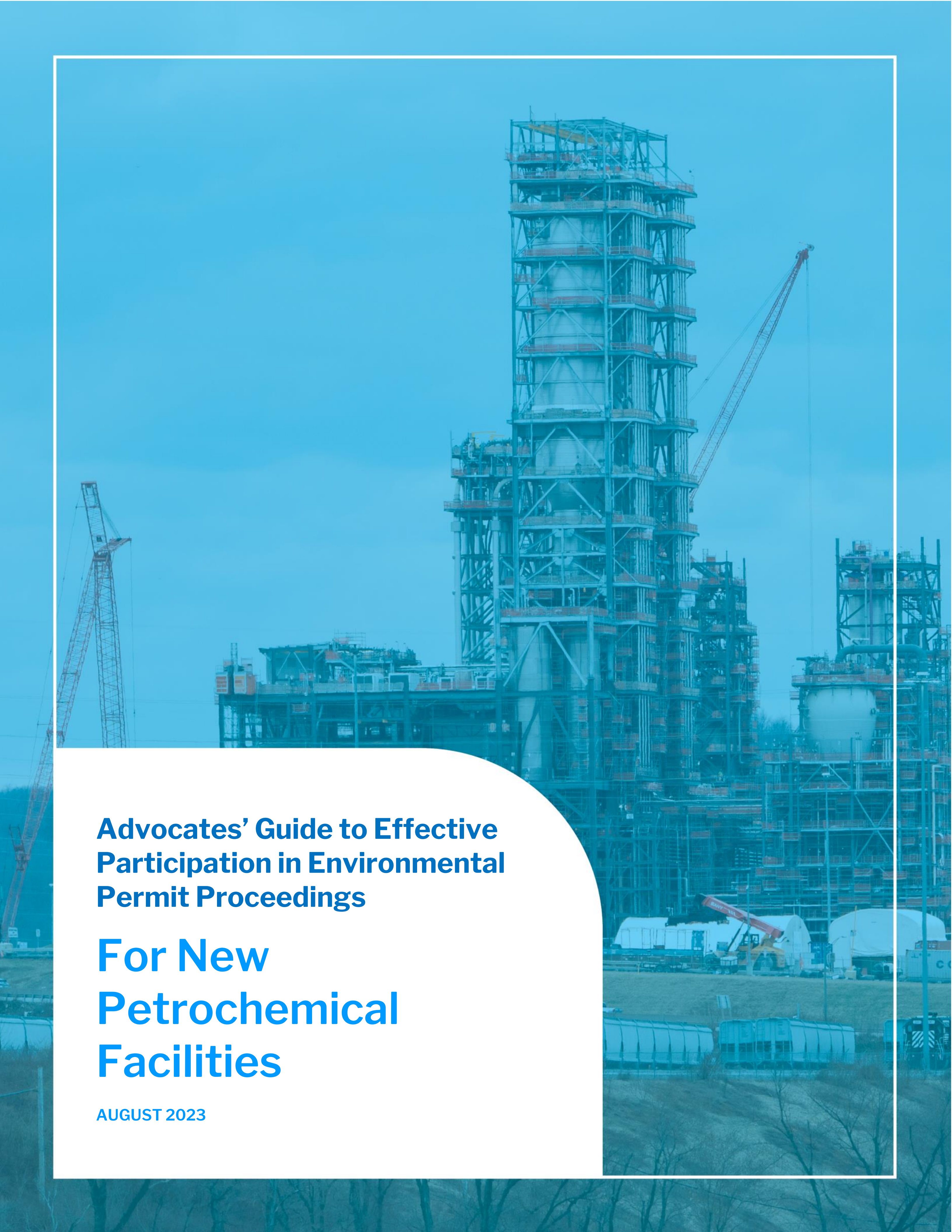

Advocates' Guide to Effective Participation in Environmental Permit Proceedings

For New Petrochemical Facilities

AUGUST 2023

The views expressed herein are solely those of the individual authors. Nothing in this guide constitutes legal advice. This guide has not been reviewed by any government entity.

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The following individuals provided unique contributions to the guide. Specifically:

> Several chapters of this guide were adapted from the Advocates’ Guide to Effective Participation in Environmental Permit Proceedings for New and Expanded Liquefied Natural Gas (LNG) Export Facilities, published in 2022. In particular, Chapters Four, Five, and Six (dealing with the Clean Water Act and the National Environmental Policy Act) are based on chapters from the LNG guide originally authored by Claire Krebs. Ms. Krebs is currently a solo practitioner of environmental public interest law licensed in Texas. In addition to her J.D., she is a licensed Texas engineer with a B.S. in mechanical engineering from Rice University, and formerly worked along the Texas Gulf Coast as an environmental engineer after serving in the Peace Corps in Honduras. She is a native of Houston, Texas, and now calls Austin, Texas, her home.

We are also grateful to Patton Dycus for providing a draft of a Clean Air Act toolkit for permitting; the draft toolkit served as a valuable roadmap for Chapter 3, and we have excerpted Mr. Dycus' excellent description of top-down BACT requirements and vulnerabilities.

The listing of these contributors does not constitute an endorsement by them, or their organizations, of the positions taken in this guide.

Cover Photo

Shell's Polymers Monaca ethane cracking and plastics complex in Beaver County, Pennsylvania. Credit to photographer Mark Dixon with Blue Lens.

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APPENDICES

Note: In many instances, comments, briefs, motions, and other documents below were submitted on behalf of numerous groups (sometimes dozens of groups!). To streamline the material, we have tried to list either the name of the primary entity that prepared the document or the entity listed first.

App. 1: Tulane Environmental Law Clinic's advocacy guide titled "Louisiana Resident Resources."

App. 2: Earthjustice, Comments on 14 Proposed Initial Title V/Part 70 Air Permits for FG LA, LLC (Aug. 12, 2019) (Formosa's St. James Parish complex).

App. 3: EIP, Petition to EPA to Object to the Title V Permit for ETC Texas Pipeline, Ltd. (Mar. 10, 2020) (Waha Gas Plant).

App. 4: Air Alliance Houston and EIP, Comments Intercontinental Terminals Company's Federal Operating Permit (Title V Permit) Renewal (Dec. 9, 2021) (Storage terminal).

App. 5: EIP, Petition to EPA to Object to the Title V Permit for Exxon's Baytown Chemical Plant (Sep. 30, 2020) (Chemical plant)

App. 6: EIP, Petition to EPA to Object to the Title V Permit for Gulf Coast Growth Ventures (Feb. 24, 2021) (Plastics plant).

App. 7: Expert comments by Dr. Ranajit (Ron) Sahu on draft air permit to LDEQ (July 29, 2021) (LNG export terminal).

App. 8: Letter from Letitia James et al., New York Attorney General, to Colonel Stephen Murphy, U.S. Army Corps of Eng'rs (May 24, 2021).

App. 9: Petitioners' Opening Brief in Shrimpers & Fishermen of the RGV v. United States Army Corps of Engineers, No. 20-60281, 2021 WL 911171 (5th Cir. Mar. 9, 2021).

App. 10: Respondent's Brief in Shrimpers & Fishermen of the RGV v. United States Army Corps of Engineers, No. 20-60281, 2021 WL 911171 (5th Cir. Mar. 9, 2021).

App. 11: Petitioners' Reply Brief in Shrimpers & Fishermen of the RGV v. United States Army Corps of Engineers, No. 20-60281, 2021 WL 911171 (5th Cir. Mar. 9, 2021).

App. 12: 565 Rise St. James v. LDEQ (La. Dist. Ct. 9/8/22) (Order denying air permit for Formosa's St. James Parish complex).

App. 13: Letter from Martha Guzman, EPA Region 9 Administrator, to 81 organizations, regarding "EPA Region 9 Review and Consideration of Class VI Carbon Storage Permits," (Sept. 18, 2022)

App. 14: Sample Fact Sheet for UIC No Migration Petition Approval.

Chapter 1

INTRODUCTION

CHAPTER ONE: INTRODUCTION

A. WHAT IS THIS GUIDE?

The goal of this guide is to provide advocates with the legal and technical knowledge to push back against the ongoing petrochemical buildout in the United States. The petrochemical industry is complex as a whole, and individual new facilities can likewise be challenging to learn about. This guide will set out the relevant technical and legal information, including the applicable laws and agencies, the environmental impacts, and effective strategies advocates need to know to best stop, slow, and police these facilities.

1. Who might benefit from this guide?

Although this guide is heavily focused on the relevant law, the goal of the guide is to be accessible to non-lawyers as well as lawyers who may not specialize in environmental law or who hope to quickly learn about new areas of environmental law. This guide focuses primarily on federal environmental laws, which are typically administered by state agencies with oversight by EPA and other federal agencies. Where state-specific information is provided, the focus is on states like Louisiana and Texas, where a large share of the petrochemical industry is based.

2. Why are we concerned about the petrochemical sector now?

Over the past decade or so, cheap natural gas fueled by a wave of new fracking and drilling—matched with an ever-increasing demand for petrochemical products like plastics—has spurred rapid growth in many sectors of the petrochemical industry. Further, as energy markets continue to move away from fossil fuels, oil and gas companies increasingly view the petrochemical sector as a vital lifeline to continue profiting from oil and gas drilling.

These buildouts lock in decades of fossil fuel demand, and with it, massive greenhouse gas emissions. For example, a 2020 study identified 88 proposed petrochemical projects in the Gulf Coast region alone.[1] If all 88 projects are constructed, they will emit 150 million metric tons of greenhouse gases per year—the equivalent of 38 new coal-fired power plants.[2]

Additionally, petrochemical facilities—substantial sources of harmful air and water pollution—are frequently located in overburdened, low-income, and majority-minority communities. For instance, Formosa, a Taiwanese energy company, plans to build a petrochemical mega-complex in Welcome, Louisiana (St. James Parish). The community of Welcome, located in the heart of Louisiana's Cancer Alley, has a

> "Petrochemicals – components derived from oil and gas that are used in all sorts of daily products such as plastics, fertilizers, packaging, clothing, digital devices, medical equipment, detergents and tires – are becoming the largest drivers of global oil demand."
>
> "Demand for plastics – the key driver for petrochemicals from an energy perspective – has outpaced all other bulk materials (such as steel, aluminum, or cement), nearly doubling since 2000."
>
> – International Energy Agency

[1] E&E News, "Plastics Plants Are Poised to Be the Next Big Carbon Superpolluters," (Jan. 24, 2020), https://www.scientificamerican.com/article/plastics-plants-are-poised-to-be-the-next-big-carbon-superpolluters/.
[2] *Id.*

population which is 99% minority, including 87% who identify as black.[3] The facility would emit a whopping 800 tons of hazardous air pollutants (also known as air toxics, these pollutants are especially toxic and/or carcinogenic even in very low concentrations), ranking it as one of the largest emitters in the nation.

Once a petrochemical facility is constructed and operating, it is virtually impossible to claw back the damage. As such, advocates and impacted communities must act now to stop the rapid buildout of new petrochemical facilities. This guide should help in that fight.

B. How is this guide organized?

This guide is organized in two parts. First, Chapter 2 provides a technical primer on the petrochemical industry and the plastics sector in particular. Chapter 2 also provides overviews of five of the most common and most carbon-intensive types of petrochemical facilities, with a technical description of the production processes and a summary of the key environmental impacts. Chapter 2 should be useful to anyone who is new to petrochemical industry, or someone who needs to learn the details of a particular type of petrochemical facility.

The remainder of the guide, Chapters 3 through 10, covers each of the environmental statutes and other permitting or approval steps that are likely to apply to new petrochemical facilities. These chapters are as follows:

- **Chapter 3:** Clean Air Act Permitting. Virtually every petrochemical facility will require a Clean Air Act permit prior to construction, and most of these permits will provide opportunities for public comment. These permits are typically issued by state environmental agencies, but still must conform with federal Clean Air Act requirements.
- **Chapters 4 and 5:** Clean Water Act Permitting. Although some smaller petrochemical facilities may not need any Clean Water Act approvals prior to construction, many larger facilities—especially those located in or near rivers and wetlands—will require a Clean Water Act Section 404 permit (issued by the U.S. Army Corps of Engineers) and other approvals prior to construction. Notably, the Section 404 permitting process (Chapter 4) also usually requires an environmental review pursuant to the National Environmental Policy Act, discussed in Chapter 6.
- **Chapter 6:** National Environmental Policy Act reviews. Major petrochemical facilities are likely to require review under the National Environmental Policy Act, or NEPA. NEPA reviews are triggered by the issuance of most federal permits, such as Clean Water Act 404 permits (but not most air permits). Although NEPA reviews do not dictate a certain outcome, the review process is a potent tool for advocates to ensure that federal agencies (typically, here, the Army Corps of Engineers) fully evaluates the environmental impacts of the project.
- **Chapter 7:** Coastal Use Permitting. Many petrochemical facilities are located in coastal areas, and in many states, this can require a new facility to obtain pre-construction approval under the Coastal Use Permitting requirements. This process is akin to a blend of land use (i.e., zoning)

[3] Louisiana Illuminator, "'Lip service': Judge blasts DEQ for approving Formosa project in St. James," (Sep. 15, 2022), https://lailluminator.com/2022/09/15/lip-service-judge-blasts-deq-for-approving-formosa-project-in-st-james/.

approval and environmental reviews under NEPA, and potentially provides advocates an opportunity to stop a project outright.

- **Chapter 8:** The Public Trust Doctrine. The public trust doctrine is an ancient environmental principle that acts as a sort of safety net to ensure other environmental permitting decisions do not harm the public and the environment. Unfortunately, the power of the public trust doctrine is fairly limited in most states. In Louisiana, however, the public trust doctrine has become a powerful tool for advocates, and even formed the basis of a recent court decision blocking the air permits for Formosa's proposed St. James Parish petrochemical complex.
- **Chapter 9:** Land Use Approvals. Some new petrochemical facilities may need land use approvals prior to construction. Because land use approvals may be more discretionary than some of the environmental laws discussed in this guide, fighting land use approvals may result in stopping new projects completely.
- **Chapter 10:** Underground Injection Control Permitting. A proposed petrochemical facility might include underground disposal of wastes as part of its design. Specifically, a facility might be designed to capture carbon dioxide from its manufacturing process, which would then be injected into an underground storage cavern. Also, petrochemical facilities sometimes seek to dispose of hazardous waste underground. Before injecting any fluids underground, a facility must obtain an Underground Injection Control (UIC) permit pursuant to the Safe Drinking Water Act. To inject hazardous waste into a UIC-permitted well, a facility must additionally obtain EPA's approval of a No Migration Petition under the Resource Conservation and Recovery Act

Each of these chapters provides an introduction to the particular environmental law, a description of what requirements are likely to apply to a petrochemical facility, and how advocates can best engage in the permitting and approval process.

Finally, the electronic appendix contains additional resources that should be helpful to advocates, including public comments, court filings, and other documents.

C. What types of facilities are covered by this guide?

The petrochemical sector is vast and varied, and this guide therefore prioritizes the most common types of facilities, many of which are also the sector's largest greenhouse gas emitters. This guide also focuses heavily on the plastics sector and other petrochemical facilities that derive their feedstocks mostly from natural gas production.

In particular, this guide highlights five main types of facilities:

- Gas processing plants;
- Natural gas liquids (NGLs) fractionating plants;
- Ethane and propane cracking plants;
- Plastic resin plants, and
- Methanol plants.

The first four facilities on this list are essentially the core processing steps to produce plastics from natural gas, ranging from up-stream gas processing plants to downstream plastic resin plants that actually produce raw plastics. Methanol plants, meanwhile, are typically not directly involved in the plastics sector, but we've included them in this guide because they are hugely energy intensive and have a particularly large carbon footprint.

This guide should still be useful for advocates looking at other types of petrochemical facilities. For instance, many of the technical processes and production units covered by this guide are common to other types of petrochemical plants. Likewise, pretty much all of the permitting and legal requirements discussed in this guide will apply equally to all types of petrochemical facilities (and most other industrial facilities).

D. What is not covered by this guide?

As discussed above, this guide focuses on the petrochemical sector, especially the gas-to-plastics stream and other energy-intensive facilities. Oil and gas facilities that primarily produce fuels, such as oil refineries, as well as facilities producing agriculture-related products (i.e. fertilizer) are not covered by this guide, but much of the material may still be relevant to advocates looking at these projects. Likewise, this guide does not discuss liquid natural gas (LNG) export terminals, which are covered by a separate guide released in 2022, available at https://oilandgaswatch.org/.

This guide also does not discuss oil and gas pipelines nor the issues of eminent domain that frequently accompany pipeline projects. We note, however, that challenging pipeline projects has been successful on several recent occasions and should not be ignored as a powerful tool if a petrochemical facility will require a new pipeline. For example, advocates and landowners in Oregon successfully defeated a requisite permit for a 229-mile gas pipeline needed for the Jordan Cove LNG export terminal, effectively killing the entire project.[4]

Advocates looking to stop a pipeline should consult with the "Landowner's Rapid Response Guide," made available by the Property Rights and Pipeline Center at https://pipelinecenter.org/, which offers step-by-step instructions, along with five videos, for challenging pipelines and their associated eminent domain claims.

E. What other resources are out there?

Each of the following chapters will provide links to helpful resources specific to that chapter (for instance, extra air permitting resources for the Clean Air Act Chapter), but we highlight here some of the most significant resources available to advocates looking to learn about the petrochemical sector generally.

- FracTracker's Guide to Petrochemicals. https://www.fractracker.org/petrochemicals/guide/.

FracTracker's Guide to Petrochemicals is an online compendium of information on the petrochemical industry. As FracTracker explains, the website aims to be a "complete guide to the social, environmental, and economic risks associated with the petrochemical industry in the United States." The guide features both high-level information and granular, facility-level data, as well as many excellent charts and maps.

- Oil and Gas Watch. https://oilandgaswatch.org/.

[4] Oregon Public Broadcasting, "Battle over Jordan Cove energy project is over after developers pull plug," (Dec. 1, 2021), https://www.opb.org/article/2021/12/01/jordan-cove-pipeline-terminal-project-abandoned-by-developers/.

Oil and Gas Watch is a free, public inventory that tracks new and expanded oil, gas petrochemical infrastructure projects across the United States. Use the map to navigate the facility of interest. Clicking on any facility will pull up a summary table of emissions information including current permit status and, in most cases, actual permit documents.

- DeSmog's Field Guide to the Petrochemical and Plastics Industry. https://www.desmog.com/2018/10/28/field-guide-petrochemical-plastics-industry/.

This guide is more of an overview of the industry and the various manufacturing processes, but should still be useful to anyone first encountering the petrochemical sector.

- BankTrack. https://www.banktrack.org/.

BankTrack is a group tracking the financing behind fossil fuel projects, including petrochemical facilities. The information compiled here could be useful for public awareness campaigns.

- U.S. Climate Change Litigation Database. http://climatecasechart.com/climate-change-litigation/us-climate-change-litigation/.

Columbia Law School and Arnold & Porter's free database of select cases related to environmental issues organized by the laws they address and jurisdiction. This should not be used as a substitute for a legal research database like Westlaw or Lexis, but it is a free compilation of major cases and some of the case briefing as well.

- The Federal Government's Regulations Website, https://www.regulations.gov/.

Regulations.gov hosts agency rulemakings, including preambles that provide explanations and context for most rules, as well as dockets additional information like public comments. For information on how to navigate this site, see the tutorial here: https://www.youtube.com/watch?v=29O-jouzwD.

- Tulane Environmental Law Clinic's "Louisiana Resident Resources" (Appendix 1).

This document is a compilation of numerous kinds of helpful environmental resources tailored to Louisiana, including everything from how to find emissions inventories to how to stay up to date on public notices.

Chapter 2

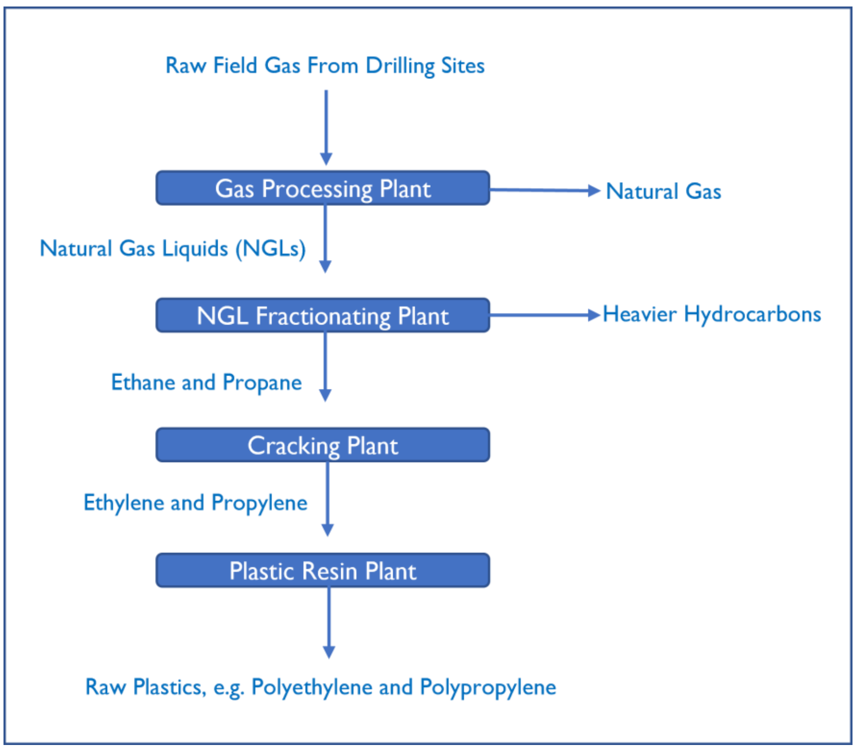
TECHNICAL BACKGROUND AND FACILITY SUMMARIES

CHAPTER TWO: TECHNICAL BACKGROUND AND FACILITY SUMMARIES

A. Chapter Overview

This chapter aims to provide the technical background necessary to understand how the major types of petrochemical facilities operate and the types of permitting each kind of facility will typically need to construct and operate. The chapter first provides a brief overview of natural gas liquids (NGLs) that form the heart of the gas-based petrochemical sector. The chapter then profiles five of the most significant types of petrochemical facilities from a climate and advocacy standpoint, with information on the scope, environmental impacts, and technical descriptions of each type of facility. The five facility types are:

- Gas processing plants;
- Natural gas liquids (NGLs) fractionating plants;
- Ethane and propane cracking plants;
- Plastic resin plants, and
- Methanol plants.



Flow of Natural Gas Liquids from drilling to plastic production

The first four plants in this list are the four primary steps needed to manufacture plastics from natural gas feedstock: gas processing plants extract the valuable NGLs from the raw natural gas; the NGLs are then fractionated into individual chemicals, including ethane and propane; ethane and propane are then “cracked” into ethylene and propylene, and, finally, plastic resin plants convert ethylene and propylene into common plastics, such as polyethylene and polypropylene.

Although many of these plants are stand-alone facilities connected by intra- and interstate pipelines, some are also combined into petrochemical complexes. For instance, Shell’s massive new Pennsylvania complex features both ethane cracking plants and plastic resin plants.

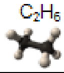
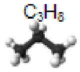
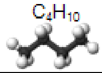
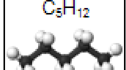
The fifth type of facility covered by this guide, methanol plants, are not integral to the plastic production chain, although methanol is used in some plastics manufacturing. Instead, methanol plants are highlighted because they are some of the most energy-intensive facilities in the petrochemical sector. Methanol plants burn a massive amount of fuel to convert natural gas into methanol, which has many uses in the petrochemical industry and as a fuel or fuel-additive in some parts of the world, especially China.

Finally, several less-common but still important types of petrochemical facilities are covered briefly: propane dehydrogenation plants (which are an alternative method of producing propylene), gas-to-liquids plants (which convert natural gas to liquid fuels like gasoline and diesel), and petrochemical storage and terminal facilities.

B. Natural Gas Liquids (NGLs) Basics

To best understand how natural gas and the petrochemical industry, especially the plastics sector, are deeply intertwined, it helps to learn about NGLs. NGLs should not be confused with liquid natural gas. Instead, when raw gas is extracted from the ground, it contains a mix of hydrocarbons and impurities. Pure natural gas is methane, which is a hydrocarbon with only one carbon atom. Raw gas from drilling sites usually consists of about 70% methane, although this can vary considerably by location. Of the remaining non-methane constituents, a significant amount are heavier hydrocarbons, i.e., compounds with more than one carbon atom.

NGL Attribute Summary eia

Natural Gas Liquid	Chemical Formula	Applications	End Use Products	Primary Sectors
Ethane	C_2H_6 	Ethylene for plastics production; petrochemical feedstock	Plastic bags; plastics; anti-freeze; detergent	Industrial
Propane	C_3H_8 	Residential and commercial heating; cooking fuel; petrochemical feedstock	Home heating; small stoves and barbeques; LPG	Industrial, Residential, Commercial
Butane	C_4H_{10} 	Petrochemical feedstock; blending with propane or gasoline	Synthetic rubber for tires; LPG; lighter fuel	Industrial, Transportation
Isobutane	C_4H_{10} 	Refinery feedstock; petrochemical feedstock	Alkylate for gasoline; aerosols; refrigerant	Industrial
Pentane	C_5H_{12} 	Natural gasoline; blowing agent for polystyrene foam	Gasoline; polystyrene; solvent	Transportation
Pentanes Plus*	Mix of C_5H_{12} and heavier	Blending with vehicle fuel; exported for bitumen production in oil sands	Gasoline; ethanol blends; oil sands production	Transportation

C indicates carbon, H indicates hydrogen; Ethane contains two carbon atoms and six hydrogen atoms
*Pentanes plus is also known as "natural gasoline." Contains pentane and heavier hydrocarbons.

The chemistry in table[5] at left may seem daunting, but don't worry. The industry frequently uses an easy shorthand to categorize these hydrocarbons: C1 for methane, as it has one carbon atom, C2 for ethane, with two carbon atoms, and so on. C3 is propane, and together these three chemicals are the primary chemicals discussed in this guide.

NGLs are called natural gas liquids because, as they are heavier than methane, they condense out of the gas phase into a liquid at higher temperatures than methane, allowing them to be separated as liquids from the gaseous methane in gas processing plants, discussed below.

[5] *What are Natural Gas Liquids and how are they used,* EIA, https://www.eia.gov/todayinenergy/detail.php?id=5930 (visited Aug. 11, 2023).

Generally, NGLs do not need to be removed from the raw gas stream; these chemicals can usually be left in a gaseous mix with methane as they can be burned right alongside methane by end users. In fact, NGLs increase the thermal energy of the natural gas if they are left in the stream, thereby increasing the value of the natural gas.

NGLs, however, are also valued for their role as raw feedstock the petrochemical industry and as stand-alone fuel sources. As will become clear in the following sections, ethane in particular is an extremely critical feedstock for the plastics industry, followed by propane. As such, it often makes economic sense for producers to separate the NGLs from the natural gas in gas processing plants.

Additionally, when the NGLs are extracted from the natural gas at gas processing plants, they remain in a liquid mix of hydrocarbons; ethane, propane, and so on. Therefore, these NGLs must be further separated in a process called fractionating, discussed below.

C. Facility Focus: Gas Processing Plants

Gas Processing Plant Near Denver, Colorado. Credit: Reid Neureiter/Flickr

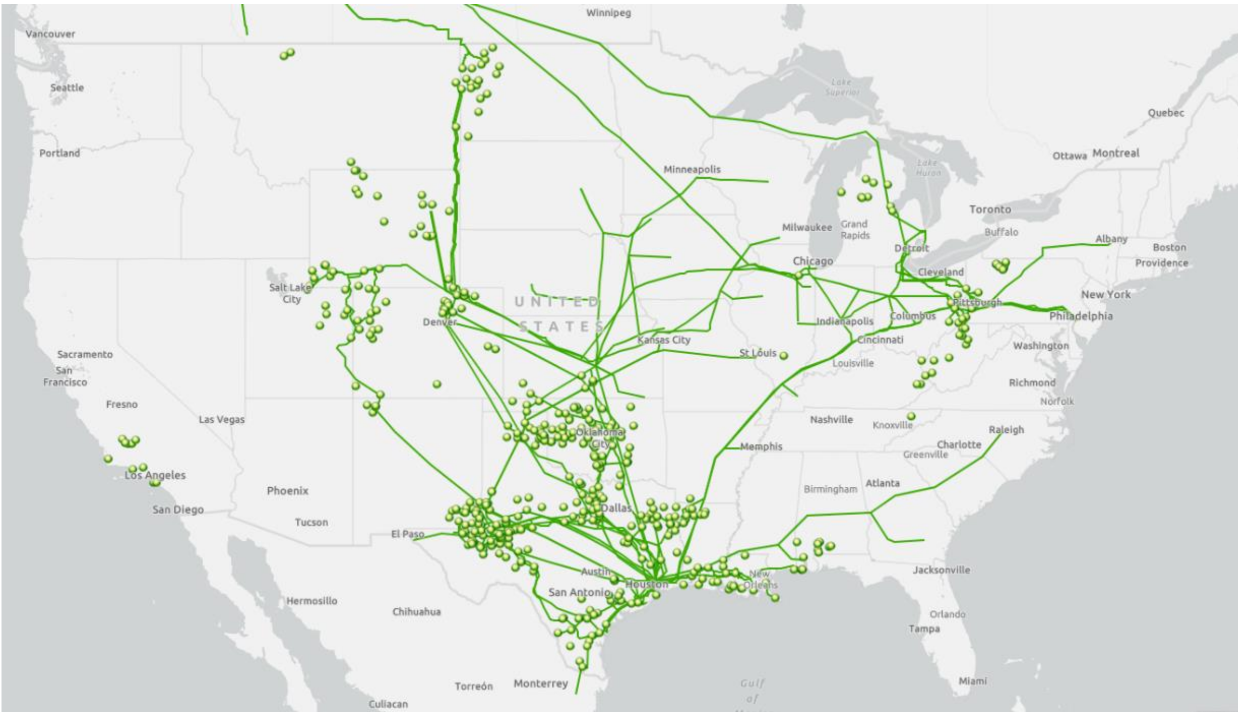
After raw natural gas is removed from the ground, gas processing plants are the first step towards converting raw natural gas into petrochemical products and pipeline quality natural gas. Although all raw natural gas (also called "field gas") must be treated in gas processing plants before transport in interstate pipelines, many plants also extract NGLs, which, as discussed throughout, form the building blocks of the petrochemical industry. As such, this guide focuses on natural gas processing plants that extract NGLs, including ethane.

1. Scope and Context Within the Petrochemical Sector

According to the Energy Information Administration's (EIA) most recent data, there are 510 gas processing plants in the lower 48 states.[6] Most of these plants are located near extraction sites, as raw field gas generally cannot be transported by long-distance pipelines. The total number of gas plants declined between 2014 and 2017 (the most recent years EIA has data for), but overall production capacity increased by about 5% over those same years.[7]

[6] *Natural Gas Annual Respondent Query System,* EIA, https://www.eia.gov/naturalgas/ngqs/ (visited Aug. 11, 2023).
[7] *Natural Gas Processing Capacity in the Lower 48 States*, EIA (Feb. 14, 2019), https://www.eia.gov/analysis/naturalgas/.

A map of U.S. gas processing plants shows large clusters in fields like the Permian Basin and Marcellus Formation. Indeed, the EIA notes that most recent growth in gas processing capacity has occurred in the Appalachian Basin, the Permian Basin in West Texas and New Mexico, and the Haynesville Shale in Texas and Louisiana.[8] The map below shows both gas processing plants and the network of pipelines that transport NGLs.



Map of Natural Gas Processing Plants and pipelines that transport natural gas liquids (NGLs) like ethane. Source: FRACTRACKER Alliance.

After extraction from raw natural gas, the NGLs consist of a liquid mix of various hydrocarbons that must be "fractionated" at an NGL fractionating plant. Thus, the raw NGL mix is typically transported from the gas processing plant via pipeline to a fractionating plant (the map above shows NGL pipelines in addition to gas processing plants). Fractionating plants are covered below.

2. Environmental Impacts of Gas Processing Plants

As a necessary part of the overall natural gas extraction and petrochemical industries, gas processing plants contribute to the reliance on fossil fuels and climate change. But gas processing plants also have significant impacts locally. The process, as described below, includes numerous combustion sources that emit harmful air pollutants like fine particulate matter, nitrogen oxides, and carbon monoxide, as well as fugitive emissions, i.e., leaks of methane, a potent greenhouse gas. The process also produces a substantial amount of wastewater that is removed from the gas stream and must be treated and disposed.

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[8] *Id.*

3. Technical Description of a Gas Processing Plant and Air Emission Points

Field gas typically arrives from drilling and/or collection sites by pipeline and is often first fed to a "slug catcher." A "slug" is a surge of gas in the pipeline, and the slug catcher is a large reservoir that can hold incoming slugs and dispense a steady stream of gas to the processing plant. Slug catchers are not a direct source of air pollution but may be a source of fugitive leaks.

Next, a series of compressors are used to move the gas through the facility and process. These compressors are usually powered by numerous natural-gas-fired internal combustion engines, each of which may be rated for several thousand horsepower. These engines are typically the largest source of air pollution at gas processing plants, emitting products of combustion such as nitrogen oxides, carbon monoxide, particulate matter, and greenhouse gases.

After the initial compression, the field gas is typically sent to a molecular sieve for pre-treatment, which is a unit that removes water and some other impurities from the field gas. The molecular sieve is not a source of air emissions (other than fugitive leaks), but the sieves are often heated by natural-gas-fired heaters, which are emission sources.

NGLs are extracted from the field gas in the next step. There are quite a few different techniques and proprietary processes used for this step, but most involve some form of refrigeration to cool the gas stream to the point where the NGLs condense into liquids while methane, which is lighter, remains in the gas phase and is then separated from the NGLs. This step also often involves additional gas-fired compressors to drive the gas stream through the refrigeration process, and these compressors are additional sources of combustion emissions.

Additional emission sources at gas processing plants include hot-oil heaters, which combust gas to heat oil that is used to transfer heat to various processes at the plant, and primary flares that to control process emissions and emergency flares.

4. Environmental Approvals Needed to Construct Gas Processing Plants

Air Permits

All gas processing plants will need to obtain permission to construct and operate pursuant to the Clean Air Act, usually in the form of an air permit issued by a state agency. The size of the project will generally determine what types of air permit(s) will be required, as emissions are usually proportional to the size of the project.

Many gas processing plants surveyed are permitted as minor sources for the Clean Air Act's New Source Review (NSR) program.[9] A few of the largest gas processing plants, or gas processing plants that are part of a larger complex, however, will require major NSR permits. Larger-scale gas processing plants will also need to obtain a Title V operating permit, which is typically only required after construction is complete and the plant is already operating. Chapter Three covers Clean Air Act permitting in greater depth.

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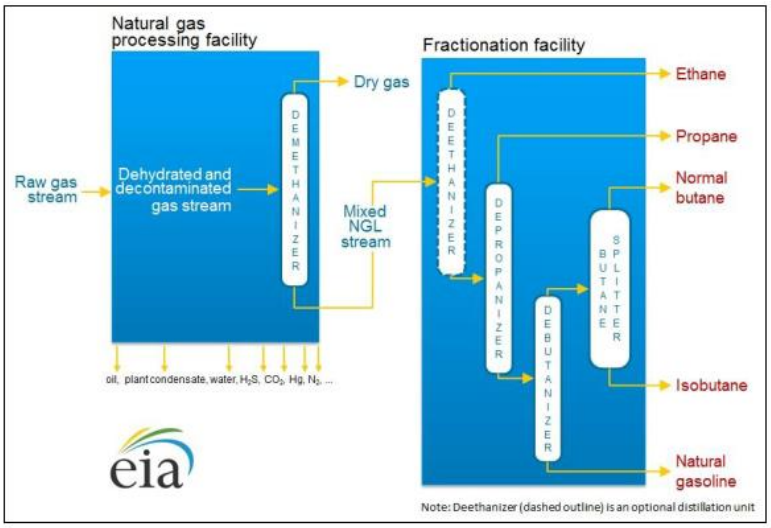
[9] Under the Clean Air Act, gas processing plants are subject to a major NSR threshold of 250 tons of any criteria pollutant emissions per year (e.g., particulate matter, nitrogen oxides, carbon monoxide, volatile organic compounds), and many gas plants surveyed have emissions below 100 tons per year for these pollutants.

Water Permits

Unlike some other components of the petrochemical industry, natural gas processing plants are unlikely to be built on wetlands or adjacent to waterways, meaning that Clean Water Act Section 404 permits are not commonly needed. Most facilities, however, will need to obtain a National Pollution Discharge Elimination System (NPDES) permit. Chapter Four covers both Section 404 permits and NPDES permits.

D. Facility Focus: Natural Gas Liquids Fractionators



Relationship between Gas Processing Plants and Fractionating Plants. Source: EIA.

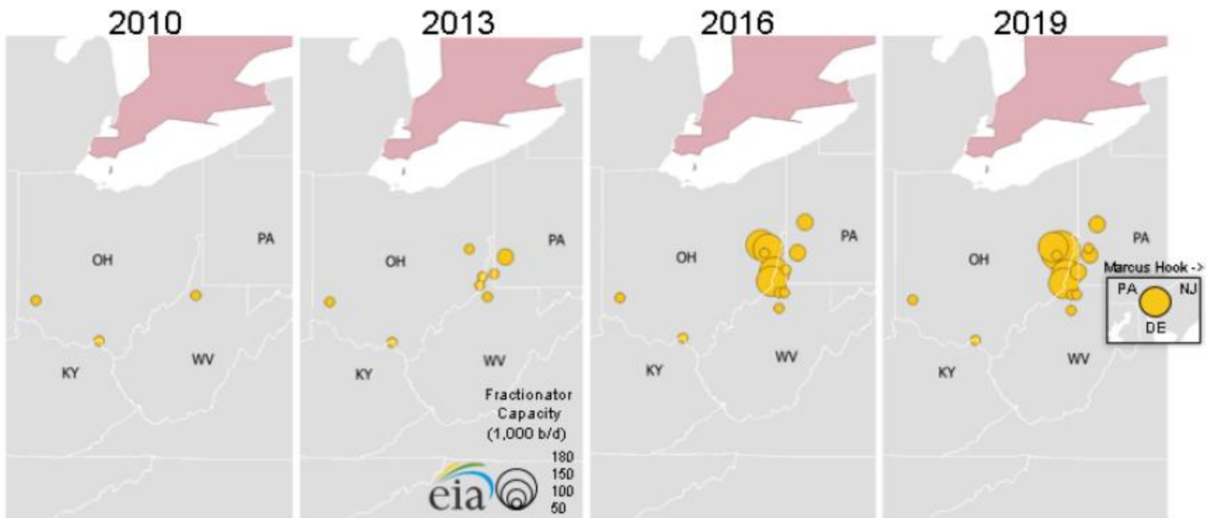
As discussed above in Section B, NGLs are the liquid hydrocarbons extracted from natural gas for their value as individual chemical compounds. NGLs are extracted from natural gas at gas processing plants, but after that initial extraction they remain in a mix of various NGLs known as “y-grade mix” or “raw mix.” The NGLs are then sent by pipeline, rail, or truck to fractionating plants, which separate individual products via fractionation. NGL Fractionators may be stand-alone industrial facilities, or units located at gas processing plants or other complexes.

1. Scope of the Industry and Future Trends

Currently there are about 120 NGL fractionating units in the U.S., but demand is growing in sync with the large petrochemical buildout.[10] For instance, some industry analysts have complained of a lack of fractionating capacity in the U.S. in recent years, which can act as a bottleneck for the broader petrochemical industry, and predict many new fractionation units will be needed to keep up with the petrochemical industry’s demand for ethane.[11] The Environmental Integrity Project’s Oil & Gas Watch

[10] *Natural Gas Liquids Primer*, U.S. Department of Energy (Dec. 2017), https://www.energy.gov/sites/prod/files/2017/12/f46/NGL%20Primer.pdf.
[11] *NGL Fractionation Capacity: Building with 2020 Vision*, BTU Analytics, https://btuanalytics.com/natural-gas-liquids/ngl-fractionation-capacity/ (visited Aug. 11, 2023).

database of new projects (as of August 2023) lists 56 new or expanding fractionating projects in the U.S.[12] The vast majority of these new projects are located in either the Appalachian region or Texas.



Growth in number and capacity of fractionating plants in the Appalachian Region. Source: EIA.

2. Locations and Sector Position of Fractionating Plants

In much of the U.S., NGL fractionators may be located far from the gas processing plant that produced the NGLs, and a large network of pipelines exists to move NGLs long distances. Traditionally, Mont Belvieu, near Houston, has been the hub of NGL fractionation, hosting numerous fractionating plants that process NGLs from a wide swath of the country. Mont Belvieu provides products like ethane to nearby petrochemical complexes, usually ethane crackers that convert ethane to ethylene.[13] Recently, however, Appalachia has seen a boom in NGL fractionators, owing to the growth in gas production in the Marcellus and Utica fields.[14] In the Appalachian region, fractionation tends to occur much closer to the gas processing plants, as the map below shows:

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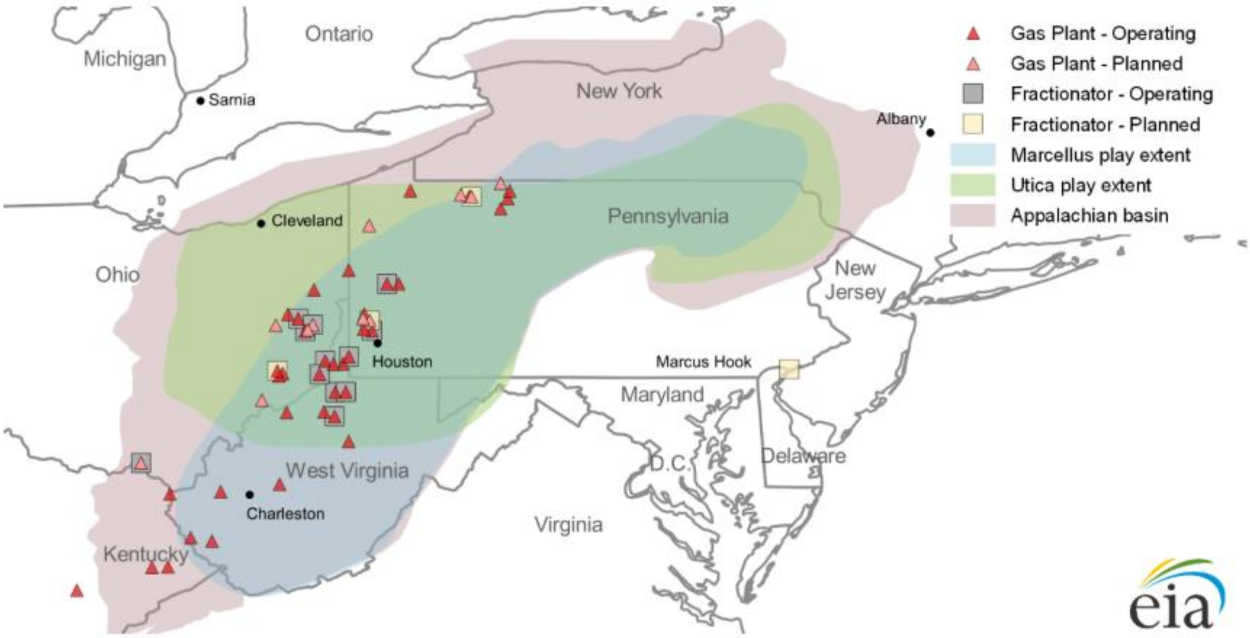
[12] *Oil & Gas Watch*, EIP, https://oilandgaswatch.org/project-index?sort=text:1:asc&page=1 (visited Aug. 11, 2023).
[13] *Talking' 'Bout My F-F-Fractionation—Increased NGL Fractionation Capacity at Mont Belview and Appalachia*, RBN Energy (July 2, 2014), https://rbnenergy.com/talkin-bout-my-f-f-fractionation-mont-belvieu-and-appalachia.
[14] *Id.*



Gas processing plants and fractionating plants in Appalachia. Source: EIA.

3. Environmental Impacts of Fractionating Plants

NGL fractionators have a large environmental impact. Most substantial are the air emissions, including air pollutants that contribute to global climate change and harm human health. Fractionators also produce a significant quantities of wastewater and water pollution.

Fractionating plants require large amounts of heat and energy, and therefore include combustion sources that emit numerous air pollutants. Additionally, leaks from the process itself are a significant source of smog-causing volatile organic compounds and toxic air pollutants. A typical fractionating plant will emit between 100 to 250 tons of nitrogen oxides, carbon monoxide, and volatile organic compounds per year. These plants also emit thousands of pounds of Hazardous Air Pollutants (HAPs) per year, which are pollutants designated by Congress as particularly toxic or carcinogenic even in small quantities. These emissions include the known carcinogens benzene and formaldehyde.

Further, in addition to facilitating the larger, climate-harming petrochemical industry, fractionating plants themselves emit hundreds of thousands of tons of greenhouse gases per year. For example, Lone Star's Mont Belvieu, Texas fractionating plant has the potential to emit more than 600,000 tons of carbon-dioxide-equivalent (CO2e) per year, comparable to a new gas-fired power plant.[15]

Fractionation plants also generate wastewater at numerous stages of the process, and their discharges are significant; for example, EnLink's Eunice Fractionator in Louisiana discharges almost

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[15] *Greenhouse Gas Equivalencies Calculator*, EPA, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results (visited Aug. 11, 2023).

700,000 gallons of water per day. Pollutants in this discharge include dissolved nitrogen, phosphorus, and oil and grease residues.

4. Technical Description of a Typical Facility and Air Emission Points

The fractionating process itself is relatively straightforward, but the facilities can be complex, regardless. In short, each component NGL has a different boiling point, with the lightest NGL, ethane, having the lowest. Thus, the mix of NGLs is first heated to the point that the ethane boils off and is collected and stored, then the process is repeated for propane, and so on.

Pretreatment

Depending on the quality of the NGL mix, the stream may need several types of pretreatment. If the mix contains CO2 and/or hydrogen sulfide (H2S), these contaminants, generally called acid gases, must first be removed, typically by a process called amine treatment (also called amine scrubbing, amine sweetening, and acid gas removal). Amines are a family of compounds related to ammonia, and when mixed with the NGL stream absorb the unwanted acid gases in a unit known as an absorber. The amines are then "regenerated" in a separate unit that strips the acid gases from the amine, which can then be cycled back to the beginning of the process; the acid gases are then vented to a flare or other incineration device (e.g., a thermal oxidizer), which is a source of emissions. Further, the regeneration process requires a substantial amount of heat, which is supplied by gas-fired hot oil heaters that are often shared with the main fractionation process below, another source of significant emissions.

If the NGL stream includes water, then it must also be dehydrated. This is often done by use of a molecular sieve, in which the NGL stream flows through a bed of pellets or beads made of silicate compounds that adsorb water molecules from the stream. The beds must be routinely regenerated, which in simple terms means the bed will be removed from the stream and heated to evaporate collected water. The gas-fired heaters used for regeneration are also a source of emissions.

Fractionation

Fractionation involves a multi-stage process where the mix of NGLs is heated in large columns to the desired boiling point to vaporize each individual NGL, starting with the lightest, ethane, then the next lightest, propane, and so on. Once a particular product is fractionated and separated from the stream, it is recondensed into liquid for storage or transport.

Facilities typically use hot oil heaters fired by natural gas or other gaseous fuel to heat the fractionation columns. These heaters are massive and can have the energy output comparable to small power plants; for instance, the heater in one fractionation line at Lone Star Fractionation in Texas has an energy output comparable to a 75 MW power plant. As such, these heaters are the most significant source of air emissions at fractionation plants, emitting products of combustion such as nitrogen oxides, carbon monoxide, fine particulates, volatile organic compounds, and of course greenhouse gases.

Other Sources of Emissions

After the Fractionation heaters, fugitive emissions are typically the next-largest source of emissions. Fugitive emissions are those that do not pass through a smokestack, and include equipment leaks, storage tanks, and relief venting. Typically, these emissions are volatile organic compounds, which combine with sunlight to form smog, and also include individual chemicals that are carcinogenic or toxic even in small quantities. Benzene is one example of such a pollutant emitted by fractionating plants which is both carcinogenic and toxic.

Additionally, fractionating plants usually operate numerous flares, auxiliary and emergency engines, and other combustion sources which emit nitrogen oxides, carbon monoxide, fine particulates, volatile organic compounds, and greenhouse gases.

5. Environmental Approvals Needed to Construct Fractionating Plants

Air Permits

All fractionating plants will need permission to construct and operate pursuant to the Clean Air Act, usually in the form of an air permit issued by a state agency. The size of the project will generally determine what types of air permit(s) will be required, as emissions are usually proportional to the size of the project.

Similar to gas processing plants, most fractionating plants surveyed are permitted as minor sources for the Clean Air Act's NSR program.[16] A few of the larger fractionating plants, or units that are part of a larger complex will require major NSR permits, and these plants will likely also need to obtain a Title V operating permit,[17] which is typically only required after construction is complete and the plant is already operating. Clean Air Act permitting is covered in Chapter Three of this Guide.

Water Permits

As with air permits, the water permitting required for fractionating plants is comparable to those required for gas processing plants. In short, stand-alone fractionating plants are unlikely to be built on wetlands or adjacent to waterways, meaning that Clean Water Act Section 404 permits are not commonly needed, although fractionating plants may be part of a larger petrochemical complex that does require a 404 permit. Regardless, facilities will need to obtain a National NPDES) permit. These permits are discussed in Chapter Four of this Guide.

E. Facility Focus: Ethane Cracking Facilities

> "Ethane to outpace growth in all other U.S. petroleum product consumption through 2023."
>
> - U.S. Energy Information

Ethylene is a vital material in the plastics industry, so much so that the industry group American Fuel & Petrochemical Manufacturers has called ethylene the "world's most important chemical."[18] Although there are various ways to manufacture ethylene, the most common method is called ethane cracking. These ethane cracking plants (also known as ethylene crackers or ethylene plants) use enormous amounts of energy, emitting millions of tons of carbon dioxide (CO2) in the process of heating ethane (and often propane) and steam to the point where its chemical bonds crack—or break—into individual molecular bonds, which reconstitute into ethylene. Ethylene is then transported to plastics

[16] Under the Clean Air Act, fractionating plants are subject to a major NSR threshold of 250 tons per year of any criteria pollutant emissions per (e.g., particulate matter, nitrogen oxides, carbon monoxide, volatile organic compounds), and many fractionating plants surveyed have maximum potential emissions below 100 tons per year for these pollutants.
[17] The threshold for Title V permitting is 100 tons per year of any criteria pollutant.
[18] *Ethylene: The World's Most Important Chemical*, American Fuel & Petrochemical Manufacturers, https://www.afpm.org/newsroom/blog/ethylene-worlds-most-important-chemical (visited Aug. 11, 2023).

manufacturing facilities as the raw material to make polyethylene—the ubiquitous plastic that is in everything from plastic bottles, bags, single use packaging, toys, and so on.

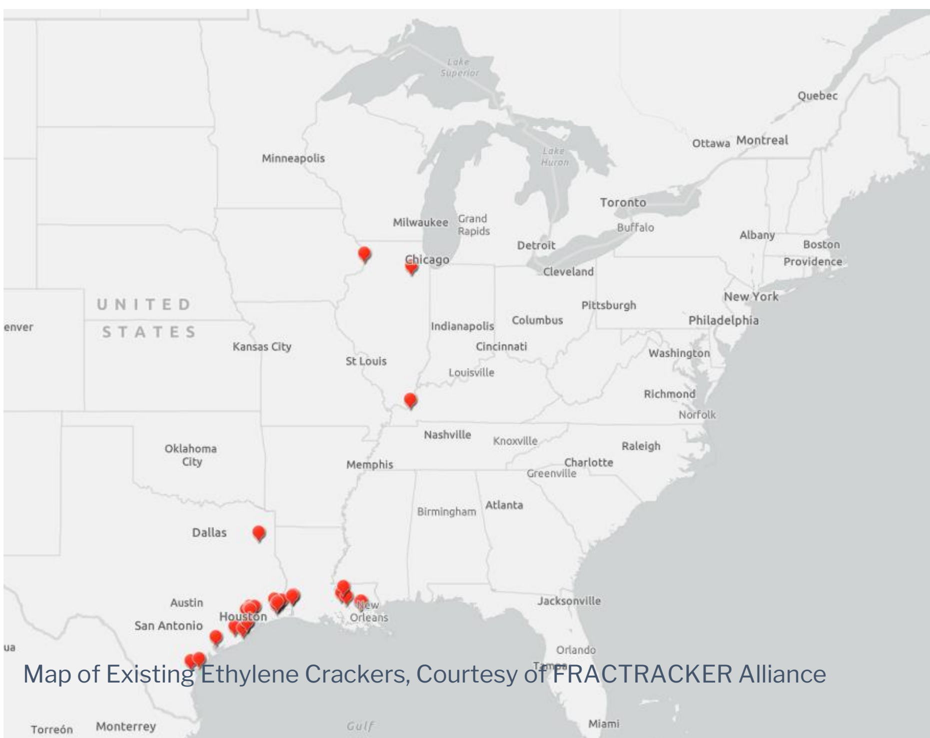
Note also that some cracking plants also include propane in the feedstock, and the cracking process can also produce significant quantities of propylene, which is another important petrochemical building block, as discussed above in Section B of this Chapter. Although this section focuses primarily on ethane cracking and ethylene production, the information provided here is also applicable to cracking plants that produce propylene in addition to ethylene.

1. Context Within the Petrochemical Sector

Ethane crackers are located mid-stream in the petrochemical industry. Ethane, an NGL, is typically delivered by pipeline to the cracking facility from a fractionating plant, although the two facilities may also be co-located. The cracking plant then produces ethylene, which it sends on to plastic resin manufacturing facilities, either by rail, truck, or pipeline—although many cracking plants are co-located with the plastic resin manufacturing facilities in large petrochemical complexes.

2. Scope of the Cracking Industry and Future Trends

Currently there are about 30 existing ethane cracking plants in the U.S., located primarily on the Gulf Coasts of Texas and Louisiana.[19] A handful of ethane cracking plants also currently exist in Kentucky and Illinois.[20]



Map of Existing Ethylene Crackers, Courtesy of FRACTRACKER Alliance

Analysts predict—and environmental advocates fear—a large expansion both in the number of new plants and the capacity of existing plants;[21] Environmental Integrity Project's Oil & Gas Watch database lists 31 new or expanding ethane cracking plants, including several massive projects like Shell's Appalachia Petrochemicals Complex currently under construction in

[19] *National Energy and Petrochemical Map,* FracTracker Alliance (Feb. 28, 2020), https://www.fractracker.org/2020/02/national-energy-petrochemical-map/.
[20] *Id.*
[21] *Ethane Cracker Plants: What Are They?*, The Climate Reality Project (Oct. 23, 2018), https://www.climaterealityproject.org/blog/ethane-cracker-plants-what-are-they.

Monaca, Pennsylvania, which will feature seven ethane cracking lines.[22]

3. Environmental Impacts of Ethane Cracking

Ethane cracking plants have significant environmental impacts, including both the direct impacts of their air, water, and greenhouse gas emissions and the indirect impacts due to the sheer quantity of gas and ethane they demand.

Direct Impacts

Ethane cracking requires enormous amounts of energy to heat ethane and steam to the required temperatures (~1,500 degrees Fahrenheit). Thus, ethane cracking plants include large combustion sources that burn enormous quantities of gas and emit numerous air pollutants. Additionally, leaks from the process itself are also a significant source of smog-causing volatile organic compounds and toxic air pollutants.

The quantity of emissions generally scales with size, but a typical ethane cracking plant will emit between 150 and 400 tons of nitrogen oxide pollution, 400 to 1,000 tons of carbon monoxide pollution, and 200 to 500 tons of volatile organic compounds per year. These plants also emit thousands of pounds of HAPs, including carcinogens benzene and formaldehyde. For example, the Occidental Chemical Corporation's ethane cracker in San Patricio County, Texas, emits 60,580 pounds of HAPs per year, including 16,000 pounds of carcinogenic and toxic benzene.[23]

In terms of climate impacts, in addition to the increased demand for natural gas, discussed below, cracking plants themselves emit massive amounts of greenhouse gases per year. Typical ethane cracker CO_2e emissions are between two to three million tons per year. For context, that's equal to about six new gas-fired power plants.[24]

Cracking plants also generate wastewater at numerous stages of the process, including when water is sprayed into the ethylene gas stream in the quench tower, described in more detail below. Although the wastewater may be treated before being discharged to local waterways, i.e., creeks and rivers, the discharges still contain harmful pollutants. These pollutants include the known carcinogens benzene and hexavalent chromium, both of which are also severely toxic.[25]

Indirect Impacts

Ethane crackers are such large consumers of ethane that a single new facility induces a substantial increase in upstream infrastructure. For example, to feed Shell's Appalachia cracker, Shell signed contracts with 10 fractionating plants, some of which will be built specifically for Shell.[26] Each one of those fractionating plants is itself a significant source of air and water pollution, as well as greenhouse gas emissions. Further, new ethane crackers are likely to increase pipeline construction, complete with all of the negative impacts of new pipelines.

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[22] *Oil & Gas Watch*, EIP, https://oilandgaswatch.org/project-index?sort=text:1:asc&page=1 (visited Aug. 11, 2023).
[23] TCEQ, *Construction Permit Source Analysis and Technical Review*, Occidental Chemical Corporation, at 1 (July 1, 2014).
[24] *Greenhouse Gas Equivalencies Calculator*, EPA, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results (visited Aug. 11, 2023).
[25] Environmental Integrity Project, Comments on Draft NPDES Permit No. PA0002208 for Shell Chemical Appalachia, at 4 (Oct. 18, 2016).
[26] *Ethane Cracking in the Upper Ohio Valley: Potential Impacts, Regulatory Requirements, and Opportunities for Public Engagement*, Environmental Law Institute (Jan. 2018), https://www.eli.org/sites/default/files/eli-pubs/ethane-cracking.pdf.

4. Technical Description of a Typical Cracking Facility and Air Emission Points.
Although there is some variety between how ethane cracking plants operate, most facilities will include a fairly consistent set of processing units, described below.

Cracking Process

Unlike upstream facilities, such as NGL fractionators and gas processing plants, ethane cracking facilities don't typically need to do significant pre-treatment of the raw materials (ethane and propane); the gas arrives from the fractionating plant ready to be processed in the cracking units.

The cracking process is driven by large, gas-fired industrial furnaces. These furnaces typically fire either natural gas, recycled waste gas from the cracking process itself (sometimes called "tail" gas), or a mix of both, and facilities can have five to seven furnaces operating simultaneously. The furnaces heat the ethane or ethane/propane mix along with steam to around 1,500° F or higher.

At this temperature, most of the ethane molecules, which have two atoms of carbon and six of hydrogen, crack apart and reform into ethylene, with two carbon atoms but only four hydrogen atoms, leaving two free hydrogen atoms. If propane is used as part of the feedstock, the initial cracking process converts propane into ethane, which is recycled through the cracker to produce ethylene.

These furnaces used for ethane cracking are the largest source of air pollution at an ethane cracking facility, emitting hundreds of tons of combustion-related pollutants. For instance, the furnaces at Shell's Appalachian Complex will emit 670 tons of carbon monoxide, 181 tons of nitrogen oxides, and nearly 100 tons of deadly fine particulate matter.[27] They will also emit more than 36,000 pounds of Hazardous Air Pollutants (HAPs).[28] HAPs are those pollutants designated by Congress as especially toxic and/or carcinogenic even in small quantities.

Facilities also often need boilers to generate steam for the cracking process, which are fired with the same type of fuels used by the furnaces. At larger facilities, or those that are part of a larger complex, like Shell's Appalachian Complex, steam may be provided by dedicated gas-fired turbines that also supply electricity—essentially a new gas-fired power plant.

Cooling and Compression

The gas stream leaving the cracking units must be converted into liquid phase to facilitate product separation, discussed below. To do so, the gas is fed to a quench tower, which sprays water into the gas stream. This reduces the gas from around 1,500° F to ambient temperatures. The wastewater from the quench tower contains hydrocarbons and other contaminants, and must be treated before disposal, although much of it is recycled in the process.

After the quench tower, the cracked gases are fed to a compressor or series of compressors, which further cools the gas stream and reduces its volume. These compressors are often powered by steam from the boilers that also supply steam to the cracking furnaces.

The quenching and cooling steps are not usually direct sources of emissions, but as with much of the petrochemical sector, these units are sources of fugitive emissions via leaks. These emissions

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[27] Shell Chemical Appalachia, LLC, *Air Quality Plan Approval Application*, at 1-4 (May 2014).
[28] *Id.*

consist of volatile organic compounds and HAPs, which can amount to several thousand pounds of HAP emissions per year at a given facility.

Treatment and Product Separation

At this stage, the gas stream contains a mix of compounds beyond just ethylene, including heavier hydrocarbons, unreacted ethane, hydrogen, and water. The water is removed by feeding the stream through adsorption beds, where the porous material in the beds removes water molecules from the stream. These beds must themselves be dried out periodically by applying heat—another source of energy-consumption and emissions.

After the water is removed, the stream is sent through a refrigeration process that uses heat exchangers and refrigerants to finally cool the stream to a mostly liquid phase. Here, hydrogen in the stream remains in gas phase and is separated to be used as fuel for the furnaces, sold to off-site consumers, or both.

The remaining liquids are then fractionated in a process similar to NGL Fractionators: the liquid is reheated in a manner that each compound in the liquid becomes a vapor at a different height in one or several fractionating towers—essentially a large distillery process—and the individual products are separate and removed. At this stage, pure ethylene is finally separate and ready to be sent to downstream consumers.

Other compounds separated at this stage are unreacted ethane (i.e., ethane that did not crack) and various other hydrocarbons, including methane and heavier hydrocarbons. The unreacted ethane is recycled back to the beginning of the process and mixed with the main feed of ethane to be cracked. The methane is often used for fuel in the furnaces or boilers, and the additional hydrocarbons may likewise be used as fuel or sold to off-site consumers.

Other Emissions Sources

The entire process of ethane cracking and fractionating involves fugitive emissions—those that do not pass through a smokestack—and include equipment leaks, storage tanks, and relief venting. Typically, these emissions are volatile organic compounds (which combine with sunlight to form smog) as well as individual chemicals that are carcinogenic or toxic even in small quantities.

Additionally, fractionating plants usually operate numerous flares, auxiliary and emergency engines, and other combustion sources which emit nitrogen oxides, carbon monoxide, fine particulates, volatile organic compounds, and greenhouse gases.

5. Environmental Approvals Needed to Construct Ethane Cracking Plants

Given their considerable environmental impacts, ethane crackers must receive certain approvals prior to construction and operations, most significant are air and water pollution permits.

Air Permits

All ethane cracking plants will need to obtain permission to construct and operate pursuant to the Clean Air Act. Unless an ethane cracking plant is unusually small, it will qualify as a major source under the Clean Air Act's New Source Review (NSR) provisions, and therefore must obtain a major NSR permit prior to construction. Ethane cracking plants will also need to obtain a Title V operating permit. Clean Air Act permitting is covered in Chapter Three.

Water Permits

Stand-alone ethane cracking plants are unlikely to require Clean Water Act Section 404 permits as they do not necessarily need to be located on waterways, but cracking plants may be located in larger petrochemical complexes that do require 404 permitting. All cracking plants, however, will need an NPDES permit. These permits are discussed in Chapter Four.

F. Facility Focus: Plastic Resin Manufacturing Plants

Plastic resin manufacturing plants are large-scale petrochemical complexes that convert fossil-fuel-derived liquids—primarily, but not exclusively, ethylene and propylene derived from NGLs—into the basic plastics you may be familiar with: various forms of polyethylene, polypropylene, polyvinyl chloride, and others. The plastics produced at these facilities are not yet consumer-grade products, but rather raw plastics in the form of pellets, chips, or "nurdles," that are shipped on to companies that produce products such plastic bags and bottles. This Chapter discusses the most common types of plastic and the resin manufacturing facilities that produce them.

One notable example of the kind of facility that falls into the plastic resin manufacturing sector is Formosa Plastic's proposed $9 billion petrochemical complex in St. James Parish, Louisiana. The massive complex would include 14 individual industrial facilities, but at the heart of the proposal is the production of the plastics polyethylene (both high and low density, discussed below), polypropylene, and an important plastics-precursor, ethylene glycol. Powered by on-site gas-fired powered plants, **the complex, if built, will directly emit a whopping 10.2 million tons of greenhouse gases, the equivalent of 23 new gas-fired power plants.**[29]

"Oil and gas companies have invested more than $200 billion in plastic production and intend to invest another $400 billion in virgin plastic production in the next 5 years. By contrast, oil and gas companies will dedicate $2 billion to reducing plastic waste in the same time period." -National Academies of Sciences, Engineering, and Medicine[1]

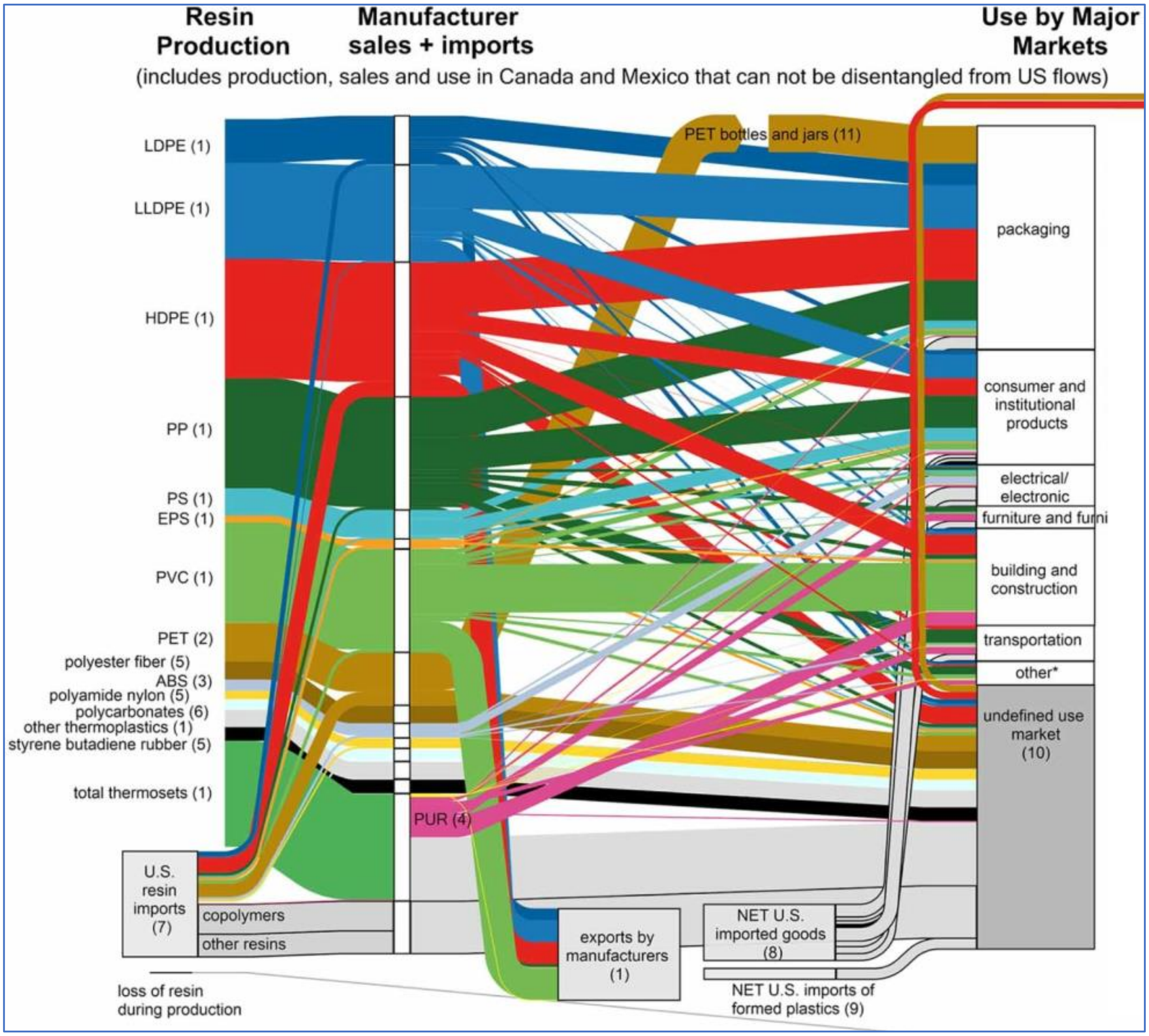
[1] Reckoning with the U.S. Role in Global Ocean Plastic Waste, National Academies of Sciences, Engineering, and Medicine (2022), https://doi.org/10.17226/26132.

1. Basic Types of Plastic

Although there are a near-infinite number of plastic polymers with different characteristics, most plastics are based on one of six types of resins. Four of these six types are polyethylene plastics: low-density polyethylene (LDPE), linear low-density polyethylene (LLDPE), high density polyethylene (HDPE), and finally, a slightly different type of resin, polyethylene terephthalate (PET). These four polyethylene plastics are largely used for either consumer products or plastic packaging; in fact, about ¾ of all plastic packaging consists of one of these four polyethylene plastics. The other two most-common plastic resins are polypropylene (PP, used in both packaging and consumer products) and polyvinyl chloride (PVC, largely used in construction materials such as PVC piping).

[29] FPCC USA, Inc. (Formosa), Prevention of Significant Deterioration Permit Application, at 19 (Sep. 2015); EPA, *Greenhouse Gas Equivalencies Calculator*, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results.

Plastic Resin Production and Uses in the U.S.[30]



Key to Resins Abbreviations: LDPE: Low-Density Polyethylene; LLDPE: Linear Low-Density Polyethylene; HDPE: High-Density Polyethylene; PP: Polypropylene; PS: Polystyrene; EPS: Expandable Polystyrene; PVC: Polyvinyl Chloride; PET: Polyethylene Terephthalate

The following subsections provide a bit more detail on each type of resin:

- **Low-Density, Linear Low-Density, and High-Density Polyethylene:** These three types of polyethylene plastics are frequently grouped together as generic polyethylene, but there are important distinctions. As the name suggests, low-density polyethylene is relatively light and flexible, but comparably weaker, making it popular for uses like plastic shopping bags and plastic wrap. High-density polyethylene, meanwhile, is stiffer, stronger, and heavier; example products

[30] Adapted from Heller, Martin C., et al., *Plastics in the US: Toward a Material Flow Characterization of Production, Markets, and End of Life*, Environmental Research Letters (Aug. 25, 2020), https://iopscience.iop.org/article/10.1088/1748-9326/ab9e1e.

include bottles and bottle caps, automobile parts, pipes, toys, and plastic furniture. Linear low-density polyethylene, meanwhile, is a bit of a middle ground: in the manufacturing process, additives modify the polymer to provide additional strength but with less rigidity as compared to low-density polyethylene.

All three types of polyethylene are made primarily by polymerizing ethylene using different techniques. Ethylene, in turn, is produced from ethane (in particular, by "cracking" ethane with high temperature and steam into ethylene), which is the second largest component of natural gas after methane. To learn more, see our guides to ethane cracking and fractionation.

- **Polyethylene Terephthalate (PET):** PET is distinct from the polyethylene plastics discussed above in that it is derived not only from ethylene (here, in the form of ethylene glycol), but also an acid called terephthalic acid. When used in garments, it is known familiarly as polyester. While garments account for about 60% of PET consumption, about 30% is used in plastic packaging, especially in clear plastic bottles.

Figure 1: PET Bottle (left) and pre-formed bottle (right)

- **Polypropylene:** Polypropylene is similar to polyethylene, except that it is somewhat more rigid, more heat-resistant, and usually less transparent than polyethylene plastics. From a chemistry and production perspective, the key difference is in the name: whereas polyethylene is made from ethylene (which itself is typically made from ethane), polypropylene is made from propylene (which, in turn, is derived from propane rather than ethane). In short, ethane (C_2H_6) and propane (C_3H_8) are sister-chemicals, with propane being slightly heavier and more complex. The two compounds follow parallel paths to plastics: ethane to ethylene to polyethylene, and propane to propylene to polypropylene.

- **Polyvinyl Chloride (PVC):** PVC is probably most familiar as the common pipes used in plumbing, and it is indeed mostly consumed by the construction industry; it is a relatively strong, rigid, and heavy plastic, but production techniques can also produce lighter and more flexible varieties used in packaging or other consumer products. Compared to the previous types of plastic resins, PVC's production is a bit more complex. The main precursor material is vinyl chloride monomer (commonly, VCM), which is a colorless, flammable gas at room temperature. Vinyl chloride monomer, in turn, is produced from a combination of ethylene and chlorine in the form of ethylene dichloride (commonly, EDC).

2. Context Within the Petrochemical Sector

Plastic resin manufacturing sits closer to the consumer than the drilling site in terms of the flow of natural gas and petroleum into everyday products. To work backwards, i.e., upstream, a majority of the feedstock for resin manufacturing is ethylene and propylene, which, as detailed in previous a separate guide, are produced from ethane and propane at ethane cracking facilities. Ethane and propane, meanwhile, are natural gas liquids, which are extracted from natural gas at fractionating facilities (also covered in a separate guide).

Plastic resin manufacturing facilities, meanwhile, do not produce final consumer products. Instead, the produce raw plastics, often in the form of pellets, chips, or "nurdles," are transported to factories that produce consumer products, such as bottles, plastic bags, pipes, toys, etc.

3. Scope of the industry and future trends

Unfortunately, granular data for resin production for the U.S. is not reliably available,[31] but North American as a whole is responsible for about 20% of the world's plastic resin production, or about 70 million metric tons per year.[32] Although exact percentages aren't available, a substantial amount of this North American production occurs along the U.S. Gulf Coast.

Unlike upstream facilities, most plastic resin manufacturing is largely concentrated in just a handful of large complexes. While not an exclusive list, a survey of air permits that list production capacities shows that following companies and plants are responsible for about 75% of all polyethylene production in the U.S.: Chevron, with four plants in Texas; Exxon, with two plants in Texas and one in Louisiana; LyondellBasell, with plants two plants in Texas and several in the Midwest; Dow, with two Texas plants; INEOS, also with two Texas plants; and, finally, Invista and Formosa, each with individual plants in Texas. The landscape for polypropylene and PVC are similar.

Moreover, production is increasing, thanks in large part to America's cheap natural gas boom of recent years: resin production in North America has grown from about 34 million metric tons in 2010 to 42 million metric tons in 2020, an increase of about 20%.[33]

4. Environmental Impacts

Air Pollution

Compared to some other types of petrochemical facilities, emissions directly from plastic resin manufacturing units can seem relatively low, often less than 100 tons per year for individual criteria pollutants. But these units are typically co-located within a petrochemical complex that includes many larger sources of emissions that support the plastic resin manufacturing process. For instance, most complexes will include boilers and combustion turbines, i.e., gas-fired power plants, that provide heat, steam, and power to the entire complex. It is therefore difficult to ascertain the exact level of emissions that a given unit, say a polyethylene unit, might ultimately emit, but these complexes can be massive sources of emissions. For instance, Formosa's proposed St. James Parish complex, which would include polyethylene and polypropylene units in addition to cracking and other units, would emit 4,500 tons of carbon monoxide, 2,000 tons of VOCs, and 1,200 tons of nitrogen oxides, in addition to many other pollutants.[34] The facility would also emit a whopping 10.8 million tons of greenhouse gas, the equivalent of 25 new natural gas-fired power plants.[35]

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[31] The excellent report on plastics by the National Academies of the Sciences discusses that industry tracking varies by the type of resin, but typically lumps together both the U.S. and Canada, and sometimes all of North America. *See Reckoning with the U.S. Role in Global Ocean Plastic Waste,* National Academies of Sciences, Engineering, and Medicine (2022), at 25, https://doi.org/10.17226/26132.
[32] *Id.* at 28.
[33] *Id.*
[34] FPCC USA, Inc. (Formosa), Prevention of Significant Deterioration Permit Application, at 19 (Sep. 2015).
[35] *Id.*; *Greenhouse Gas Equivalencies Calculator*, EPA, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results (visited Aug. 11, 2023).

Water Pollution

Manufacturing plastic resins can involve significant amounts of wastewater, especially the manufacturing of PVC and polyethylene terephthalate (PET) plastics. Although plants will typically have on-site wastewater treatment facilities, the discharge will still usually contain benzene, toluene, vinyl chloride (at PVC plants), ethylene, and many other pollutants.

Wetlands Impacts

A good portion of existing and proposed plastic resin plants are located in coastal areas along the Gulf Coast or along riverways in other states, in order to facilitate transportation of raw materials and finished products. Such plants often require considerable dredging and filling of wetlands; a good example is the contentious proposed Formosa St, James Parish project in Louisiana. That complex would harm more than 60 acres of critical wetlands that "provide habitat for rare wildlife species, protect water quality, provide erosion protection, and act as a buffer to local communities from the worst effects of flooding."[36]

5. Technical Description of Typical Resin Plants and Air Emission Points

Each type of resin discussed above is produced at a dedicated facility or unit, usually within a larger complex, and each type of resin requires unique processing. Moreover, even for a given resin, say high-density polyethylene, there are a wide variety of processes and proprietary techniques used across the sector. As such, this section attempts to provide a general overview of each type of resin manufacturing unit and the common sources of emissions, but advocates should be aware that new facilities may be unique. Moreover, compared to other industrial facilities, the plastics industry considers much of the process proprietary, and public versions of permit applications that set forth the manufacturing process are comparably thin on details.

Polyethylene and Polypropylene Facilities

The general manufacturing process for low, linear-low, and high-density polyethylene are similar enough to be described jointly; the distinctions for manufacturing each type of plastic is dependent more on the ingredients (in addition to ethane) than the core processes and units. Likewise, the process for producing polypropylene is similar as well, except the base chemical is propane rather than ethane.

First, the main ingredient for polyethylene, ethylene (or in the case of polypropylene, propylene, and both ethylene and propylene are often referred to as "monomer" in air permit applications), is typically delivered from off-site ethane cracking facilities, or cracking facilities that are co-located with the resin plant. Once at the resin plant, this ethylene or propylene is often then further purified to remove contaminants, which are generally VOCs that are either sent to a control device such as a flare for destruction or emitted directly to the atmosphere.

Polyethylene and polypropylene are not just made from ethylene and propylene, however; to produce the resin, ethylene or propylene is blended with a mix of other chemicals, consisting in part of reagents and/or "co-monomers," which are chemicals like 1-hexene and 1-butene that contribute to the desired product specifications. Frustratingly, the exact blend of these additional chemicals is

[36] *Ctr. For Biological Diversity v. U.S. Army Corps of Engineers*, Case 1:20-cv-00103, Doc. 1 at 3 (D.C. Cir. Jan. 15, 2020).

usually considered proprietary and not listed publicly in permit applications, even though the chemicals may be vented to the atmosphere at points in the production process.

The ethylene or propylene and co-monomer mix is often then mixed with a slurry of catalysts (again, usually proprietary) in a reactor vessel, where these materials catalyze the transformation of ethylene or propylene into polymer chains (i.e., resin). The reactor vessel is then purged, removing the polyethylene resin which is mixed with the unreacted gases. At this stage, the resin is in a granular or powder form, and the gas must be separated in a series of high and low-pressure gas recovery systems. The separated gas is typically recycled to the beginning of the process or vented to a flare for destruction.

Even after the de-gassing systems, the resin granules at this stage are still off-gassing VOCs (i.e., the plastic itself is emitting VOCs), so the resin may also be stored briefly in bins where the emissions of VOCs can be collected for destruction.

The granulated resin is next mixed with yet another set of proprietary additives before being melted in an extruder; this extruder produces the final product, often plastic pellets known as “nurdles.” Both the extrusion process and the storage of these pellets can also involve VOC emissions from the melting plastic and from the pellets themselves as they cool down and off-gas VOCs.

In addition to the emission points discussed above, throughout the process fugitive emissions from leaks can also be a significant source of VOC emissions. Additional sources of emissions are numerous process vents that emit VOCs and particulates from the manufacturing process, storage tanks, and emergency and other engines.

Finally, power for the manufacturing process is often provided by gas-fired combustion turbines that are co-located with the resin manufacturing process. These power plants are enormous sources of emissions, but because they serve the entire petrochemical complex, may not be listed as emission sources directly related to the particular resin manufacturing unit.

Polyethylene Terephthalate (PET) Facilities

Manufacturing PET involves two primary ingredients: purified terephthalic acid (commonly, “PTA”) and ethylene glycol, which is a derivative of ethylene. These two ingredients are typically manufactured by separate facilities, although they may be co-located, as in the case of Indorama’s Ventures’ Decatur, Alabama complex.

At the resin manufacturing facility, PTA and ethylene glycol are mixed into a slurry along with additives that influence product specification. This mix is then sent to an initial set of reactors (known usually as a pre-polymerization reactors) where the slurry is heated and polymerization begins to occur. This process produces water as a byproduct, which is used in the next step.

After the initial reactors, the slurry is sent to finishing units, also known as polymerization reactors. Here, water from the first step is heated by gas-fired heaters to create steam, which is used to create the conditions necessary for continued polymerization. This polymerization, when completed, results in the production PET resin. This resin is still quite hot, and it is then forced through a die plate into a tank of cold water, which solidifies the resin into chips. These chips are then separated from the water and dried in centrifugal dryers before entering storage silos.

The largest source of emissions in the PET manufacturing process are the process heaters used to create steam; these heaters typically burn natural gas and emit between 50 and 100 tons of nitrogen oxides and carbon monoxide per year. The entire process also generates significant VOC emissions; VOC emissions from the major units are typically collected and sent to pollution control devices (usually incinerators of some sort), but fugitive emissions of VOCs are still significant, roughly comparable to the emissions of the heaters.

PVC Facilities

As with polyethylene above, the key hydrocarbon ingredient of PVC is ethylene; the production process, however, is quite distinct. In short, there are three steps to converting ethylene into PVC, each occurring at a dedicated facility or unit within a complex. First, ethylene is combined with chlorine or hydrogen dichloride to produce a chemical known as ethylene dichloride (often called "EDC"). A second facility or unit will then use furnaces to crack ethylene dichloride into vinyl chloride monomer (often called "VCM"). Finally, at the third step, vinyl chloride monomer is polymerized into PVC resin. This guide focuses on the final step where plastic resin is produced, but advocates should be aware that the first two "up-stream" units are also significant sources of emissions and wastewater; the cracking furnaces used to produce vinyl chloride monomer, in particular, are enormous sources of emissions comparable to the cracking furnaces at ethane crackers (discussed above).

First, the main raw material of PVC, vinyl chloride monomer, arrives at the facility, typically by pipeline and often from a co-located production facility. PVC is manufactured in batches rather than continuously, thus the raw vinyl chloride along with a mixture of additives (typically a proprietary mix of suspending agents, reaction initiators, and solvents) are prepared in tanks in advance of a batch production.

This mix of vinyl chloride and additives is then fed into a reactor with water; inside the reactor, the water and chemicals are stirred while initiating chemicals are added that cause the vinyl chloride to begin polymerization into PVC. At this point, the slurry within the reactor contains about 30% PVC, with the remaining mix being mostly water and unreacted vinyl chloride. The slurry is then discharged from the reactor to a degassing tank and then a stripping column, where boilers provide steam to strip the unreacted vinyl chloride from the slurry, to be recycled back to the beginning of the process. These boilers are the primary source of air emissions at PVC plants, typically emitting 20 to 30 tons of nitrogen oxides and carbon monoxide pollution per year (for each boiler; and a typical plant can have a half-dozen boilers).

At this stage, additional gaseous chemicals are released from the slurry that must be disposed, typically by routing these gases to an incinerator (specifically, a thermal oxidizer), which combusts these gases and releases emissions to the atmosphere (primarily the pollutants fine particulate matter, nitrogen oxide, carbon monoxide, VOCs, and greenhouse gases).

Next, the PVC must be separated from the water, which occurs typically in a series of dryers that use a considerable amount of air to dry the PVC granules; this air is then sent to scrubbers to control emissions, but this process produces significant amounts of particulate matter and VOC emissions (in the range of 10 to 30 tons per year per scrubber). The dry PVC granules are now ready for storage and shipment offsite for final product production.

6. Environmental Approvals Needed to Construct Plastic Resin Plants

Plastic resin manufacturing plants will need several types of environmental approvals to construct, at a minimum most will need an air permit and a water discharge permit, but some will also need Clean Water Act § 404 approval form the Army Corps of Engineers.

Air Permits

All plastic resin plants will need to obtain permission to construct and operate pursuant to the Clean Air Act. The exact type of permit will depend on the size and location of the facility; emissions from individual plastic resin manufacturing units are usually relatively low and may not qualify as major sources under the Clean Air Act's New Source Review and Title V requirements. Most units, however, will be located in a larger petrochemical complex that, as a whole, does qualify as a major source. Clean Air Act requirements are discussed in Chapter Three.

Water Permits

The most significant water permit that a plastic resin manufacturing facility may require is a Clean Water Act Section 404 permit authorizing the discharge of dredged or fill material into the waters of the United States, which includes most wetlands. In short, if the facility will be built on wetlands or on a navigable waterway, like most of the resin plants on the Gulf Coast, the facility will need to obtain a Section 404 permit to authorize construction. These permits are issued by the U.S. Corps of Engineers, which usually must consult with EPA and states and offer significant opportunity for public participation.

Moreover, 404 permits can be significant hurdles for new petrochemical complexes, as demonstrated by the ongoing fight over Formosa's attempts to obtain a Section 404 permit for its proposed St. James Parish complex (which would manufacture polyethylene and polypropylene plastics). Facilities will also need to obtain a NPDES permit. These issues are discussed in more detail in Chapter Four.

G. Facility Focus: Methanol Plants

> "Methanol plants are among the most natural gas-intensive industrial end users." -U.S. EIA[37]

Methanol is a type of alcohol roughly like ethanol (the familiar type of alcohol in beverages) that is used as a building block for many petrochemical products, primarily plastic products but also solvents, paints, and so forth. Methanol is also consumed as a fuel or a fuel additive, especially in China, where methanol is used as a transportation fuel and as a gasoline additive, in the same way the U.S. uses ethanol.

Methanol can be produced from a variety of raw materials, but the most prevalent process is an energy-intensive conversion from natural gas at facilities known as methanol plants. As the glut of cheap natural gas swelled over the last decade, companies in the U.S. began building methanol plants at an unprecedented rate—the country's total methanol production capacity doubled in recent years, moving the nation from a net importer to a net exporter of methanol.[38]

[37] *New Methanol Plants Expected to Increase Industrial Gas Use Through 2020*, EIA (Feb. 21, 2019), https://www.eia.gov/todayinenergy/detail.php?id=38412.
[38] *U.S. Methanol Capacity Doubles,* Refinery Operations (Apr. 13, 2016), https://refineryoperations.com/u-s-methanol-capacity-doubles/.

Methanol plants consume a massive amount of natural gas, both as a feedstock and as fuel, with correspondingly massive greenhouse gas emissions. For instance, the boilers and heaters at the proposed IGP Methanol plant in Plaquemines Parish, Louisiana, would consume as much natural gas as a 400-megawatt gas-fired power plant, emitting 2.5 million tons of greenhouse gas per year.[39]

1. Context Within the Petrochemical Sector

In terms of raw materials, producing methanol is straightforward: all you need is methane, i.e., natural gas, but you need a lot of it. As a result, existing and proposed methanol plants are largely clustered in the Gulf Coast, where they take advantage of the existing pipeline infrastructure.[40]

Although methanol is used in a variety of ways in the petrochemical sector, the most common use is for manufacturing formaldehyde; about one-third of all methanol produced is converted to formaldehyde, which in turn is used to produce plastics, resins, adhesives, and many other products.[41] Methanol is also used directly in manufacturing various polyester plastics, and as a feedstock to create ethylene and propylene, which are also used directly in the manufacture of plastics.[42] Finally, about 15% of methanol produced globally is used as fuels or fuel additives.[43]

2. Scope of the industry and future trends

Over the last decade, global demand for methanol has approximately doubled, from 49 million metric tons per year in 2010 to around 95 million tons in 2020.[44] Over this span, demand growth has been driven largely by China, which consumes about half of the world's methanol.[45]

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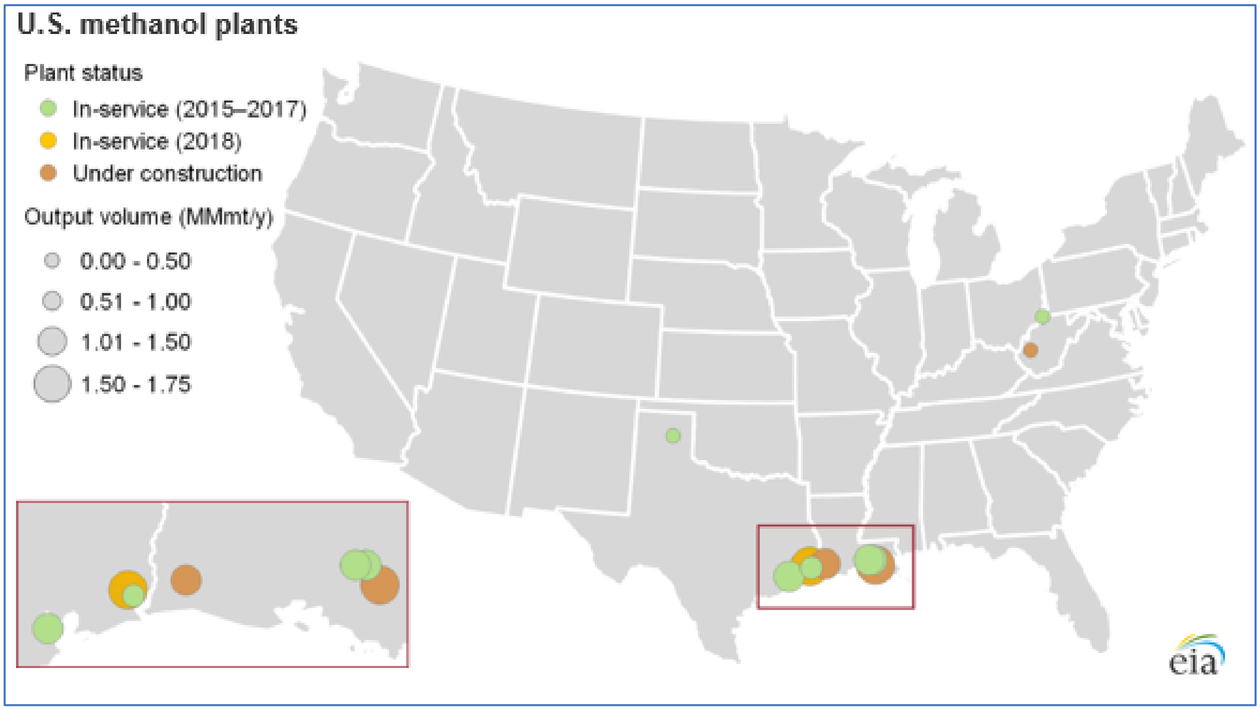
[39] IGP Methanol, LLC, Title V/PSD Initial Air Permit Application, at 13 (Feb. 3, 2017).
[40] *New Methanol Plants Expected to Increase Industrial Gas Use Through 2020,* EIA (Feb. 21, 2019), https://www.eia.gov/todayinenergy/detail.php?id=38412.
[41] *Uses of Methanol*, The Essential Chemical Industry, https://www.essentialchemicalindustry.org/chemicals/methanol.html (visited Aug. 11, 2023).
[42] *Id.*
[43] *Id.*
[44] *Global Methanol Demand Growth Driven by Methanol to Olefins as Chinese Thirst for Chemical Supply* Grows, *IHS Markit Says,* S&P Global (June 12, 2017), https://news.ihsmarkit.com/prviewer/release_only/slug/country-industry-forecasting-media-global-methanol-demand-growth-driven-methanol-olefi.
[45] *Id.*



Map of new and under-construction methanol plants. Source: U.S. Energy Information Administration.

The U.S., meanwhile, has a production capacity of 10 million tons per year spread across a half-dozen or so facilities plants, mostly located on Texas and Louisiana's Gulf Coast.[46]

EXISTING METHANOL PLANTS AND CAPACITY		
Facility	**Location**	**Annual Capacity**
Natgasoline Beaumont	Beaumont, Texas	2.4 million tons
Methanex Geismar	Geismar, Louisiana	2.2 million tons
Koch Methanol St. James (formerly YCI Methanol)	St. James, Louisiana	1.8 million tons
Celanese Clear Lake Pasadena Plant	Clear Lake, Texas	1.4 million tons (expanding to 1.6 million)
Beaumont Methanol	Beaumont, Texas	1.1 million tons
LyondellBasell	Channelview, Texas	780,000 tons
Liberty One (US Methanol LLC)	Charleston, West Virginia	200,000 tons

In terms of future growth, the methanol market is closely tied to end users, traditionally the construction, automotive, and broader chemical sectors.[47] Thus the growth of the methanol industry

[46] *New Methanol Plants Expected to Increase Industrial Gas Use Through 2020*, EIA (Feb. 21, 2019), https://www.eia.gov/todayinenergy/detail.php?id=38412.
[47] *Methanol Markets are Projected to Register a CAGR of around 5.9% to Reach U.S. $ 60.4 Bn by 2031: PMR*, Bloomberg (Feb. 8, 2022), https://www.bloomberg.com/press-releases/2022-02-08/methanol-market-are-projected-to-register-a-cagr-of-around-5-9-to-reach-us-60-4-bn-by-2031-pmr.

is broadly dependent on the global economy. Prior to the war in Ukraine, analysts predicted the industry would grow at a rate of 5.9% by 2031,[48] but more recent analyses are not available.

3. Environmental Impacts

Methanol plants are significant sources of air pollution, both conventional pollutants and greenhouse gases. Methanol plants also have substantial impacts to water quality, especially if they are to be located on wetlands, such as the controversial (and now cancelled) Kalama Methanol project in Washington.

Air Pollution

There are two main sources of air pollution at methanol plants. First are the gas-fired furnaces and boilers used to heat and power the methanol production process. These combustion sources produce nitrogen oxides, fine particulate matter, carbon monoxide, and VOCs. The impacts of these pollutants are significant: fine particulate matter is harmful to anyone, but especially the elderly, children, or individuals with lung and heart conditions. Nitrogen oxides and VOCs, meanwhile, combine to form ground-level ozone, or smog, which is also unhealthy to breath.

The second significant emissions source is fugitive emissions of VOCs. These are emissions that occur not from smokestacks but from leaks in the production process. Notably, methanol is a VOC and is also listed as a Hazardous Air Pollutant (HAP), which are pollutants designated by Congress as especially toxic and/or carcinogenic even in very small quantities. Methanol is listed as a HAP due to its toxic nature, which can cause neurological damage.[49] The methanol leaks at a methanol plant can be significant; Methanex itself estimates that its Geismar, Louisiana plant emits upwards of 78,000 pounds of methanol per year.[50]

Climate Change

In addition to facilitating the larger, climate-harming petrochemical industry, methanol plants themselves emit massive amounts of greenhouse gases per year. As noted above, a typical methanol plant emits between two and three million tons of greenhouse gases per year, or the equivalent of six new gas-fired power plants.[51]

Water and Wetlands Impacts

Methanol is frequently transported by ship, and as a result, methanol plants are often sited on wetlands adjacent to navigable waterways. Construction of these plants and related shipping infrastructure necessitates considerable dredging and filling of wetlands, which "provide habitat for rare wildlife species, protect water quality, provide erosion protection, and act as a buffer to local communities from the worst effects of flooding."[52]

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[48] *Id.*
[49] EPA, *Hazard Summary for Methanol* (Sep. 2016), https://www.epa.gov/sites/default/files/2016-09/documents/methanol.pdf.
[50] Methanex Corporation, Geismar Methanol Plant, Title V Permit Minor Modification Application, at 6 (Aug. 2019).
[51] *Id.*
[52] *Ctr. For Biological Diversity v. U.S. Army Corps of Engineers*, Case 1:20-cv-00103, Doc. 1 at 3 (D.C. Cir. Jan. 15, 2020).

Methanol plants also consume large quantities of water in the production process (the Kalama, Washington methanol plant would have consumed 5 million gallons of water per day[53]), and likewise produce wastewater that is discharged into nearby waterways.

4. Technical Description of a Typical Facility and Air Emission Points.

Although there is some variety in how methanol plants are designed and operated, most facilities include a fairly consistent set of processing units, described below.

First, natural gas arrives via pipeline, and typically must undergo pre-treatment, including the removal of impurities and sulfur. To remove the sulfur, gas-fired heaters heat the natural gas, which is then fed to a catalyst bed. The metal catalysts cause the sulfur in the natural gas to react with hydrogen, forming hydrogen sulfide, which can be removed from the stream (via adsorption) and must be disposed of off-site.

After pre-treatment, natural gas is ready to be converted into the methanol. The primary method for doing so is called steam reforming. Natural gas—i.e., methane—is heated by industrial furnaces and mixed with steam and oxygen, breaking apart the methane molecules, which then combine with oxygen and hydrogen to form something called synthesis gas, commonly called syngas. Syngas is a fuel gas consisting primarily of hydrogen and carbon monoxide. The furnaces used to produce syngas are usually the largest source of emissions at a methanol plant, especially nitrogen oxides, particulate matter, and carbon monoxide, along with significant greenhouse gas emissions.

The next step converts syngas into methanol. First, the syngas must be compressed to high pressure (another source of energy consumption). The pressurized syngas is then fed into reactor vessels where copper, zinc, or other metal catalysts work to convert the syngas into a crude liquid containing both methanol and water. This methanol-water mix must be refined to produce pure methanol; this occurs by distilling the mix to remove water and undesired hydrocarbons other than methanol, resulting in the final product. Typically, the final methanol will be held on-site in storage tanks before shipping offsite.

In addition to the furnaces used to power the steam reforming process, methanol plants also feature gas-fired boilers that provide steam to the reformers and compression turbines that compress syngas. Another significant source are flares, which are typically used to incinerate gases that are generated throughout the process. Finally, fugitive emissions of VOCs from leaks are significant, including emissions of toxic methanol, discussed above.

5. Environmental Approvals Needed to Construct Methanol Plants

Methanol plants will need, at a minimum, an air permit and a wastewater discharge permit to operate, but many will also need to obtain approval from the Army Corps of Engineers for construction that impacts wetlands. Each of these types of permits provides opportunities for public participation.

Air Permits

All methanol plants will need to obtain permission to construct and operate pursuant to the Clean Air Act. Unless a methanol plant is unusually small, it will qualify as a major source under the Clean Air Act's New Source Review (NSR) provisions, and therefore must obtain a major NSR permit prior to

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[53] *A Guide Explaining the Health and Climate Risks Posed by the Proposed Kalama Methanol Facility*, Earthjustice (June 11, 2021), https://earthjustice.org/features/fracking-methanol-kalama-what-to-know-about-facility.

construction.[54] Methanol plants will also need to obtain a Title V operating permit,[55] which is typically only required after construction is complete and the plant is already operating. A notable exception, however, is the state of Louisiana, which does typically require a Title V permit prior to construction. Clean Air Act permitting is covered by Chapter Three.

Water Permits

The most significant water permit that a plastic resin manufacturing facility may require is a Clean Water Act Section 404 permit authorizing the discharge of dredged or fill material into the waters of the United States, which includes most wetlands. In short, if the facility will be built on wetlands or on a navigable waterway, as is the case for several methanol plants on the Gulf Coast, the facility will need to obtain a Section 404 permit to authorize construction. These permits are issued by the U.S. Corps of Engineers, who usually must consult with EPA and states, and offer significant opportunity for public participation.

Moreover, a Section 404 permit can be a significant hurdle for a new methanol plant, as demonstrated by successful efforts of advocates in opposing a Section 404 permit for the Kalama Methanol plant in Washington. In particular, to issue a Section 404 permit, the Corps must also satisfy the requirements of the National Environmental Policy Act (NEPA), which in the case of Formosa required the Corps to conduct a full Environmental Impact Statement, a process which is ongoing.

Methanol plants usually also need to obtain a NPDES permit. These permits are issued generally by state environmental agencies and contain limits on pollutants and monitoring requirements.

H. Miscellaneous Other Facilities and Units

1. Propane Dehydrogenation Plants

Propane dehydrogenation (PDH) plants use complex industrial technology to convert propane to propylene, a key ingredient of plastics like polypropylene. In this role of producing propylene, PDH plants are an alternative to the much more common use of steam cracking facilities, discussed above. Yet most steam cracking plants focus on ethane to ethylene production, with propylene production merely as a byproduct; thus, as demand for propylene-based plastics and other products has grown, PDH plants have emerged as an “on-purpose” propylene production source, in that the purpose of the facility is solely to produce propylene, rather than ethylene and some residual propylene.

As of 2021, there were three existing PDH plants in the U.S., all located on Texas’ Gulf Coast.[56] Another seven PDH units have been announced or are under construction, all located in Texas and Louisiana.[57] Further, all of these PDH plants are or will be located within much larger petrochemical complexes. An example is Formosa’s Point Comfort Plant in Calhoun County, Texas, where the PDH plant is just one of 16 units in the complex.

[54] The threshold for PSD major source permitting for this type of facility is potential emissions of 100 tons or more per year as it is considered a chemical process plant for purposes of PSD classification.
[55] The threshold for Title V permitting is potential emissions of 100 tons or more per year of any criteria pollutant.
[56] *Oil & Gas Watch*, EIP, https://oilandgaswatch.org/project-index?sort=text:1:asc&page=1 (visited Aug. 11, 2023).
[57] *Id.*

The heart of a PDH plant are the gas-fired reactors, where propane reacts with catalysts to convert to propylene. These gas-fired reactors are the primary source of combustion emissions at a PDH plant, although flares can also be substantial sources. In terms of total emissions from PDH units, VOC emissions are the highest, followed by CO and NOx. For example, Formosa estimates the PDH unit at its Sunshine plant in Louisiana will emit 500 tons of VOCs, 200 tons of CO, and 60 tons of NOx.

Thus, in terms of permitting, PDH facilities are likely to be permitted as major sources (or major modifications if an existing complex adds a PDH unit) under the Clean Air Act's New Source Review provisions. PDH units also generate wastewater, requiring a NPDES permit, likely part of the overall facility's NPDES permit(s).

2. Gas-To-Liquids Plants

Gas-to-liquids (GTL) plants convert natural gas to liquid fuels, primarily gasoline and diesel fuel. The process is energy-intensive—and quite expensive—especially compared to traditional oil refining. As a result, GTL facilities only make sense in markets where natural gas is very cheap while oil is relatively expensive. To date, only a handful of GTL plants have been built worldwide, and none are located in the U.S. However, a few plants have been proposed in the U.S. in the past few years (in Texas, Arkansas, North Dakota, and Pennsylvania). None of the U.S. plants have yet broken ground and some analysts are skeptical that GTL plants will become economically viable in the U.S.[59]

> "Profits have been elusive for the [gas-to-liquids] technology. To make it work financially, natural gas prices must remain low and prices for oil, diesel and jet fuel must remain high for a prolonged period." -New York Times[58]

[58] South African Company to Build U.S. Plant to Convert Gas to Liquid Fuels, New York Times (Dec. 3, 2012), https://www.nytimes.com/2012/12/04/business/energy-environment/sasol-plans-first-gas-to-liquids-plant-in-us.html.
[59] *Gas-to-liquids plants face challenges in the U.S. market*, EIA (Feb. 19, 2014), https://www.eia.gov/todayinenergy/detail.php?id=15071.

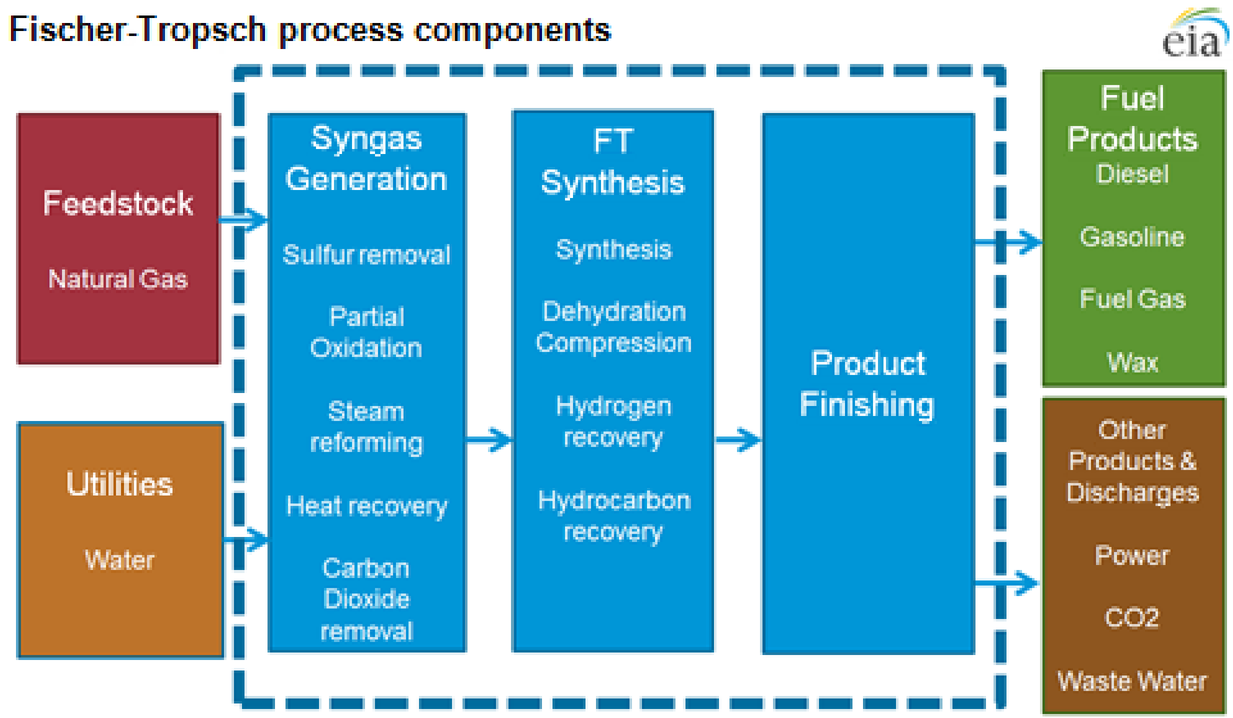

Figure 2: The most common GTL production method is the Fischer-Tropsch process. Source: EIA

Due to the relative dearth of application material for the few proposed GTL plants in the U.S., exact details on the environmental permitting needed to build a GTL plant are limited. It is likely, however, that any GTL plants would be major sources under the Clean Air Act's New Source Review requirements; a proposed plant in Arkansas estimated it would emit more than 1,000 tons of NOx per year and nearly 2,000 tons of CO.[60] That facility also needed a NPDES discharge permit and a CWA § 404 permit for construction of the river-side plant and docks.[61]

Finally, it also appears that GTL plants would be substantial sources of carbon emissions. Although estimates are again scarce, the Arkansas facility estimated it would emit 8.3 million tons of CO2e per year, the equivalent of 20 new gas-fired power plants.[62] At least one proposal has also included carbon capture and sequestration.[63]

3. Storage and Terminals

Many of the petrochemical facilities discussed so far will include on-site storage facilities, often storage tanks, but there are also numerous existing and planned facilities solely dedicated to storing petrochemical precursors and products. Some of these are large tank farms, while others utilize underground storage, for instance in large salt dome caverns. This section focuses on dedicated, stand-alone storage facilities and terminals, however most of the same information provided here is applicable to storage facilities co-located with other petrochemical facilities.

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[60] *Oil & Gas Watch*, EIP, https://oilandgaswatch.org/facility/888 (visited Aug. 11, 2023).
[61] *Id.*
[62] *Id.*; *Greenhouse Gas Equivalencies Calculator*, EPA, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results (visited Aug. 11, 2023).
[63] *Oil & Gas Watch*, EIP, https://oilandgaswatch.org/facility/4272 (visited Aug. 11, 2023).

Storing and transporting volatile chemicals—and most petrochemical products discussed in this guide are volatile organic compounds (VOCs)—generates a significant amount of emissions. A good example is the Mt. Airy terminal (formerly the Pin Oak terminal) in St. John the Baptist Parish, Louisiana. The facility stores and handles many types of liquid chemicals, including NGLs, with more than 40 enormous tanks and loading infrastructure for truck, train, and barge transport.[64] The facility estimates that it will emit more than 1,500 tons of VOCs per year,[65] ranking it in the top five largest emitters in Louisiana.[66] These emissions also include hundreds of tons of HAPs, including 40 tons of carcinogenic benzene—making the facility the largest source of benzene emissions in Louisiana and one of the largest in the entire country.[67] These emissions primarily arise from loading and unloading operations and from fugitive emissions from tank storage.

As such, large storage and terminal facilities will need major source permits under the Clean Air Act, although smaller facilities may qualify as minor sources. These facilities are also commonly built along waterways for transport purposes, necessitating Clean Water Act Section 404 permitting. Finally, these facilities also generate wastewater and will typically require NPDES permits.

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[64] *Oil & Gas Watch,* EIP, https://oilandgaswatch.org/facility/981 (visited Aug. 11, 2023).
[65] Pin Oak Terminals, LLC, Application for Significant Modification to Minor Source Air Permit No. 2580-00051-02 for an Initial Title V and PSD Permit, at 3 (March 2017).
[66] EPA, 2017 National Emissions Inventory, https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei.
[67] Pin Oak Terminals, LLC, Application for Significant Modification to Minor Source Air Permit No. 2580-00051-02 for an Initial Title V and PSD Permit, at 377 (March 2017); EPA 2017 National Emissions Inventory.

Chapter 3

CLEAN AIR ACT

CHAPTER THREE: CLEAN AIR ACT

A. Overview

1. What is the Clean Air Act and what approvals are required?

All of the petrochemical facilities covered in this guide emit significant amounts of air pollution, and in fact some are among the largest sources in a given state. As a result, the vast majority, if not all, new petrochemical facilities will need a pre-construction permit issued under the authority of the Clean Air Act. This Chapter sets out what permits are required and a general overview of the Clean Air Act as it applies to the petrochemical industry.

The primary goal of the Clean Air Act is to achieve compliance with National Ambient Air Quality Standards (NAAQS), which are federal standards set by EPA establishing the allowable concentration in the air for six "criteria" pollutants: ground-level ozone (or smog) (regulated as volatile organic compounds (VOCs) and nitrogen oxides (NOx[68]), particulate matter (PM) (regulated as PM10 and PM2.5), sulfur dioxide (SO2), nitrogen dioxide (NO2), carbon monoxide (CO) and lead. For example, and in vastly simplified terms, the current NAAQS for ozone is a maximum of 0.070 parts per million (ppm); if the concentration of ozone is above that for a given area, that area is in "nonattainment;" areas below the standard are in "attainment."

Although EPA sets the NAAQS, states have primary responsibility for achieving compliance with the NAAQS. They do so by establishing "state implementation plans" (SIPs), which are legal requirements that govern, in relevant part, how new and existing sources of air pollution are regulated. SIPs must be approved by EPA, and once approved, they become federally enforceable, meaning that they can be enforced by EPA and members of the public via the Clean Air Act's citizen suit provision. Note that most SIP requirements are state regulations that have been approved by EPA. Though a state might revise its state regulations, such revision does not alter what is in the SIP unless and until the regulation is approved by EPA.

Among other things, SIPs must implement preconstruction permit programs in accordance with the Act's New Source Review (NSR) provisions. For now, it suffices to say that NSR permits implement limits on emissions of criteria pollutants and serve to assure sources will not cause or contribute to NAAQS exceedances.

Critically, the permitting requirements applicable to a new source will be vastly different if the source will be a "major," or large, source, versus a "minor" source. Various emission thresholds determine major versus minor status; moreover, an otherwise major source may opt to be a "synthetic" minor source by accepting limits designed to keep its potential emissions below the applicability threshold. "Minor" sources are subject to "minor NSR," however the Clean Air Act and federal regulations say very little about what a state's minor NSR program must include, other than to require that minor NSR programs must assure NAAQS compliance and that the public must have an opportunity to comment on draft minor NSR permits. In sharp contrast, major sources are subject to detailed

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[68] Ground level ozone in the atmosphere is formed by a reaction of VOCs and NOx in the presence of sunlight. As such, there are no NAAQS specifically for VOCs or NOx, except for NO_2, but VOCs and NOx are regulated due to their contribution to ozone formation.

federal statutory and regulatory requirements. The petrochemical plants covered in this guide fall into both minor (and synthetic minor) and major NSR sources.

More specifically, "major" NSR requirements differ depending on whether the area where a proposed source will be located is attaining the NAAQS. Pollutants for which an area is in nonattainment are subject to Nonattainment New Source Review, or "NNSR." Pollutants for which the area is in attainment are subject to "Prevention of Significant Deterioration," or "PSD." PSD always applies to at least some of the pollutants emitted because no area is in nonattainment for all of the NAAQS. NNSR only applies to those pollutants for which the area in which the source is proposed to be located is nonattainment; in other words, a source that is subject to NNSR for one or more nonattainment pollutants will remain subject to PSD for attainment pollutants.

Although the NAAQS and SIPs can fairly be called the backbone of the Clean Air Act, there are numerous other pollution control requirements under the Act that may apply to a new petrochemical facility. Those programs are briefly described below and expanded in depth later:

- **EPA's Technology Based Standards.** The Act and EPA's regulations establish two similar technology-based standards applicable to new sources. These standards differ from NSR in that they apply to individual units or processes within a proposed facility and are standardized across an industry or beyond; for instance, all new emergency generators are subject to the same standards regardless of where they are located (i.e., emergency generators at a hospital in Los Angeles and emergency generators at a petrochemical plant in Louisiana will be subject to the same standards).
    - **New Source Performance Standards (NSPS).** NSPS, found at 40 C.F.R. part 60, are federal standards for criteria pollutants. For instance, and of relevance to most petrochemical facilities, all new steam generating units (i.e., boilers) over a certain size must meet the NSPS emission limits for criteria pollutants like PM as set out in Subpart Db of the NSPS rules (40 C.F.R. § 60.40b). Most petrochemical facilities are subject to several other NSPS Subparts, discussed below.
    - **National Emission Standards for Hazardous Air Pollutants (NESHAP).** While NSPS focuses on criteria pollutants, NESHAP regulates hazardous air pollutants (HAPs). HAPs are pollutants listed by Congress or EPA as especially toxic and/or carcinogenic even in small quantities. HAPs are not regulated by NAAQS and SIPs (other than lead, which is both a criteria pollutant and a HAP). As to petrochemical facilities, several NESHAPs are usually applicable, for instance, most boilers are subject to a NESHAP (40 C.F.R. § 63.7480, Subpart DDDDD). Standards promulgated after 1990 are referred to as "Maximum Achievable Control Technology" or "MACT" standards.
- **Title V Operating Permits.** Frustrated with endemic non-compliance and complex, disparate permitting schemes, Congress in 1990 enacted Title V of the Clean Air Act, which established a federal operating permit program requiring every major source and some smaller sources to obtain a permit that comprehensively spells out all of the source's Clean Air Act obligations. This is the Title V permit, and despite the frequent description as a "federal" operating permit, states again typically take the lead in this permitting, although EPA exercises direct oversight. Critically, a Title V permit must identify each Clean Air Act requirement that applies to a source and require monitoring, recordkeeping, and reporting sufficient to assure compliance with all such

requirements. Title V permits are typically only required after a facility has begun operating, but several states—including Louisiana and Texas—have certain Title V requirements that must be met either before construction or before operations can commence, so Title V permitting is addressed by this guide.

2. Who Implements the Clean Air Act? States vs. EPA

The Clean Air Act is an oft-cited example of "cooperative federalism" in that "air pollution control at its source is the primary responsibility of States and local governments, but that federal leadership is essential for the development of cooperative Federal, State, regional, and local programs to prevent and control air pollution."[69] In practice, this means that most work related to air permits is performed at the state level. For example, most air permits are drafted and issued by state agencies, in accordance with regulations issued by those same agencies; those regulations, however, typically follow EPA's regulations, and EPA usually must approve state regulations before they are legally in force as part of the overall Clean Air Act structure.

In Texas, the key agency with authority to issue Clean Air Act permits is the Texas Commission on Environmental Quality (TCEQ), and in Louisiana, it is the Louisiana Department of Environmental Quality (LDEQ). In addition to permitting, state agencies also frequently take the lead in compliance oversight and enforcement.

Despite the emphasis on state implementation, there are several important ways that advocates can seek EPA's intervention in permitting a new petrochemical facility. As discussed below, EPA retains explicit oversight of all Title V operating permits and must object to defective permits, although because Title V permits are operating permits as opposed to construction permits, this oversight may not be especially powerful when confronted with a new facility seeking permission to construct. EPA also holds informal oversight over the NSR permitting programs implemented by states; EPA can review draft NSR permits and offer comments to state permitting authorities, and has legal authority to stop a facility's construction if the facility has not complied with NSR preconstruction permitting requirements.

Finally, note that some offshore facilities may be permitted directly by EPA. Most of the facilities covered by this guide are unlikely to be built offshore, but if advocates do happen to encounter such a facility, they should refer to the Advocate's Guide to LNG permitting, available at https://environmentalintegrity.org/advocates-guide-for-challenging-lng-projects/, which covers the subject.

3. Why challenge a petrochemical plant's Clean Air Act permits?

A motivated advocate is likely to identify defects in a facility's air permit application as well as its draft permit. There are numerous incentives for an applicant to cut corners: skimping on proposed pollution controls will save money, for instance. And even well-intentioned state agencies are generally understaffed, so permit writers may not have the time or incentive to deeply review a complex air permit application to assure the proposed facility will comply with the Act. That said, advocates should understand that it is extremely difficult—though not impossible—to defeat a proposed facility's application for an air permit. Simply put, a state agency will issue an air

[69] 42 U.S.C. § 7401(a).

construction permit once the applicant has demonstrated that the proposed facility will meet all applicable federal and state requirements. In most cases, it is at least possible for an applicant to make that demonstration, even if it fails to do so on the first try. For example, if an applicant receives pushback regarding the adequacy of its proposed pollution controls, it can redesign the facility. If the applicant fails to demonstrate that its emissions will not cause or contribute to a NAAQS violation, it can accept additional limits that constrain its operations in a way that would avoid such violation.

Nonetheless, a challenge to a facility's air permit often succeeds in forcing an applicant to take significant additional measures to ensure that its emissions do not adversely impact air quality, including utilizing more effective (and often much more expensive) air pollution controls, performing additional air quality modeling, preparing a more robust analysis of environmental impacts, and being made subject to more rigorous air pollution monitoring requirements. Occasionally, when faced with having to pay the full cost of Clean Air Act compliance, an applicant will withdraw its application or simply fail to move forward with construction after receiving a final permit.

Finally, air permit challenges can be a useful organizing tool for advocates. Well-attended public hearings with key community leaders voicing opposition, large numbers of public comments detailing public concerns about a project, and legal challenges can generate substantial publicity and demonstrate widespread community opposition to a proposed facility. Even if a state agency like TCEQ ultimately issues the air permit, other entities that may hold discretion over approving a new facility may be more likely to vote against a project given the widespread public concern regarding air pollution issues.

4. How is this Chapter organized?

This Chapter describes the portions of the Clean Air Act most relevant to petrochemical facilities, followed by helpful resources and advice on how to approach reviewing an air permit for a petrochemical facility.

- Section B explains how to determine what kind of new source review permit a new (or modified) facility will need to obtain prior to construction;
- Section C examines major NSR Permits that larger petrochemical facilities will need;
- Section D details minor rather than major NSR, which applies to many smaller plants or supporting projects;
- Section E looks at hazardous and toxic air pollutants (HAPs and air toxics) and the NESHAP and state air toxics requirements that apply to petrochemical facilities;
- Section F briefly describes the applicable New Source Performance Standards;
- Section G examines Title V federal operating permits;
- Section H provides an overview how to prepare effective comments on air permits and gives advice on how to review a complex permitting record;
- Section I details the air pollution and air pollution control technology relevant to petrochemical facilities, and
- Section J lists resources for learning more about all of the above topics, how to find important information and documents, and other helpful resources.

B. Minor and Major New Source Review Applicability for New Sources

Perhaps the single most important Clean Air Act question a new facility must confront is whether it will be a major NSR source or a minor source. Under the Act, the costs and hurdles of building a major source are far more substantial than building a minor source, and many prospective permit applicants try to design their facility specifically to avoid major NSR. A "natural minor" source does not have the potential to emit an NSR-regulated pollutant in excess of the major source threshold. A "synthetic minor" source is capable of emitting above the major source threshold but has agreed to enforceable operating limits that ensure its emissions will remain below the major source threshold, thereby avoiding the more rigorous major NSR permitting requirements.

The spectrum of petrochemical facilities covered by this guide include all three types of facilities—minor sources, synthetic minor sources, and major sources—although most fall into one of the latter two categories. This section focuses on the preconstruction "applicability determination" that prescribes whether a source must comply with major versus minor NSR requirements.

1. Major Source Thresholds

For the facilities covered in this guide, major or minor NSR applicability is determined by three factors: the type of facility, its location, and the planned facility's potential emission rates for the six criteria pollutants (PM, NOx, CO, SO2, VOCs, and Lead). The type of facility is relevant because there are two different major source thresholds that can apply, discussed in more detail below. Location, meanwhile, is important because areas that are in nonattainment with the NAAQS have lower thresholds for major source applicability than areas that are in attainment.

In attainment areas, a major source is any new facility that has the "potential to emit" (PTE, more on this below) at or above the applicable threshold of either 100 or 250 tons of any criteria pollutant per year. The different thresholds arise because the Act and EPA's regulations establish the lower, 100-ton-per-year threshold for a specific list of 28 types of industrial facilities;[70] for all other types of facilities not on that list, the major source threshold is 250 tons per year.[71] In other words, certain kinds of industrial facilities are subject to the stricter 100-ton-per-year threshold, while all others are subject to the 250-ton-per-year threshold.

Of the 28 listed source categories subject to the 100-ton threshold, "chemical process plants" is the only one that is likely to be relevant to petrochemical plants. Although the phrase "chemical process plant" could broadly include a vast number of industrial facilities, EPA has narrowly defined the term based on the Standard Industrial Classification (SIC) Manual. The SIC Manual assigns four-digit codes to all types of industrial operations, and chemical plants under the Manual have SIC codes that begin with the digits "28" (no relation to the list of 28 under the Act). For the petrochemical sector covered by this guide, ethane crackers, plastic resin manufacturing plants, and methanol plants have SIC codes that begin with 28 and are thus included as chemical process plants subject to the 100-ton-per-year threshold. Other plants covered by this guide, like NGL fractionators and gas process plants, are listed by the Manual as oil & gas extraction, with different SIC codes, and are not considered chemical process plants. These plants are therefore subject to the 250-ton-per-year threshold.

[70] 40 C.F.R. § 52.21(b)(1)(i)(a).
[71] 40 C.F.R. § 52.21(b)(1)(i)(b).

Major sources in attainment areas are subject to Prevention of Significant Deterioration (PSD) review, which requires the use of the best available control technology (BACT) and an analysis of the impacts on air quality. The PSD requirements are covered in more detail below.

In nonattainment areas, the default major source threshold is 100 tons per year of any pollutant that is causing the nonattainment (for instance, VOCs and NOx are both precursors of ozone, so if any area is in nonattainment for ozone, either VOCs or NOx could individually trigger the major source threshold). This is true regardless of the facility type, i.e., there is no "list of 28" for nonattainment new source review. Further, there are more stringent thresholds depending on the severity and type of the nonattainment.

Note that a facility that triggers nonattainment new source review is likely to also trigger PSD for other pollutants. For instance, a facility whose VOC emissions trigger nonattainment new source review because the area is nonattainment for ozone (and again, VOCs are a precursor to ozone), but is located in an area that is in attainment for particulate matter, that facility is still subject to PSD review if it is a major source of particulate matter.

2. Potential to emit

Potential to emit, or PTE, is term of art with a specific, legal meaning defined in several places across the Act and in regulations. The relevant definition for NSR is set out as follows: "Potential to emit means the maximum capacity to emit a pollutant under [the source's] physical and operational design."[72] Further, "any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed" can be included in calculating PTE if it is legally and practicably enforceable, such as a permit limit on production throughput that is accompanied by adequate monitoring to ensure compliance with the limit.[73] PTE issues are also covered in more depth in Section D.3 below detailing minor source permits, as most PTE issues arise in the context of purported minor sources that may actually be major sources when PTE is correctly calculated.

3. Co-located facilities?

Many petrochemical facilities are parts of larger complexes and/or located near related support facilities. For instance, Shell's new Pennsylvania complex includes both ethane cracking units and plastic resin manufacturing units, along with numerous other sources. This raises the question of how to define the "source" for the purpose of determining whether a facility or facilities are a major source subject to NSR.

By attempting to separate projects into discrete permits, industry can evade key NSR requirements, or even evade major NSR altogether. For example, if a gas processing plant has the potential to emit 150 tons of VOCs per year, and a related and adjacent fractionating plant will emit 200 tons of VOCs, for a total 350 tons of VOCs from the two facilities (and the relevant major source threshold here is 250 tons per year), are they one major source or two minor sources?

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[72] 40 C.F.R. § 52.21(b)(4).

[73] EPA, *Guidance on Limiting Potential to Emit in New Source Permitting*, at 6 (June 13, 1989), https://www.epa.gov/sites/default/files/2015-08/documents/lmitpotl.pdf.

This question is referred to as "project aggregation" (or sometimes "source aggregation"), and here are the broad elements that must be met for two or more projects to be considered one source:

1. Do they share the same industrial grouping? This is determined by whether the facilities share the same first two digits of the four-digit Standard Industrial Code (SIC). Gas processing plants and NGL fractionating plants are grouped within the oil and gas sector with a SIC code of 13, while most other facilities covered by this guide are chemical processing plants with the SIC code of 28.
2. Are they located on "one or more contiguous or adjacent properties"?
3. Are they "under the control of the same person (or persons under common control)"?

40 C.F.R. § 52.21(b)(6)(i). Although the first prong is straightforward, the second two have been subject to shifting guidance and rulemaking in recent years. Key issues:

<u>Definition of "adjacent":</u> EPA has two different ways of defining adjacent depending on the type of facility at issue. For the oil and gas industry, which EPA has defined as facilities with a SIC code of 13 (including gas processing plants and NGL fractionating plants), EPA strictly defines "adjacent" to mean on the same "surface site," as defined in 40 C.F.R. § 63.761, or within ¼ mile of each other.[74] "Surface site" is further defined as "any combination of one or more graded pad sites, gravel pad sites, foundations, platforms, or the immediate physical location upon which equipment is physically affixed."[75]

For all other types of facilities, including ethane crackers, plastic resin plants, and methanol plants, the determination is more nebulous and subject to recently shifting interpretation from EPA.[76] Historically, EPA has explained that the "guiding principle behind how close properties need to be in order to be considered adjacent is the 'common sense notion of a plant,' which involves a fact-specific analysis of the pollutant emitting activities that compromise or support the primary product or activity of the operations."[77] This "common sense notion of a plant" traditionally included consideration of the functional interrelatedness of the two (or more) facilities, i.e., how physically or logistically connected are the facilities (for example, does one directly supply material to the other?). Under this interpretation, in some instances facilities located miles from one another could be considered to be adjacent if they were sufficiently connected in a functional manner.

In 2019, EPA narrowed this interpretation, stating that the only consideration relevant to the definition of "adjacent" is physical proximity. EPA went further to suggest that the distance required to be "adjacent" should be narrow:

> *EPA will consider properties that do not share a common boundary or border, or are otherwise not physically touching each other, to be "adjacent" only if the properties are nevertheless nearby, side-by-side, or neighboring (with allowance being made for some limited separation by, for example, a right of way). This is inherently a case-specific inquiry where determining the appropriate distance at which two properties are proximate enough*

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[74] 81 Fed. Reg. 35,622, 35,623 (June 3, 2016).
[75] 40 C.F.R. § 63.761.
[76] EPA, "Interpreting 'Adjacent' for New Source Review and Title V Source Determinations in All Industries Other Than Oil and Gas," (Nov. 26, 2019), https://www.epa.gov/sites/default/files/2019-12/documents/adjacent_guidance.pdf.
[77] *Id.* at 5.

to reasonably be considered "adjacent" may vary depending on the nature of the industry involved.[78]

As of 2022, it is unclear whether EPA will revisit this interpretation any time soon. If advocates encounter multiple facilities that satisfy the other prongs of the source aggregation determination but are dismissed as non-adjacent, they should consult an experienced Clean Air Act attorney.

Definition of control and common control: Here's how EPA recently summarized the common control question:

> *EPA first determines whether the facilities are commonly owned, e.g., one company is a parent company to the other or one company owns part of the other company. Common control can also be established if an entity has the power to direct or cause the direction of the management and policies of another entity. This direction could be as a result of the ownership of stock, or voting rights, by the existence of a contract, lease, or other type of agreement between the facilities, or through another means.*[79]

In a 2018 Federal Register notice EPA further clarified its source aggregation interpretation.[80] Reviewing that notice is a good starting point for advocates looking to learn more.

4. Modifications to existing facilities

Modifications to existing facilities can also require a major NSR permit. This is discussed more fully in Section B.10. For sources that are already major and in attainment areas, the thresholds are set out below:

- Carbon monoxide: 100 tons per year (tpy)
- Nitrogen oxides: 40 tpy
- Sulfur dioxide: 40 tpy
- Particulate matter: 25 tpy of particulate matter emissions. 15 tpy of PM10[81]emissions
- PM2.5: 10 tpy of direct PM2.5 emissions; 40 tpy of sulfur dioxide emissions (as a precursor to PM2.5); 40 tpy of nitrogen oxide emissions unless demonstrated not to be a PM2.5 precursor
- Ozone: 40 tpy of volatile organic compounds or nitrogen oxides
- Lead: 0.6 tpy
- Fluorides: 3 tpy
- Sulfuric acid mist: 7 tpy
- Hydrogen sulfide (H2S): 10 tpy
- Total reduced sulfur (including H2S): 10 tpy

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[78] *Id.* at 8.
[79] Letter from Gregg M. Worley, EPA, to James Capp, EPA, at 2, Dec. 16, 2011, https://www.epa.gov/sites/default/files/2015-07/documents/ps2011.pdf.
[80] 83 Fed. Reg. 57,324 (Nov. 15, 2018), https://www.regulations.gov/document/EPA-HQ-OAR-2003-0064-0175.
[81] PM_{10} refers to particulate matter 10 microns or smaller in diameter. $PM_{2.5}$, mentioned below, refers to particles 2.5 microns or smaller in diameter.

- Reduced sulfur compounds (including H2S): 10 tpy

The thresholds for a modification to trigger Nonattainment NSR are generally the same as the PSD thresholds—except that lower thresholds apply in serious, severe, and extreme nonattainment areas.[82]

Finally, with respect to facility modifications, advocates should be aware that there are myriad ways for a facility to escape having its modification be classified as "major" even if the modification in question would, at first look, appears to result in a significant emission increase. For example, a facility can utilize a process called "netting" whereby sources may make modifications that would otherwise need a major source NSR permit by claiming credits for prior emission reductions at the same facility. The rules governing how to determine whether a facility modification is subject to major NSR are complex and beyond the scope of this guide. Advocates who believe that a facility modification has been improperly excluded from major NSR are strongly encouraged to consult with an experienced Clean Air Act attorney.

C. Major New Source Review Construction Permits

If a facility has conceded it will need a major NSR permit (i.e., a PSD permit and potentially also a non-attainment NSR permit) in order to construct, this section provides an outline of the procedures for permit issuance as well as key issues advocates should look for when reviewing a major NSR permit.

Additional Resource: EPA's Draft New Source Review Workshop Manual. Although the Manual is not considered legally binding, it is recognized as the best resource for EPA's interpretation of NSR regulations and requirements. Many of those interpretations have been included in other EPA's documents or decisions that are binding, such as decisions by EPA's Environmental Appeals Board or in Title V petition orders. The manual is currently available at: https://www.epa.gov/nsr/nsr-workshop-manual-draft-october-1990.

1. How do I know when a major NSR permit application has been submitted for a proposed petrochemical plant?

As a general rule, it may be difficult to know when a major NSR permit application for a new facility has been submitted to a permitting agency. Although there are requirements for public notice and comment once an agency has prepared a draft permit it proposes to issue, many states have no notice requirements for the public to learn when an application has merely been submitted, although Texas is a notable exception, as explained below.

The lack of notice on applications is problematic because reviewing lengthy and complex applications can be daunting even for experienced Clean Air Act attorneys, so the more time available to review and organize in advance of the draft permit, the better.

Fortunately, there are ways advocates can learn of and obtain new applications. If an advocate is aware of a proposed new petrochemical facility, perhaps from other, non-Clean Air Act, permitting processes, or from the industry itself, here's what they should do:

[82] *See* 40 C.F.R. § 51.165(a)(1)(x).

- Monitor online databases. Many states, including both Louisiana and Texas, maintain reasonably up-to-date online portals where documents, including permit applications, are uploaded (see Section 8.J.1). Be aware, however, that these databases may not be complete or updated sufficiently, so reliance on such databases alone may not be adequate to catch all new facilities.
- File public records requests.
- Talk to the agency. Most agency staff are willing to at least tell members of the public if an application has been received and how to obtain it. Often, they will direct you to file a public records request, but on occasion, a staff member will provide you with an electronic copy by email.

Texas Notice of Application: Texas does issue public notices when TCEQ receives a major source NSR application, but only after TCEQ has determined the application is administratively complete, and TCEQ has up to 90 days after receipt of an application to make this determination. The public notice is specifically referred to as the "Notice of Receipt of Application and Intent to Obtain Air Permit." Advocates can use TCEQ's website[83] to search for all public notices for a given time period, county, zip code, and so on. See the section below on public notice requirements for information on how to sign up for mailing lists to receive such notices.

2. Will I have an opportunity to comment on a proposed plant's major NSR permit application?

In most states the only formal opportunity to comment on a proposed plant's major NSR permit application will be once the agency has reviewed the application and drafted a permit. However, although the draft permit itself is the subject of the comment period, defective or incomplete applications that result in deficient permits are fair game for comments filed on the draft permit. In fact, reviewing and commenting only on the draft permit is likely to miss significant issues; reviewing the facility's application(s) is vital to spotting problems with the permit. For instance, a permit application may mention the possibility of the facility being equipped with more effective pollution controls, but the permit may require lesser controls because the applicant successfully argued that the more effective controls are not legally required. If you review the application and become aware of the issue, you might be able to successfully rebut the applicant's arguments and persuade the permitting agency to require the more effective controls.

Some states, including Texas, do provide a formal public comment period on major NSR permit applications. TCEQ allows for public comments and requests for public meetings as soon as it deems a new application "administratively complete" (see below Section 8.B.6.i). The "completeness determination" typically occurs many months before a draft permit is issued. Note that the deadline for comments or meeting requests is not finalized at this stage, but rather will be set once TCEQ issues a subsequent public notice and opportunity for comment on the draft permit.

Regardless of whether the state provides a formal opportunity to comment on a permit application, nothing prevents you from providing the permitting authority with comments informally. Especially prior to the State finding that the application is "administratively complete," if you discover that an application is missing critical information (which is often the case) you should consider asking state officials to find that the application is incomplete. An incompleteness finding delays the deadline by

[83] TCEQ, *Search for Public Notices*, https://www14.tceq.texas.gov/epic/eNotice/index.cfm (visited Aug. 11, 2023).

which the state must act on the application and, as a practical matter, likely delays the point at which agency staff begin preparing a draft permit.

Be aware that in most cases, an applicant will submit its protocol for modeling the proposed facility's impacts on ambient air quality (the "modeling protocol") long before submitting its permit application—most likely about six to ten months beforehand. There is no formal opportunity to comment on the modeling protocol, but to the extent that you find out that a protocol has been submitted, it is helpful to submit any comments on the protocol early in the permitting process before the modeling is undertaken. While you can certainly comment on deficiencies in the modeling protocol when you comment on the draft permit, it will be difficult at that late stage to persuade the State to require the applicant to make substantial changes to its modeling protocol and redo its modeling.

To effectively comment on a modeling protocol, you almost certainly will want to enlist a modeling expert. One area that might be useful to focus on is the applicant's protocol for compiling the emissions inventory to be used for modeling the proposed facility's ambient air quality impacts. To model compliance with the NAAQS, an applicant undertakes a two-step process—a process considered controversial by environmental advocates, discussed in Section B.9.i.d. First, an applicant will screen the project's emissions to determine whether they exceed "Significant Impact Levels" (SILs). If the emission exceed the SILs, the applicant will model both the project's emissions and those of nearby sources to determine whether the project will cause or contribute to a NAAQS violation.[84]

Often, at this second step, applicants try to take shortcuts, simply relying on state emissions inventories that may only include estimated actual emissions and often are woefully inaccurate. Early in the process, you could advocate for the state to require the applicant to undertake a more rigorous analysis of actual emissions in the area, which the applicant can identify by taking the time to review individual permits to determine each facility's allowable emissions. An expert could advise you as to the specific nuances of the state in which you are operating and the particular information sources that an applicant proposes to utilize in putting together the regional emissions inventory to be used for modeling.

3. When is a Permit Application Complete?

It is important to understand the significance of the administrative completeness (or sometimes "technical completeness") determination. Major NSR applications are vast documents and must contain many types of information. It is common for an applicant to submit an incomplete application. Agencies therefore usually do not start the permitting "clock" until they complete an initial review of the application to ensure it at least contains the minimal types of information that will enable the agency to review and prepare a draft permit. If an agency notifies an applicant that its application is incomplete and the applicant fails to provide the missing information, the agency will not take any further action on the application. Note that an agency will have a deadline for determining that an application is incomplete. If it does not make a completeness determination, the application is automatically deemed complete. While the agency may continue to request more information as

[84] 40 C.F.R. Part 51, Appendix W, § 9.2.3.

needed, such request may not affect the statutory/regulatory deadline by which the agency must take action on the application.

Below, and in broad strokes, are the minimal requirements for a complete major NSR permit application relevant to a new petrochemical facility in Louisiana; most other state's requirements will be similar:

- The facility's physical location (with high specificity) and process description;
- The facility's projected emissions rates;
- The bases for estimating emission rates (i.e., emission factors, process throughput, and other detailed calculations);
- List of applicable Clean Air Act requirements;
- Co-location determination: are there any other facilities that really should be permitted jointly with this one? Or is this potentially a modification of an existing source?
- Control technology determination(s), i.e., what emissions level reflects the use of best available control technology (BACT) (required for attainment-area pollutants) or lowest achievable emissions rate (LAER) (required for nonattainment area pollutants) and why?
- Air quality analysis, including air dispersion modeling to demonstrate compliance with NAAQS;
- Additional impacts analysis (impacts to soils, vegetation, and visibility);
- Signed certificate of compliance with applicable requirements;
- Certificate of a Registered Professional Engineer.

It is vital to note that the mere fact that an agency has determined that an application contains all of the necessary information **does not** mean the application is actually complete. The completeness determination by an agency is a high-level review, and advocates should be on the lookout for omission of key information necessary to inform the permit writer and the public of how the facility will be built and operated and how it will impact the environment. For example, a "complete" application may omit technological or economic information necessary to justify BACT determinations. A permit issued based on an incomplete application is likely defective and vulnerable to legal challenge.

Even after a permit application has been deemed complete, agencies may realize they need additional information, and will make formal or informal requests for additional information. Likewise, it is common for applicants to realize they need to make changes to the application and to submit application amendments.

In a perfect world, the NSR permit application would be a single, self-contained document with all of the necessary information in one place. In reality, however, the "application" may really consist of numerous documents, amendments, and even communications like emails. Advocates should therefore view the "application" as more of an administrative record rather than a single document.

4. How much time does a permitting authority have to act on a major NSR permit application?

In most states, including Texas and Louisiana, the deadlines applicable to permit processing are found in their SIPs—specifically, in state NSR regulations that have been approved by EPA.[85] Although these deadlines are legal requirements, in practice states frequently miss these deadlines. The relevant regulations for Texas and Louisiana are set out below:

<u>Texas Major NSR Permitting Schedule (30 TAC § 116.114)</u>

1. Upon receipt of an application, TCEQ has 90 days to inform the applicant whether the application is complete or deficient. If it is deficient, the clock stops until the applicant provides the missing information; if it is complete, then the schedule continues.
2. If the application is deemed complete initially, then TCEQ has 180 days to issue a preliminary decision in the form of a draft permit or permit denial; if the initial application was not initially deemed complete but was supplemented, TCEQ has 150 days from the date the permit was eventually deemed complete to make a preliminary decision.
3. The rules do not set out explicit deadlines for issuing permits when public comments are received; in practice, substantive comments can cause the agency to miss the aforementioned dates.

<u>Louisiana Major NSR Permitting Schedule and Deadlines (LAC 33:III.509(Q))</u>

1. Upon receipt of an application, LDEQ has 60 days to notify the applicant whether the application is complete or deficient (if LDEQ fails to timely notify the applicant one way or the other, the application is deemed complete). If the application is deficient, the applicant must respond to the notice of deficiency to supplement the application within 30 days.
2. Louisiana's rules are somewhat ambiguous on what happens once an application is deemed complete. Specifically, the rules state that "[w]ithin one year after receipt of a complete application, [LDEQ] shall make a preliminary determination whether construction shall be approved. . ."[86] The ambiguity arises because it is unclear whether the one-year deadline is triggered as of the date of receipt or the date the completeness determination is made.
3. Regardless, once a preliminary determination is made, LDEQ will make the draft permit and determination available for public notice and comment. As in Texas, there are no specific deadlines for when the final permit must issue if comments are received.

5. How do I know when a draft major NSR permit is available for public comment?

Especially if you already know that an application has been submitted, it is not difficult to determine when a draft major NSR permit is available for public comment. At a minimum, all states must provide for public notice and comment on draft major NSR permits, and most states maintain mailing lists (often via email and regular mail) that advocates may sign up for to receive notices and other updates. Most agencies also have online websites listing recent public notices.

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[85] If a state is operating under "delegated" EPA authority (a list of such states is provided at Section 8.B.12), or EPA is directly acting as the permitting agency (likely offshore permitting, Section 8.D), then a one-year deadline to issue or deny applies. See more information here: https://www.epa.gov/sites/default/files/2015-07/documents/timely.pdf.
[86] LAC 33:III.509(Q)(2).

Texas Public Notice Requirements for Major NSR Permits

Texas' public notice requirements for Major NSR permits can be found at 30 TAC § 39, Subchapters H & K.[87] Specifically, Texas' SIP requires public notice and comment at several stages of the permitting process:

- Notice of Receipt of Application and Intent to Obtain Permit, 30 TAC § 39.418: once TCEQ determines that an application is complete, TCEQ shall mail the determination and the *Notice of Receipt of Application and Intent to Obtain Permit* to those on the mailing list (see below for details on mailing lists). Notice must also be published in a local newspaper and on sign postings at the site, pursuant to 30 TAC Chapter 39K.
  - Comment deadline: TCEQ's public notice deadlines can be confusing, so the best practice is to look at the public notice itself to ascertain when TCEQ has set the deadline. In general, however, for major NSR permits, the deadline will be 30 days after publication of the *Notice of Application and Preliminary Determination*, set out below. This means there will be a long but unspecified period where the *Notice of Receipt* is open for public comment.[88]
- Notice of Application and Preliminary Determination, 30 TAC § 39.419: "After technical review is complete for applications subject to the requirements [of major NSR, both PSD and NNSR], the executive director shall file the executive director's draft permit and preliminary decision, the preliminary determination summary and air quality analysis, as applicable, with the chief clerk and the chief clerk shall post these on the commission's website."
  - Comment deadline: 30 days after **newspaper publication** of the public notice.[89] This can be problematic for advocates, as the publication of the notice in a local newspaper is left to the applicant, meaning the exact start and end time of the notice period can be hard to ascertain. Specifically, the notice must be published "in a newspaper of general circulation in the municipality in which the facility is located or is proposed to be located or in the municipality nearest to the location or proposed location of the facility."[90] Advocates can call the applicant at the number listed in the public notice to ascertain whether publication has occurred. Alternatively, proof of publication is also usually posted on TCEQ's Commissioner's Integrated Database, but this may not be posted until days or weeks after publication, meaning advocates lose valuable time.
    - Also note that in some instances, applicants must also publish a newspaper notice in an alternative language; this is determined by whether the nearest elementary or middle school to the facility is implementing a bilingual education program.[91] If newspaper notice is required in more than one language, the alternative language notice may be in a different newspaper than the English-language notice; in this instance, the 30-day deadline runs from whichever notice was published last.

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[87] Shortcut to the SIP: https://www.epa.gov/sips-tx/current-texas-sip-approved-regulations#39H.
[88] *See* 30 TAC § 55.152.
[89] 30 TAC § 55.152(a)(1).
[90] 30 TAC §39.603(d).
[91] For a quick guide to bilingual public notice requirements, see TCEQ's "Easy Steps to Determine if Public Notice in an Alternative Language is Required," https://www.tceq.texas.gov/assets/public/permitting/air/Bilingual/alternatelanguagechecklist.pdf.

TCEQ Mailing lists: advocates may sign up for two types of mailing lists in Texas. First, TCEQ maintains mailing lists specific to each proposed facility, so if you know the name of a proposed facility, you may request to be added to that mailing list. Alternatively, TCEQ also maintains mailing lists on a county basis; for instance, you can ask to receive all public notices for facilities in Harris County. Requests for either type of mailing list must be made in writing to chiefclk@tceq.texas.gov. In practice, these notices are also posted on TCEQ's website at: https://www14.tceq.texas.gov/epic/eNotice/.

Louisiana Public Notice Requirements for Major NSR Permits

Louisiana's public notice requirements for PSD sources can be found at LAC 33:III.509(Q). Confusingly, Louisiana's regulations do not set out specific public notice requirements for nonattainment NSR permits, but practically speaking any petrochemical plants that trigger nonattainment NSR are likely to also trigger PSD or minor NSR permitting requirements (which will also require public notice and comment, discussed in Sections 8.B.3 and 8.C.2, respectively).

Louisiana's rules also do not establish a specific time period for public comment periods on draft PSD permits, however the public notice document will set forth a precise deadline. Based on a review of public notices, LDEQ typically provides for around 35 days of public comment. Note that if the time period is less than 30 days, it is unlawful.[92]

LDEQ maintains both a regular mailing list and an electronic mailing list, to sign up visit https://internet.deq.louisiana.gov/portal/SUBSCRIBES/PUBLICNOTIFICATION or contact the Public Participation Group in writing at LDEQ, P.O. Box 4313, Baton Rouge, LA 70821-4313, by email at DEQ.PUBLICNOTICES@LA.GOV or by contacting the LDEQ Customer Service Center at (225) 219-LDEQ (219-5337). Likewise, public notices are posted to LDEQ's website at: https://deq.louisiana.gov/public-notices.

6. How much time will I have to comment on a draft major NSR permit? Can I get an extension?

Permitting authorities must provide at least 30 days of public notice and comment on draft Major NSR permits,[93] and in practice 30 days is typically what states choose to provide. Note that if the 30-day period ends on a weekend or holiday, most states will roll the deadline to the next working day, but it is imperative that you confirm this in writing with the permitting authority. It is also vital to check whether the deadline is 5 pm, midnight, or some other arbitrary time (at least one state has a 4:30 pm deadline, which seems designed to trip up unsuspecting advocates). In Louisiana and Texas, as of this writing, the deadline is midnight.

Extensions are granted at the discretion of the permitting authority. In practice, agencies are usually willing to grant an extension request when there is significant public interest, the facility or permit is particularly complex, or other extenuating circumstances exist. Regardless, it doesn't hurt to ask. Requests for extensions are typically made by a brief letter sent to the appropriate contacts at the agency setting out the reasons that a request would benefit the public or is otherwise warranted. Unfortunately, it is often the case that extension requests aren't granted until the end of the initial comment period, and you don't want to rely on the agency granting your request. Thus, even if you

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[92] 40 C.F.R. § 52.21(q) states that PSD permits must follow the public notice and comment requirements of 40 C.F.R. § 124, which, in turn, includes a requirement for at least 30 days of public comment. 40 C.F.R. § 124.10(b)(1).
[93] 40 C.F.R. § 124.10(b)(1).

request an extension, be prepared to submit at least a basic set of comments by the initial comment deadline.

Additionally, in many states, requesting a public hearing (discussed below) may also result in an extension of the deadline for written comments. In Texas, for instance, if a public hearing is granted during or after the close of the public comment period, TCEQ typically reopens or extends the written comment deadline until the date of the public hearing.

7. Is there an opportunity for a public hearing on a draft major NSR permit?

Permitting authorities must hold a public hearing when there is "a significant degree of public interest."[94] Many states choose to hold public hearings on all major NSR permits, but others will only do so when requested, including both Louisiana and Texas (discussed below).

So, what are public hearings and why or when should advocates request one?

- <u>Public Hearing Format:</u> The legal purpose of a public hearing is to provide members of the public with an opportunity to present oral comments to the permitting agency that will be entered into the administrative record for the permit action. The agency must document all oral comments that it receives. The agency is obligated to consider and respond to any substantive and significant comments in deciding what action to take on the permit application.

  The exact format of the public hearing will vary from state to state, but a typical public hearing will contain similar elements. Often the state agency will make a brief presentation before the public hearing begins in which it will describe the proposed facility, the draft permit, and, typically, the agency's rationale for why the permit will protect public health and the environment. Sometimes this presentation will be followed by a question-and-answer session, but not always. Note that if the agency gives a presentation and/or hosts a Q&A session, the official "public hearing" does not begin until after that is over. Once the hearing officially begins, all meeting attendees can provide oral comments on the draft permit if they wish to do so. It is important to confirm when the hearing officially begins so that you know that your oral comments will be in the administrative record. Also, though oral comments will be incorporated into the administrative record, it is good practice to bring a written copy of whatever you plan to say in your oral comments and hand them to the stenographer before you speak. Though not required, this will ensure that your comments are properly recorded and make it more likely that you will receive a substantive response from the agency when it takes final action on the permit application. Preserving a record of your comment is important because, in most cases, you can only challenge an agency's final decision based on issues that were raised in public comments on the draft permit.

  Typically, someone who wishes to make an oral comment at a public hearing must sign up on a speaker list when they arrive at the hearing. The public notice announcing the hearing should provide instructions for how to sign up. If you anticipate that there will be a lot of people at a

[94] For a discussion of what qualifies as a "significant decree of public interest," *see In re Sierra Pacific Indus. (Anderson Processing Facility)*, PSD Appeal Nos. 13-01, 13-02, 13-03 & 13-04, Order Remanding in Part and Denying Review in Part (EAB, July 18, 2013) (available on the website of EPA's Environmental Appeals Board at https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/05819647854bacb0852578db004a8fe9/1432397d2de2b8f885257bac005d9283!OpenDocument&Highlight=2,sierra,industries).

hearing, tell advocates that they should sign up or arrive early if they want to speak near the beginning.

- Who will be there? The agency typically will bring a handful of representatives, including usually the individual(s) responsible for reviewing the application and writing the permit, as well as managers and public relations and/or environmental justice representatives. The applicant will usually send representatives to speak or even present, and sophisticated corporations also tend to invite numerous supporters, such as local politicians, representatives from the local chambers of commerce, and company employees, to vouch for the benefits of the project. Finally, of course, are members of the public. To get the most out of a public hearing, be sure to enlist as many advocates as possible to attend. You can assist those who are willing to speak by arming them with suggested talking points if they are interested. If you have a lot of people attending who are opposed to the facility but won't be speaking, make sure that one of the speakers asks members of the audience to raise their hands if they oppose the project, and have the speaker describe what portion of the audience is opposed, etc. Aside from encouraging community members to attend, you should also consider whether any elected officials would be willing to attend the hearing and express opposition to the project. Finally, if you think that you will have a sufficient number of advocates present, you should notify the media and be prepared to speak with them. You might hold a press event prior to the hearing at a location that provides a good visual background, e.g., protesters on the steps of city hall.
- What is the value of a public hearing? Generally speaking, the types of issues covered by this guide that relate specifically to the draft permit are best made in writing; oral comments are usually limited to around three to five minutes, making a presentation on legal or technical arguments concerning the permit difficult. However, public hearings can be useful for several reasons:
    - Showing that the community is paying attention and seeking a just and stringent permit;
    - Providing members of the community who are uncomfortable preparing written comments with an opportunity to present their concerns orally;
    - Focusing the agency's attention on key legal or technical arguments made in written comments;
    - If Q&A is allowed prior to the hearing, learning more about the agency's thinking regarding pertinent issues(e.g., if you have found vulnerabilities in the permit record, why not ask if the agency has considered the issues? If yes, they may save you time by explaining their rational, and if not, it highlights the agency's lack of thoroughness and oversight);
    - As an organizing tool to bring together members of the public who may have concerns about the facility;
    - Providing an opportunity for media coverage of the community's concerns.
- Are there risks to requesting a public hearing? There can be. The primary one is requesting a public hearing and not having community members show up or speak. Advocates should only request a public hearing when it is clear that the community is sufficiently engaged—and not overly intimidated—to attend and speak publicly.

Texas and Louisiana specific guidance:

- **Texas public meetings:** In Texas, public hearings are specifically referred to as public "meetings;" requests for a public "hearing" will be interpreted as a request for a contested case hearing, discussed below, so advocates must be precise with the language of their requests. Public meetings will only be held when requested. The public notice will contain instructions on how to request a public meeting.
- **Louisiana hearings:** Although Louisiana's SIP appears to require public hearings on all major PSD permits,[95] in practice it appears LDEQ only holds hearings for permits when requested or when they anticipate significant public interest. Advocates may request a hearing once the public notice for a draft permit is released, and the public notice will contain instructions for how to do so (including online and by email).

If advocates do wish to request a hearing, it is worth contacting the agency before the draft comes out if you have specific requests regarding when and where the hearing should be held. If the agency already intends to hold a public hearing on a draft permit, it likely will announce the time and location of the hearing in the same notice used to announce the availability of the draft permit for public comment.

8. What are the key issues I should cover in my comments on a draft major NSR permit?

Major NSR permits and the permit record can seem daunting. This section details key issues that tend to arise in major NSR permits, first in a general manner, and then in a more detailed look at petrochemical-specific NSR issues.

a. Prevention of Significant Deterioration requirements

Many larger petrochemical plants are permitted as major NSR sources, so they will need to obtain a PSD permit addressing all criteria pollutants for which the area where the source is proposed to be located is in attainment. As noted above, all areas in the U.S. are classified as attainment for at least some criteria pollutants, so a proposed major source will always be subject to PSD for at least some pollutants. This section addresses issues to watch for in the PSD portion of a permit.

i. Best Available Control Technology (BACT) Determinations

One of the most contentious realms of major NSR permitting, and therefore an area ripe for scrutiny, is the BACT determination (and much of what is discussed in this section also is relevant to LAER determinations for nonattainment NSR). Generally, the more stringent the BACT determination is, the more money the source will need to spend to comply; on the other hand, BACT is meant to require exactly what it stands for: the best available control technology. Herein lies the tension between sources, agencies, and advocates.

Despite its name, BACT is not a particular control technology, but instead a short-term emission limit based on the use of a given control technology or operating practice. Here is the most central part of the definition of BACT:

> *Best Available Control Technology means an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to*

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[95] LAC 33:III:509(Q)(2)(c).

> *regulation under the Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source . . .*

40 C.F.R. § 52.21(b)(12). See below for a more detailed description, but in short, BACT should be the lowest emission limit that has been achieved at a similar source such as combustion turbines. The burden then falls on the applicant to demonstrate why its unique, source-specific design or operating conditions render that emission limit infeasible either technologically or due to considerations of energy, environmental, or economic impacts.

In most states, the foregoing analysis is conducted in a five-step, "top down" approach pursuant to EPA guidance: [96]

- <u>Step one.</u> Assemble all available, potential control technologies and the related emission limits achieved or believed to be achievable. This can include both controls and operating practices, including a combination of controls, and the scope is not limited to control technologies in use in the United States.
- <u>Step two.</u> Eliminate those potential control technologies that are not technically feasible.
- <u>Step three.</u> Rank the remaining options in order of control effectiveness.
- <u>Step four.</u> Conduct a case-by-case consideration of energy, environmental, and economic impacts—starting with the option ranked most effective for controlling emissions. In the absence of unusual circumstance, the presumption is that cost and other impacts that have been borne by one source in a given category may be borne by another source in the same source category. Cost is usually expressed as cost-per-ton of emissions reduced. If the top option is rejected, evaluate the next most effective control option.
- <u>Step five.</u> The most effective option not rejected is BACT.

<u>Ways to challenge a proposed BACT determination include:</u>

- <u>At step 1:</u> The proposed determination ignores technology in use at other similar facilities (including those in other countries) or other industries that can be transferred to this industry. Sources and states sometimes claim that they can refuse to consider control technologies that are used by identical processes located at synthetic minor facilities, as these controls are not used as BACT, but this incorrect and should be challenged. In addition, it is not that unusual for the proposed BACT determination to involve no controls (but instead, best operating practices). Scrutinize such determinations carefully.
- <u>At step 2.</u> The technical infeasibility determination is unfounded.
- <u>At step 4.</u> A technology is improperly found cost-ineffective because costs are inflated (perhaps by counting the cost of controls that are already required to control other pollutants), the

[96] This description of BACT and the following "Ways to challenge a proposed BACT determination" were adapted from material drafted by Patton Dycus and are excerpted here with permission.

emission control efficiency assumption is too low (increasing the cost/ton of pollution removed), or the amount of uncontrolled emissions is underestimated.

Texas, meanwhile, does not use the top-down method, but instead a "three-tier" process. Note that while EPA does not require the top-down method, EPA will only accept other methods so long as the procedure produces the same results as the traditional EPA-endorsed top-down methodology.[97] In addition, TCEQ has specifically stated that the three-tier method must produce exactly the same results as the top-down method, and not merely be "likely" to produce the same results.[98]

TCEQ's three-tier process is briefly summarized here, but a full guide is available at this footnote.[99]

- Tier I: Evaluates emission limits or performance levels established as BACT in recent major NSR permits; this step roughly presumes that "technical practicability and economic reasonableness of a particular emission reduction option may have already been demonstrated in prior reviews for the same process and/or industry."[100] Note that Tier I also should also "take into consideration any new technical developments, which may indicate that additional emission reductions are economically or technically reasonable."[101]
- Tier II: If no BACT requirements have been established for particular process or industry, the process moves to Tier II, which considers BACT limits in recent NSR permits for "similar air emissions streams in a different process or industry."[102]
- Tier III: This tier applies only if the first two have failed to identify applicable BACT limits. Tier III is a "a detailed technical and quantitative economic analysis of all emission reduction options available for the process/industry under review."[103] In practice, it is rare for a source to reach Tier III.

ii. Air Quality Modeling

Applicants for PSD permits must conduct air dispersion modeling to demonstrate that their emissions will not cause or contribute to exceedances of the NAAQS (or otherwise degrade air quality, see PSD Increments[104]). Air dispersion modeling is a complex and technical process, and

[97] TCEQ, Response to Texas Chemical Council's Comments on Air Permit Reviewer Reference Guide (APDG 6110) Air Pollution Control: How to Conduct a Pollution Control Evaluation, at 4 (undated), https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/rtc-texas-chem.pdf (visited August 14, 2023).
[98] *Id.*
[99] TCEQ, Air Permit Review Reference Guide (APDG 6110) Air Pollution Control: How to Conduct a Pollution Control Evaluation (2011), https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/airpoll_guidance.pdf.
[100] *Id.*
[101] *Id.*
[102] *Id.*
[103] *Id.*
[104] Here's how EPA explains PSD increments: "PSD increment is the amount of pollution an area is allowed to increase. PSD increments prevent the air quality in clean areas from deteriorating to the level set by the NAAQS. The NAAQS is a maximum allowable concentration 'ceiling.' A PSD increment, on the other hand, is the maximum allowable increase in concentration that is allowed to occur above a baseline concentration for a pollutant. The baseline concentration is defined for each pollutant and, in general, is the ambient concentration existing at the time that the first complete PSD permit application affecting the area is submitted. Significant deterioration is said to occur when the amount of new pollution would exceed the applicable PSD increment. It is important to note, however, that the air quality cannot deteriorate beyond the concentration allowed by the applicable NAAQS, even if not all of the PSD increment is consumed." EPA, *Prevention of Significant Deterioration Basic Information*, http://www.epa.gov/nsr/prevention-significant-deterioration-basic-information#:~:text=The%20NAAQS%20is%20a%20maximum,baseline%20concentration%20for%20a%20pollutant

advocates may benefit from bringing in expert assistance if there is reason to suspect issues with the modeling. Below are a few things to look for:

- How close does the applicant themselves show the results compared with the NAAQS or PSD increments? The application will contain tables that show the results of the modeling, i.e., the highest concentration of each pollutant in the atmosphere as a result of both existing pollution and the plant's new emissions. Those tables will compare the results with the applicable standard. For instance, the NAAQS for PM2.5 (fine particulate matter) is 12 μg/m3,[105] so if the modeling report shows the current value in the county is 8 μg/m3, and will be 11.5 μg/m3 with the new facility, that is worth further examination.
- Does the modeling actually show exceedances of the NAAQS or PSD increments? This is surprisingly common in areas with a lot of industry like Louisiana's petrochemical corridor. This isn't technically a modeling deficiency, but rather a legal issue, and is discussed in Part iii below.
- Does the modeling report comply with the modeling protocol? Prior to conducting the modeling, applicants will work with the permitting authority to develop a protocol document that governs how the modeling will be conducted. In the final report, if the applicant has deviated from the protocol, they will typically say so and explain why. It may be legitimate, but it is worth a closer look.
- Does the modeling protocol and report comply with Appendix W? Appendix W to 40 C.F.R. Part 51 is EPA's guidance on how air dispersion modeling should be conducted. Any deviations from Appendix W may be another red flag. Such deviations will be discussed in the protocol, final report, or in communications between the applicant and the agency.
- If the modeling is for a modification rather than a new source, does modeling include only the increased emissions from the modification rather than the total emissions from the source? Sources occasionally attempt to model only the "new" emissions that result from a modification rather than the total emissions for the source; this is improper. Modeling for modifications must include the total emissions from the source.[106]

Finally, the modeling is only as good as the data it's based on. For example, if you have reason to believe a source is underestimating emissions, then you should also argue that the modeling analysis is deficient because it relied on underestimated emission rates.

iii. Significant Impact Levels

It is not uncommon for a permit applicant to claim that its emissions will not have a "significant" impact on ambient air quality, and thus, that the applicant is not required to undertake a detailed analysis or modeling to demonstrate that its emissions, in combination with the emissions of other sources in the vicinity, will not cause or contribute to a violation of the NAAQS or PSD increment (a "cumulative impact analysis"). This argument is based on a concept created by EPA called "Significant Impact Levels" (SILs). Essentially, the idea is that if ambient air impact of the proposed new source or modification is not projected to exceed the SIL, i.e., that it is not "significant," then the impact is too small too matter.

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[105] Concentrations of pollutants in ambient air are typically expressed as either micrograms per cubic meter ($\mu g/m_3$) or parts per millions (ppm).
[106] 40 C.F.R. Part 51, Appendix W, Table 8-2.

In fact, some applicants even concede that their emissions will indeed contribute to exceedances of the NAAQS or PSD increment, but then rely on SILs to say that their contribution to the exceedance is too small to be significant.

Advocates have long argued that SILs are simply illegal and contrary to Congress' intent behind the Clean Air Act. EPA, however, has generally approved of SILs, and even approved SILs into its regulations at one point,[107] but litigation forced EPA to reconsider SILs and their future remains somewhat uncertain.[108] Regardless, most states appear to use SILs, which can be a point to challenge a PSD permit. Below is an excerpt of excellent comments by Corinne Van Dalen, Michael Brown, and Adrienne Bloch of Earthjustice on this issue in relation to the Formosa St. James Parish complex in Louisiana:[109]

THE CLEAN AIR ACT UNAMBIGUOUSLY PROHIBITS FORMOSA'S USE OF SILS. THE ACT'S AND LOUISIANA'S

PSD provisions require Formosa to demonstrate that the emissions from its proposed complex will "not cause, or contribute to" an exceedance of any NAAQS or any increment. See 42 U.S.C. § 7475(a)(3); LAC 33:III.509.K.1. Congress used mandatory and expansive language throughout § 7475(a) to make its directive clear and leave no gaps for EPA or LDEQ: "no" covered source may be constructed, "unless" that source "demonstrates" that it "will not" "cause, or contribute to," "any" violation of the NAAQS or "an " increment. 42 U.S.C. § 7475(a)(3); see Consumer Electronics Ass'n v. FCC, 347 F.3d 291, 298 (DC. Cir. 2003) ("the Supreme Court has consistently instructed that statutes written in broad, sweeping language should be given broad, sweeping application"). Congress specifically used the terms "cause" and "contribute" together to ensure the PSD program would prevent increments and the NAAQS from being exceeded by considering all possible violations or contributions to violations. Alabama Power Co. v. Castle, 636 F.2d 323, 362 (DC. Cir. 1979); HR. Rep. No. 95-294, at 9; S. Rep. No. 95-127, at 11, 32 (1977). By including "or contribute to," Congress unambiguously covered any triggering or worsening of a NAAQS or increment violation. See North Carolina v. EPA, 531 F.3d 896, 910 (DC. Cir. 2008) (where statute uses disjunctive "or" to connect terms, terms have different meaning). Within the plain meaning of the Clean Air Act, Formosa has shown that its facility will contribute to NAAQS violations and exceedance of a Class II increment.

In the case of Formosa, the company's own modeling showed exceedances of the PM2.5 and NO2 NAAQS, but Formosa and LDEQ considered Formosa's contribution to the exceedances to be

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[107] 40 C.F.R. § 51.166(b)(2).
[108] *See Sierra Club v. EPA*, 705 F.3d 458, 463-64 (D.C. Cir. 2013). In short, EPA has held the view that SILs may be appropriate, and in 2010 attempted to codify SILs for PM2.5 and ozone. Advocates challenged the 2010 rulemaking, and EPA requested that the Court vacate and remand the rules. EPA to date has not attempted new rulemaking, but instead issued non-binding guidance in 2018 establishing recommended SILs for PM2.5 and ozone as the first part in a two-step process it intends to take; EPA states that it intends to study the use of these recommended SILs in step one, before codifying them in step two. *See* EPA, Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program (Apr. 17, 2018), https://www.epa.gov/nsr/significant-impact-levels-ozone-and-fine-particles.
[109] Earthjustice, Comments on 14 Proposed Initial Title V/Part 70 Air Permits for FG LA, LLC (Aug. 12, 2019) (Appendix 2).

insignificant because they did not exceed the SILs. For example, the SIL for NO2 used by LDEQ was 7.5 micrograms per cubic meter (μg/m3), but Formosa only cause an increase of 6.3 μg/m.3 So although Formosa and LDEQ agreed that Formosa would technically contribute to the NAAQS exceedances, LDEQ acted as though no exceedances would occur because it deemed the increase insignificant.

Critically, in August 2022, a Louisiana court agreed with environmental advocates' arguments that this use of SILs is illegal, striking down LDEQ's permit for Formosa. If this ruling survives an ongoing appeal, it will have a significant impact on how (or even if) major new petrochemical plants can be permitted in much of Louisiana.

SILs have also been used to evade more detailed modeling requirements that might also reveal NAAQS exceedances. Specifically, states and EPA have used SILs to allow a PSD source to conduct Phase I modeling that evaluates only emissions from the proposed facility without any consideration of other sources or the existing air quality; if the results of the Phase I modeling are below the relevant SILs[110] (established either by EPA guidance,[111] future EPA regulations, or by states), then the agency will assume that the facility will not cause or contribute to any exceedance of the NAAQS or increments. Only if the Phase I modeled emissions exceed the SIL will the source need to conduct a comprehensive Phase II modeling analysis that includes nearby sources and existing air quality.

Note, however, that EPA has stated that permitting authorities will occasionally need to look beyond SILs and require additional measures to assure compliance with the NAAQS and Increments even for emissions that do not exceed the SILs. For example, EPA states that "notwithstanding the existence of a SIL, permitting authorities should determine when it may be appropriate to conclude that even a de minimis impact will "cause or contribute to' an air quality problem and to seek remedial action from the proposed new source or modification."[112]

Even in this narrower context, advocates have made the same argument as above that the use of SILs to circumvent additional modeling is not legal. It is unclear if or how the recent Louisiana court's ruling on SILs will impact their use in this context within Louisiana. Regardless, if advocates encounter the use of SILs to evade modeling requirements or to issue permits despite NAAQS exceedances, they should contact an experienced Clean Air Act attorney.

iv. Additional Impacts Analysis

In addition to directly assessing a project's impacts on air quality through modeling, PSD also requires an analysis of impacts to soil, vegetation, visibility of pollution from the project, as well as an analysis of the impacts on air quality from residential, commercial, and industrial growth that will accompany the project.[113] Note that EPA has taken the position that impacts from greenhouse gas

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[110] EPA has generally given states discretion to set SILs, and frequently the numerical value of SILs is based on the table found at 40 C.F.R. § 51.165(b)(2), but note that from a legal perspective, the values in this table are not specifically approved as SILs. This table was developed for other permitting purposes, but EPA has referred to these values as SILs in various guidance documents. *See* EPA, *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program*, at 8-9 (Apr. 17, 2018) ("SIL Guidance"), https://www.epa.gov/nsr/significant-impact-levels-ozone-and-fine-particles.

[111] As of August 2023, EPA has established "recommended" SILs in non-binding guidance for PM2.5 and ozone. See *SIL Guidance,* 15.

[112] *SIL Guidance,* 10, *citing* 75 Fed. Reg. 64,864, 64,892.

[113] 40 C.F.R. § 52.21(o).

emissions are not considered in the Additional Impacts Analysis.[114] Generally, advocates have not found vulnerabilities related to the Additional Impacts Analyses performed for petrochemical facilities in past proceedings, s, but advocates should look for unique aspects of future facilities that may raise innovative impacts arguments.

b. Petrochemical-Specific PSD Issues to Watch For

This section addresses specific PSD issues that may arise in the context of permitting a major source petrochemical facility. There are a number of similar units that will need to undergo BACT/LAER at most facilities, including boilers and furnaces, which are often some of the largest emission sources.

i. Limits do not reflect BACT

New sources often argue that the most stringent BACT limits that have been achieved in practice should not apply to their particular facility for numerous reasons. As a general rule, more stringent limits may be based on using more expensive equipment or operating in a manner that is more expensive; companies may also fear that more stringent limits will be harder to comply with and lead to more violations. A few common methods of evading true BACT limits are set out below, along with suggestions for how to challenge them:

- Omission of relevant BACT options in Step 1. Sources typically rely on a database called the RACT/BACT/LEAR Clearinghouse (known as the RBLC, because only environmental lawyers can turn a list of acronyms into a meta-acronym). The RBLC attempts to house all case-by-case technology determinations, as reported by state permitting authorities. Yet the RBLC is usually out-of-date and incomplete. Many states fail to enter information into the RBLC and the RBLC only assesses U.S. sources. Thus, a permit applicant that relies solely on the RBLC most likely has not identified all potential control technologies nor the lowest emission rates achieved in practice.
- BACT dismissed as not Technically Feasible. Sources often argue that some unique process or design inherent to their facility means that, where other sources, say turbines, have been able to use a particular control, they cannot employ the same technology for some reason. Such claims are worthy of skepticism and further digging.
    - Here's one example from a recent liquid natural gas export facility; while not strictly a petrochemical facility as defined by this guide, the unit at issue—a combustion turbine—is also used at petrochemical plants. The applicant, Venture Global LNG, evaluated wet scrubbers for SO_2 removal for its turbines, which can achieve 80 to 95% removal rates for SO_2. Venture then dismissed the control as not technically feasible because the "optimal" exhaust temperature for wet scrubbers is between 40F and 100F, but the exhaust from Venture Global's turbines would be in the range of 450F to 527F." The applicant dismissed the control as not technically feasible on this basis, without considering that there are feasible methods to cool exhaust gases to the desired range. Ultimately the company

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[114] EPA, *PSD and Title V Permitting Guidance for Greenhouse Gases*, 48 (Mar. 2011), https://www.epa.gov/sites/default/files/2015-08/documents/ghgguid.pdf. Portions of this guidance are no longer accurate due to the U.S. Supreme Court's decision in *Utility Air Regulatory Group v. EPA*, 573 U.S. 302 (2014), but the Court's decision did not impact EPA's position in the guidance that greenhouse gas emissions are not considered in the additional impacts analysis.

proposed (and the state approved) no control technology, and relied instead on "good combustion practices," discussed below.

- Dismissed on environmental, energy, or economic grounds. The key here is that the environmental, energy, or economic issues must be unique to the proposed facility such that the impacts (i.e., cost) will be significantly higher than at the facility or facilities that have implemented the control and demonstrated compliance with the BACT limit. In other words, what makes this source special? Why is it more expensive to use the same technology and meet the same BACT limit that another comparable source has already met?

  Typically, the technique sources use here is to calculate the cost per ton of emissions reduced by using a higher-ranked control technology. States often have informal, unpublished cost/ton thresholds above which a control can be dismissed as too expensive, and the basis for this threshold can be frustratingly opaque. For instance, Indorama's Westlake, Louisiana ethane cracking plant dismissed selective catalytic reduction as a control for one of its ethane cracking furnaces by calculating that it would cost $5,490 per ton of NOx reduced and concluding that this amount was too great without any further discussion of why that would be too expensive; Formosa's proposed St. James Parish complex, meanwhile, dismissed controls based on costs as low as $3,700 per ton. In both instances, LDEQ approved of these determinations, although advocates pointed out that EPA has suggested a threshold as high as $10,000 per ton in some instances.[115]

  If a source is dismissing a demonstrated control technology as too expensive, advocates may benefit from having an expert review the BACT determination.

- Limits do not represent best possible emission reduction. It is unfortunately common to see an applicant, once a technology is selected, proposing limits that aren't reflective of the best possible emissions reduction. For example, Indorama Westlake selected a control technology for its ethane cracking furnace known as Low-NOx burners. In its application, Indorama included a table of emission limits achieved in practice by similar facilities that showed limits ranging from 0.04 lb/MMBtu to 0.22 lb/MMBtu. In this scenario, the BACT limit should be the lowest—0.04 lb/MMBtu—but Indorama instead proposed a limit of 0.098 lb/MMBtu, which is more than two times higher than the lowest limit.

- No short-term limits. BACT is supposed to be a short-term limit,[116] something like 2.5 ppm on a "three-hour basis." This means that at any given time, emissions may exceed that limit, but the limit is only violated if, on average over a given three-hour period, emissions exceed 2.5 ppm. The shorter the averaging period, the less likely it is that spikes of emissions might cause detrimental concentrations of pollutants in the ambient air.

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[115] Earthjustice, Comments on FG LA, LLC PSD Permit, Attachment E, at 46-7 (Aug. 12, 2019) (Appendix 2).

[116] BACT emission limits and associated monitoring must "demonstrate protection of short-term ambient standards (limits written in pounds/hour) and be enforceable as a practical matter (contain appropriate averaging times, compliance verification procedures and recordkeeping requirements)." NSR Workshop Manual at B.56; *see also In Re ConocoPhilips Co.,* PSD Appeal No. 07-02, 13 E.A.D. 768, 796 (June 2, 2008). In other words, if a NAAQS is a 1-hour or 8-hour standard, then the BACT limits should approximately match the standard. A 30-day rolling average for a limit, for instance, would not be protective of the short-term NAAQS. Spikes in emissions could readily cause NAAQS exceedances, yet there would not be a permit limit violation.

Unfortunately, many of the BACT limits in petrochemical permits do not include short-term limits, and instead implement limits on an averaging basis as long as 30 days, which is problematic. For instance, a limit that is averaged on a 30-day basis allows emissions that greatly exceed the numerical limit for days on end, perhaps because of poor combustion practices, which worsens air quality and potentially causes exceedances of the NAAQS. Yet, as long as average emissions over the 30 days is below the limit, perhaps because the facility addressed the cause of high emission rates, the facility will be in compliance with the limit despite potentially causing NAAQS exceedances.

- Not decided on a case-by-case basis. Some states, including Texas, have made predeterminations for what constitutes BACT for certain sources. This is contrary to the case-by-case nature of BACT, which is meant to "force" new technologies and lower emission limits over time. As such, if you encounter BACT limits that are established broadly by an agency rather than in a source-specific, case-by-case analysis, you should determine whether lower limits have been achieved in practice and argue that those limits must be considered as BACT following EPA's top down method (and again, although Texas uses a different system, both EPA and TCEQ agree that whatever method is used it must ultimately produce the same result as EPA's top-down method).
- Good Combustion Practices, What Does That Mean? Many BACT determinations for furnaces and boilers utilize a combination of technologies (including multiple types of controls in some instances) and some form of "good combustion practices," or often just "good combustion practices" alone. Unfortunately, good combustion practices are rarely defined in a way that results in enforceable permit conditions that require such practices. Commenters should therefore emphasize that this is a vague and ambiguous "control" under BACT, and focus especially on what precise, enforceable permit conditions (and related monitoring provisions) are incorporated into the permit to ensure that the source actually does use good combustion practices. Note that sometimes permitting authorities tack on a "good combustion practices" requirement in addition to specifying an enforceable emission limit based on BACT. So long as the BACT limit is itself adequately justified and enforceable, the inclusion of an additional "good combustion practices" requirement as a backstop likely wouldn't contravene the BACT requirement, though it is still worthwhile to advocate for the permitting authority to make the good combustion practices requirement as clear and enforceable as possible.
- Greenhouse Gases (GHG) BACT. Most major NSR sources will also have to undergo GHG BACT. Universally with petrochemical plants surveyed for this guide, BACT for GHGs has been set as some form of good combustion or other vague operation or design practices. Industry will typically propose something like Carbon Capture and Sequestration (CCS) as an alternative and then dismiss it as not technically feasible, which, even if valid, does not excuse the applicant from evaluating other available means for reducing GHGs. Any steps that a facility can take to increase efficiency should be considered as part of GHG BACT. For example, many petrochemical plants usually use thermal oxidizers as control devices to reduce VOC emissions from certain processes. Thermal oxidizers are essentially large gas-fueled incinerators that burn off organic pollutants; they are conceptually similar in design to a gas grill—a simple box with gas burners. This system loses a significant amount of heat, and therefore energy, in heating the exhaust stream to necessary temperatures. Far more efficient incinerators exist in the form of regenerative and recuperative thermal oxidizers, which serve the same function but using vastly lower amounts of fuel (and therefore emitting far lower levels of GHGs).

More generally, the main flaws in GHG BACT determinations relate to specificity and enforceability. The vague "energy efficiency" improvements that facilities propose are generally not correlated with quantifiable reductions in GHG emissions, and likewise are not incorporated into permits as specific requirements. Advocates should push for discrete, measurable reductions in GHG emissions embodied in enforceable permit conditions.

Finally, advocates should note an important difference between a traditional BACT analysis and a GHG BACT analysis: while a traditional BACT analysis considers what constitutes BACT "for each emissions unit or pollutant-emitting activity at each emissions unit,"[117] it may be appropriate to select GHG BACT "on a facility-wide basis by taking into account operations and equipment which affect the environmental performance of the overall facility."[118] Thus, EPA "recommends that permitting authorities consider technologies or processes that not only maximize the energy efficiency of the individual emission units, but also process improvements that impact the facility's energy utilization."[119] Advocates should consider whether facility-wide process improvements at a petrochemical facility could serve to reduce the facility's GHG emissions.

ii. Failure to commence construction within 18 months

PSD regulations require that permits shall become invalid if construction does not commence within 18 months of issuance, and likewise if construction is discontinued for 18 months, or if construction is not completed within a reasonable time.[120] Note that "commencing" construction is a defined term that EPA has interpreted at length to set out what activities qualify as construction, including certain contractual obligations.[121]

The requirement that a permittee commence construction within 18 months of permit issuance is important because the control technology determinations and air quality impacts analyses conducted during the permitting process become outdated over time. Yet because many larger petrochemical plants are permitted in a speculative manner, it is common for facilities to fail to commence construction within 18 months of permit issuance.

Advocates should therefore watch for opportunities to intervene where a previously permitted source has failed to commence construction; for instance, sources may apply for permit modifications after the PSD permit has expired due to failing to commence construction, and advocates should argue that the source cannot modify an expired permit and must instead apply for a new permit. Worst case, advocates may need to consider filing a citizen suit, discussed in Section 8.B.10, in which advocates can seek to halt construction of a major source without a major NSR permit.

Finally, although sources may seek extensions, EPA has held that there are limits to how many extensions may be granted (usually a second extension is much harder obtain) and in what

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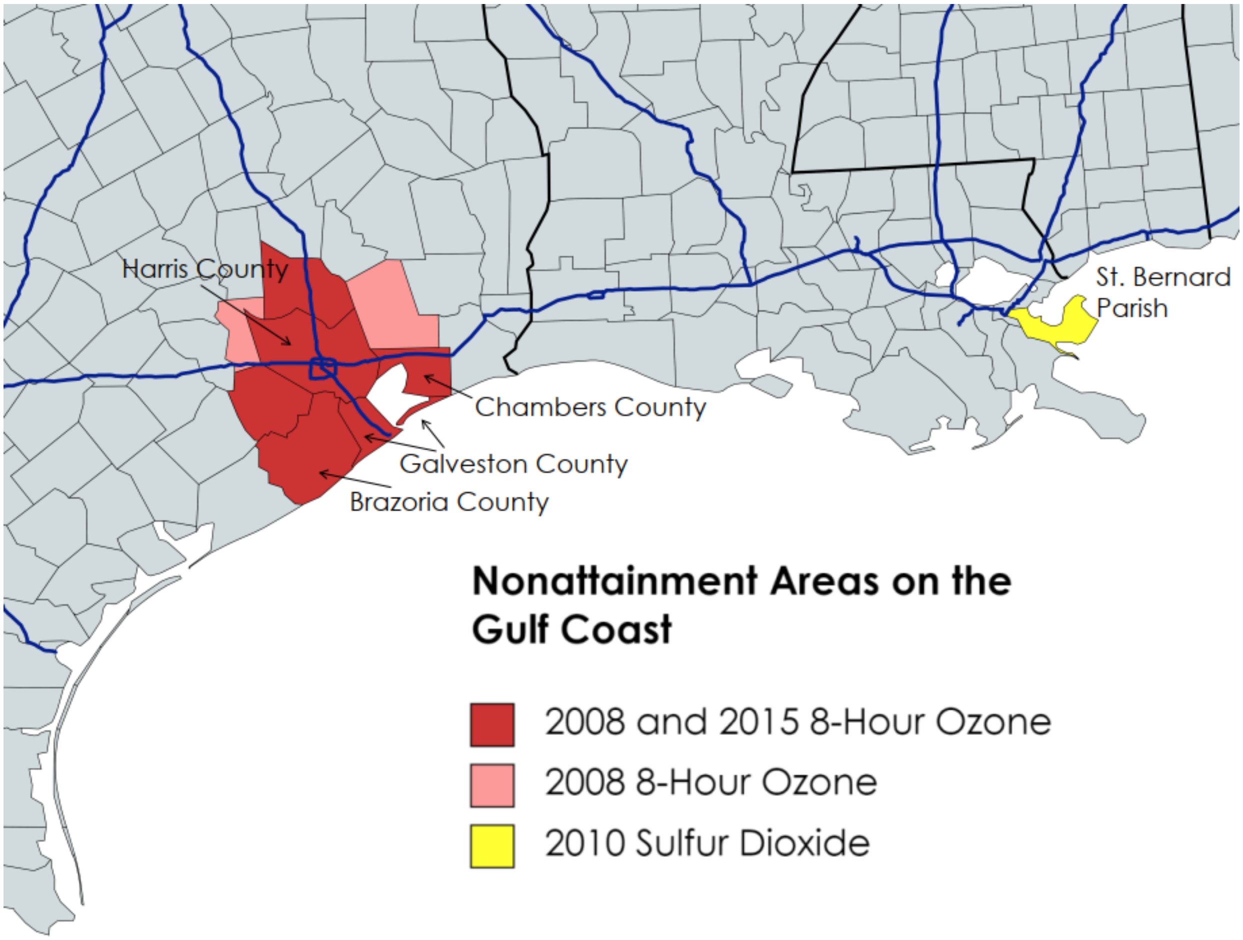
[117] EPA 1990 NSR Workshop Manual at B.4 (emphasis added).
[118] EPA, *PSD and Title V Permitting Guidance for Greenhouse Gases* (Mar. 2011) https://www.epa.gov/sites/default/files/2015-08/documents/ghgguid.pdf (emphasis added).
[119] EPA PSD GHG Guidance at 30.
[120] 40 C.F.R. § 52.21(r)(2), *see also* LAC 33:III.509.R.2 for a state equivalent.
[121] *See, e.g.,* EPA, Memorandum from Director, Division of Stationary Source Enforcement to David Kee, Chief Air Enforcement Branch, Region 5, addressing "'Commence Construction' under PSD" (July 1, 1978), https://www.epa.gov/sites/default/files/2015-07/documents/commence.pdf.

circumstances.[122] Note also that Texas has specific rules governing extensions, which can be found at 30 TAC § 116.120.



c. Nonattainment NSR requirements applicable in areas that are not achieving a federal ambient air quality standard.

If the area where a major NSR facility is to be located is in nonattainment for a pollutant or multiple pollutants, then the facility must comply with stricter nonattainment NSR (NNSR) requirements for that pollutant. Many of the same requirements set out above for PSD permits, i.e., attainment NSR, will apply in parallel. This section highlights the unique steps required for NNSR.

Most counties in the country are designated as either attainment or unclassifiable (i.e., no data) for all NAAQS, but several key areas relevant to petrochemical operations are listed as nonattainment. The map below shows nonattainment areas for the Gulf Coast as of September 2022, but note that if you are looking at a facility in other parts of the nation, especially California and the northeast, additional areas are designated as nonattainment.

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[122] *See* EPA, Guidance on Extension of Prevention of Significant Deterioration (PSD) Permits under 40 CFR 52.21(r)(2), at 5 (Jan. 31, 2014), https://www.epa.gov/sites/default/files/2015-07/documents/extend14.pdf.

If a new petrochemical facility is proposed to be located in one of the ozone nonattainment counties in Texas, the facility will need to undergo NNSR for VOCs and NOx, as these are the precursor pollutants to ozone formation. For other pollutants, a PSD review will be required. Likewise, any facilities in St. Bernard Parish in Louisiana would need to undergo NNSR for SO2.

i. Lowest Achievable Emission Rate

The lowest achievable emission rate (LAER) is defined as: "the more stringent [of]…

> (A) The most stringent emissions limitation which is contained in [any SIP] for such class or category …, unless the owner or operator … demonstrates that such limitations are not achievable; or
>
> (B) The most stringent emissions limitation which is achieved in practice by such class or category of stationary sources."[123]
>
> Unlike BACT, LAER does not involve consideration of economic, energy, or other environmental costs; in short, if a similar source has achieved a particular emission rate, that emission rate shall constitute LAER unless particularly exceptional circumstances apply.[124]

ii. Emission offsets

Another distinction between PSD and NNSR is that new major sources in nonattainment areas must offset their emissions increase of nonattainment pollutants by obtaining so-called "offsets." Offsets are actual reductions in emissions from existing sources within the area. Exactly what qualifies as "actual reductions" is complex, but the reduction must be enforceable, quantifiable, permanent, and approved by the permitting authority.[125]

At a minimum, all offsets must at least reduce the emissions of the relevant pollutants in a one-to-one ratio (i.e., if your source will emit 75 tons of a pollutant, some other source in the area must agree to reduce its emissions of that same pollutant by at least 75 tons). Most offsets require more, however, and the degree of offsets required depends on the pollutant and the severity of the nonattainment in the area.

All counties in Houston-Galveston-Brazoria ozone nonattainment[126] areas are designated "serious" nonattainment, meaning they will require an offset of at least 1.2 to 1 for both VOCs and NOx.

d. Enforceable BACT and LAER Limits.

BACT and LAER emission limits and standards must be enforceable, i.e., coupled with conditions designed to enable the public, EPA, and states to identify violations.

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[123] 40 C.F.R. § 51.165(a)(1)(xiii).
[124] In short, the only way out of using a given control technology in use by a similar source is if doing so would be so cost-prohibitive that no new major sources of the type could be built. If a source is attempting to dismiss a given LAER on economic grounds, advocates should learn more about LAER with EPA's Draft NSR Workshop Manual.
[125] *See* 40 C.F.R. Part 51, Appendix S.
[126] This is based on the 2008 8-Hour Ozone standard; most of the counties in the same area are also "marginal" nonattainment with the 2015 8-Hour Ozone standard as well, however the stricter offset requirement of the "serious" nonattainment with the 2008 standards controls. *See* TCEQ, Fact Sheet – PSD and Nonattainment (2019), 2, https://www.tceq.texas.gov/assets/public/permitting/air/factsheets/factsheet-psd-na-6241.pdf.

Specifically, the BACT or LAER limit (and the required technology to meet the limit) must be set forth in the permit. Further, EPA's draft 1990 NSR Workshop Manual states: "[I]t is best to express the emission limits in two different ways, with one value serving as an emissions cap (e.g., lbs/hr.) and the other ensuring continuous compliance at any operating capacity (e.g., lbs/MMBtu)."[127]

This includes evaluating whether all technology determinations and assumptions in any air quality analysis are included in the permit as enforceable conditions, e.g., type of fuel, hours of operation, and control efficiencies. If the model used an emission rate of, say, 15 lb/hr, the permit must include an emission limit no higher than 15 lb/hr. In general, the permit must define as clearly as possible what is expected of the source.

To be enforceable, BACT and LAER limits must also be accompanied by monitoring, recordkeeping, and reporting provisions sufficient to enable the public and regulators to determine whether sources are complying with permit limits and other conditions. Note that this is a separate requirement from Title V monitoring, recordkeeping, and reporting requirements, but many of the monitoring techniques may be the same. For a discussion on types of monitoring and the overlap with Tile V requirements, see Section 8.G.5.

e. Additional requirements as needed to assure that the facility will not cause or contribute to a NAAQS violation or exceed the available PSD increments.

If modeling shows that a facility as originally designed could cause or contribute to a NAAQS violation, the permit must include additional limitations and monitoring requirements over and above BACT that will prevent the NAAQS violation.[128]

At a minimum, all major NSR permits must include limits that constrain operations to those that were included in the NAAQS air dispersion impacts analysis (i.e., if the source modeled ambient air impacts assuming only one emergency engine would be operated at a time, that should be an enforceable permit limit). But where the modeling shows that a facility would cause near-exceedances, or potential exceedances, of the NAAQS, the permit should contain additional requirements that are protective of the NAAQS. For example, LDEQ implemented limits on how many engines (i.e., emergency engines, firewater pumps) may be operated simultaneously at the Magnolia LNG facility, as well as maximum operating times for high-emitting boiler operations.

Advocates should further address whether existing off-site monitoring is adequate to determine whether the NAAQS are exceeded. Typically, many counties or parishes may only have one or two air monitors (or none at all), so it is highly unlikely these monitors will be located in the right location to assess NAAQS compliance.

Unfortunately, PSD's legal requirements for post-construction ambient air monitoring are relatively vague.[129] Still, advocates should argue that such monitoring is necessary when a source's emissions could cause exceedances of the NAAQS. Specifically, the facility's air dispersion modelling will show the location of the highest concentrations of pollutants beyond its fence-line. If the modeled

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[127] EPA, Draft NSR Workshop Manual, at H.5.
[128] *See, e.g.,* 42 U.S.C. § 7475(a)(3) (facility may not construct without showing that its emissions will not cause or contribute to a NAAQS violation or an exceedance of the allowable PSD pollution increment).
[129] *See* 40 C.F.R. § 52.21(m)(2) (requiring a source to perform post-construction monitoring "as the Administrator [or permitting authority] determines is necessary").

concentrations come anywhere close to causing a NAAQS exceedance, advocates should argue that the facility must install and operate an air monitor as close to this location as possible to verify ongoing NAAQS compliance at that location.

Finally, in certain areas with heavy petrochemical and other industry activity, the county or parish may be designated attainment but modeling from numerous sources shows multiple and severe exceedances of the NAAQS. This is the case, for instance, in the Lake Charles area. In these instances, advocates should consider arguing that the county or parish should be redesignated as nonattainment (and potentially take up separate advocacy work outside of the facility-specific comments towards this end). Advocates can also argue that such facilities should be subject to non-attainment NSR rather than PSD.

9. Modifications

Although this guide focuses on new facilities rather than modifications, some significant new petrochemical units are built as modifications to existing facilities. As discussed above, existing (or permitted but not constructed) sources may request to modify their NSR permits. In general, modifications to major NSR sources are treated in a similar manner to a preconstruction permit (and, in fact, in many states, these modifications are also called preconstruction permits), in that PSD or NNSR must be conducted if certain thresholds are met. For sources that are already major and in attainment areas, the thresholds are set out below:

- Carbon monoxide: 100 tons per year (tpy)
- Nitrogen oxides: 40 tpy
- Sulfur dioxide: 40 tpy
- Particulate matter: 25 tpy of total particulate matter emissions, 15 tpy of PM10[130]emissions, 10 tpy of PM2.5 emissions; 40 tpy of sulfur dioxide emissions (as a precursor to PM2.5); 40 tpy of nitrogen oxide emissions unless demonstrated not to be a PM2.5 precursor
- Ozone: 40 tpy of volatile organic compounds or nitrogen oxides
- Lead: 0.6 tpy
- Fluorides: 3 tpy
- Sulfuric acid mist: 7 tpy
- Hydrogen sulfide (H2S): 10 tpy
- Total reduced sulfur (including H2S): 10 tpy
- Reduced sulfur compounds (including H2S): 10 tpy

The thresholds for a modification to trigger nonattainment NSR are generally the same as the PSD thresholds—except that lower thresholds apply in serious, severe, and extreme nonattainment areas.[131]

[130] PM_{10} refers to particulate matter 10 microns or smaller in diameter. $PM_{2.5}$ refers to particles 2.5 microns or smaller in diameter.
[131] *See* 40 C.F.R. § 51.165(a)(1)(x).

Finally, as mentioned above with respect to PSD, there are myriad ways for a facility to escape having its modification be classified as "major" even if the planned modification appears to result in an NNSR-triggering emissions increase—see more above at Section B.1. The rules governing how to calculate whether a facility modification is subject to NSR are complex and beyond the scope of this guide. Advocates who believe that a facility modification has been improperly excluded from major NSR are strongly encouraged to consult with an experienced Clean Air Act attorney.

10. What are my legal options if the permitting authority rejects my comments on a draft major NSR permit?

If you have identified a defective major NSR permit and raised those issues in public comments, what are your options if the permitting agency rejects your comments? In most states, advocates can challenge a defective major NSR permit in an administrative proceeding established under state law (usually found in a state's version of the Administrative Procedures Act). Often called a "contested case hearing" or similar, the proceeding resembles a civil trial in state court, complete with witnesses, discovery, and pre-trial motions, and is held before an administrative law judge (ALJ). In some states, there may be multiple levels of challenging a permit, for instance an initial contested case hearing before an ALJ, who then makes a recommendation to the director of the agency, and then advocates can move to appeal the director's decision; finally, state court is usually the final step if all prior options have been exhausted.

Advocates are strongly urged to find an experienced lawyer to bring the case, but a few things to know:

- Typically, there is a firm deadline to file an administrative appeal, perhaps 30 days after final permit issuance, **but it may be sooner**. <u>In fact, as discussed below, in Texas a request for a contested case hearing must be filed even before TCEQ issues a final permit. Thus, an advocate who wishes to mount a legal challenge to a major NSR permit must line up legal representation early in the permit review process</u>;
- Requests for an appeal must be in writing and contain a certain amount of information (see below for Texas' example);
- The legal issues that form the basis of the challenge must have been made with some specificity in public comments, unless the basis for the challenge arises after the public comment period or could not have been known to advocates during the public comment period;
- Advocates typically must have legal standing to bring a permit challenge. Standing is the concept that someone bringing the challenge must actually be impacted or potentially impacted by the proposed facility. This usually means individuals who live, work, or recreate near the facility and are concerned about the impacts to air quality;
- Usually, the challenge should be brought by a membership organization focused on the environment that represents the interests of the individuals harmed by the new facility. The organization will then have standing via its members, who spend time near the facility.

<u>Challenging Major NSR Permits in Texas.</u> Challenging air permits in Texas is complex compared to other states. Fortunately, the University of Texas Law School Environmental Clinic has recently published an excellent guide that covers this issue (and public participation in Texas more broadly) in

great depth and is available online for free.[132] As such, this guide will only briefly describe the main avenues to appeal a defective permit. Note that, in general, these administrative procedures must be followed before an advocate can challenge a permit decision in court.

If the permit is issued by TCEQ's Executive Director, the following challenges are applicable:

- **Request for a Contested Case Hearing:** this is the first opportunity to challenge, but the request must be made in writing within **30 days of the issuance of the Notice of Application and Preliminary Decision**. Unfortunately, this means advocates must decide to request a Contested Case Hearing before the agency has considered and responded to public comments. A Contested Case Hearing is an administrative appeal like those described above and is held before an ALJ with the State Office of Administrative Hearings.
- **Request for Reconsideration:** this is a request seeking for the TCEQ Commission to reconsider a final permitting action, and therefore must be made within 30 days of the "decision letter" announcing the agency's decision to issue or deny the permit (i.e., after considering public notice and comment and the result of any Contested Case Hearing).
- **Motion to Overturn:** is similar to a Request for Reconsideration but is only available if no request for a contested case hearing or request for reconsideration has been made (or if the request was rejected). The motion must be made within 23 days of the mailing date of a notice of signed permit.

If a permit is instead issued by the Commission itself, the only administrative appeal is a **Motion for Rehearing**, which must be made within 25 days of the date the Commission's decision is signed. See the University of Texas Law School Environmental Clinic's guide for more information.[133]

<u>Challenging Major NSR Permits in Louisiana.</u> Louisiana is somewhat unique in that it does not provide for administrative appeals of final air permits. Instead, the sole remedy is to bring suit in state court. The state court will then act as fact-finder and ultimately decide whether LDEQ has issued the permit in accordance with state law, in particular, the state's Administrative Procedure Act.[134] Issues to note:

- The court will generally only evaluate evidence that is part of the administrative record, therefore if you think you might need to challenge an air permit, it is vital that your public comments are as thorough and detailed as possible;
- Advocates must file suit within 30 days of the notification of final permit action;[135]
- The suit must be filed in the Nineteenth Judicial Circuit Court for the parish of East Baton Rouge (this is true regardless of the facility's location).[136]

Citizen Suits: the foregoing legal challenges address appealing a *permit*, but advocates should be aware that the Act also allows advocates to bring a "citizen suit" against a company in federal court for Clean Air Act violations. While citizen suits are often thought of as tools for enforcing violations at

[132] University of Texas Law School Environmental Clinic, *Texas Environmental Public Participation Guide* (2017), https://law.utexas.edu/wp-content/uploads/sites/11/2019/01/2017-EC-EnviroPublicParticipationGuide.pdf.
[133] *Id.* at 10.
[134] La. R.S. § 30:2050.21(F).
[135] La. R.S. § 30:2050.21(A).
[136] La. R.S. § 30:2050.21(A).

existing plants, the Act also allows citizens to sue for constructing a major NSR source without an NSR permit.[137] For example, if a facility's PSD permit has expired because construction did not commence within 18 months of issuance, but the company starts construction, a citizen suit could be brought against the company.

11. What authority does EPA have to prevent a state with a SIP-approved major NSR permit program from issuing a legally deficient major NSR permit?

The Clean Air Act provides EPA with authority to stop construction of a facility that is not complying with NSR, even under circumstances where a state has approved the construction pursuant to an EPA-approved state NSR program. Specifically, Clean Air Act § 113(a)(5) provides that whenever EPA "finds that a State is not acting in compliance with any requirement or prohibition of [the Act] relating to the construction of new sources or modification of existing sources," EPA may "issue an order prohibiting the construction or modification of any major stationary source in any area to which such requirement applies."[138] Also, specific to Prevention of Significant Deterioration permitting, Clean Air Act § 167 requires EPA to "take such measures, including issuance of an order, or seeking injunctive relief, as necessary to prevent the construction or modification of a major emitting facility which does not conform to the [PSD] requirements."[139]

EPA almost never exercises its statutory authority to block a facility's construction due to a state's issuance of a defective major NSR permit.[140] However, the possibility that EPA *might* exercise this authority means that states usually listen to whatever feedback EPA gives them regarding major NSR permit applications and draft permits and try to resolve EPA's concerns prior to final permit issuance. ***Thus, advocates should consider seeking to persuade EPA to raise concerns with the state permitting authority and the applicant early in the permitting process.***

The Clean Air Act includes specific procedures designed to facilitate EPA's oversight of state major NSR permit programs. First, the statute declares: "Each State shall transmit to the Administrator a copy of each permit application relating to a major emitting facility received by such State and provide notice to the Administrator of every action related to the consideration of such permit."[141] Second, before issuing an individual permit, a state permitting agency must provide an opportunity for all "interested persons," including "representatives of the [EPA] Administrator" to submit comments to the state on the draft permit.[142]

Regional EPA offices vary tremendously in the extent to which they participate in major NSR permitting for sources located in areas where state, local, or tribal agencies have federal approval to administer air permitting requirements. For example, EPA Region 4, which oversees Clean Air Act implementation in Florida, Georgia, North Carolina, South Carolina, Tennessee, Alabama, Kentucky, and Mississippi, participates in nearly every major NSR permit proceeding for a proposed new facility in that region. First, EPA's Region 4 air pollution modeling experts review the applicant's proposed

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[137] 42 USC §7604(a)(3).
[138] 42 U.S.C. § 7413(a)(5)(A).
[139] 42 U.S.C. § 7477.
[140] One prominent example in which EPA used this authority resulted in litigation that reached the U.S. Supreme Court. In *Alaska Dep't of Envtl. Conserv. v. EPA*, 540 U.S. 461 (2004), the Supreme Court affirmed EPA's orders prohibiting the Alaska environmental permitting agency from issuing a defective PSD permit and prohibiting the permittee from commencing construction under that permit.
[141] 42 U.S.C. § 7475(d).
[142] 42 U.S.C. 7475(a)(2).

modeling protocol and identify what improvements or changes need to be made. Second, Region 4 staff review each permit application when it arrives at the agency and give feedback to the state (and sometimes directly to the applicant) regarding additional information needed to complete the application. In addition, Region 4's modeling experts often re-run the models provided by the applicant to verify the modeling outcomes reported in the permit application. Third, as per an agreement between EPA and most Region 4 states, the permitting agencies provide EPA with an opportunity to review and give informal feedback on draft permits before they are released for the formal public comment period. If the state does not address EPA's feedback before releasing the draft permit for public comment (or if the state fails to provide EPA with an opportunity to comment prior to the start of the comment period), EPA will submit formal comments to the state permitting agency during the comment period, and these comments become part of the administrative record for the permitting action.

At present, in marked contrast to EPA Region 4's heavy involvement in reviewing state major NSR permits prior to their issuance, EPA Region 6, which oversees major NSR permitting in Texas, Louisiana, Arkansas, New Mexico, Oklahoma, and 66 Tribal Nations, reports that it rarely reviews major NSR applications or draft permits for sources proposing to locate in the region. Instead, Region 6 focuses its oversight efforts on periodic evaluations of each state's implementation of Clean Air Act permitting programs. While many petrochemical facilities are likely to be located within the boundaries of EPA Region 6, the fact that Region 6 does not typically get involved in individual major NSR permit proceedings does not mean that EPA cannot get involved. Rather, it just means that you need to devote more resources toward persuading Region 6 that its involvement is necessary.

As an initial matter, even before an application is filed with the state and EPA, you should consider meeting with regional EPA staff to discuss your concerns and request that EPA review the application and modeling protocol when it is submitted. Note that a major NSR permit applicant typically submits its modeling protocol to government authorities well before submitting its permit application, because the permit application must include the actual modeling results. In fact, most, if not all, state permitting authorities require an applicant to provide them with a proposed modeling protocol early in the application process. If you discover that an applicant has submitted a modeling protocol to the state permitting authority, you could request that EPA review the protocol. If the relevant EPA regional office does not have anyone available to review the modeling protocol, you could suggest that the Region to ask for assistance from the Region 4 modeling section, which sometimes reviews modeling protocols for other regions. In addition, if you can enlist your own modeler to review the protocol, you could meet with EPA to discuss any flaws that you uncover and, if EPA agrees with your assessment, request that EPA send a letter to the state and the applicant detailing those flaws. If you get involved early in the process, you are more likely to be able to persuade EPA to insist upon the source performing more extensive modeling of the source's anticipated air quality impacts. Such modeling could uncover problems that make it less likely that the project will move forward.

Likewise, EPA's early involvement in reviewing and identifying deficiencies in an applicant's permit application could also be helpful. Sometimes, a project's funders tie their investment to the applicant meeting certain milestones, such as submitting a complete permit application. That might cause an applicant to apply for its permit before it has all of the necessary details so as to signal to funders that the project is moving forward. Persuading EPA to weigh in with the state regarding aspects of the application that are deficient could result in the state determining that the application is incomplete, perhaps casting doubt amongst funders as to the project's viability and slowing its progress.

Persuading EPA to weigh in on deficiencies in the draft permit also can be very valuable, especially if EPA's comments are in writing and placed in the permit record. If the state fails to correct the deficiencies identified by EPA, you could use EPA's objections to support your own challenge. Be aware that when EPA provides feedback to a state on a draft major NSR permit, it often provides that feedback on a "pre-draft" version of the permit before the draft permit is released for public comment. Furthermore, EPA often provides its comments via a telephone call with state permitting staff rather than in writing. If you can persuade EPA to provide its comments in writing, you could obtain those comments and place them in the permitting record yourself if EPA does not do so. Ideally, if the state has not addressed EPA's concerns by the time it releases a draft permit for public comment, EPA will file formal comments with the state agency during the comment period. Those comments would then be included in the administrative record for the permitting action and could be used in any subsequent challenge to the permit.

Finally, if you have a strong argument that a major NSR permit issued by a state agency does not comply with federal requirements, you can try to persuade EPA to use its statutory authority to block construction of the facility pursuant to the deficient permit. As noted above, EPA rarely exercises this authority, and if EPA did not at least send in comments to the state during the public comment period identifying the alleged permit deficiencies, the likelihood of EPA blocking a facility's construction is pretty much zero. But if EPA did identify deficiencies and the state failed to correct them, it is worth advocating for EPA to issue an order prohibiting the source's construction.

12. Challenging Major NSR Permits in "Delegated" States

Most states implement major NSR permitting pursuant to their EPA-approved state implementation plans, which provide avenues for challenging major NSR permits at the state level as described above. A few states, however, have opted instead to issue major NSR permits pursuant to EPA's delegated authority.[143] In these states, the state agency issues permits as if the agency is standing in the shoes of EPA. Delegated-authority states that may have petrochemical facilities are Connecticut, Maryland, Massachusetts, New Jersey, and Washington (but, in Washington, only the GHG portion of PSD permits are issued under delegated authority).

Challenging a major NSR permit issued by a state pursuant to federally delegated authority is different than challenging a permit issued by a state operating its own federally approved NSR program; the key difference is that administrative challenges to a permit issued pursuant to federally delegated authority are heard by EPA's Environmental Appeals Board, and judicial appeals are heard in federal district court. Though it is possible to pursue an administrative challenge before the Environmental Appeals Board without an attorney, advocates are strongly encouraged to at least consult with an environmental attorney before pursuing such a challenge.

D. Minor NSR Permits (Including Synthetic Minor Permits)

New facilities (or modifications of existing facilities) with emissions that will not exceed the major NSR threshold generally still need to obtain a preconstruction permit under a state's minor NSR

[143] *See* 40 C.F.R. § 52.21(u).

permit program. This will be true for all of the petrochemical plants discussed in this guide (other than major sources, of course). Unfortunately, the statute and EPA's regulations are sparse on what is required in minor NSR permit programs, and permits and requirements therefore vary from state to state.

It may be helpful at this point to revisit the minor vs. synthetic minor distinction. Generally speaking, a minor source, sometimes called a "true" minor source, is a facility whose potential maximum emissions will not exceed the major source threshold even if it operates at full capacity, perhaps 24 hours a day, 365 days per year. A synthetic minor source, meanwhile, is a facility that would be a major source if it operated at full capacity, but has accepted enforceable operating limits that reduce the facility's potential emissions to below the major source threshold. Both types of permits are covered in this section as most procedures and requirements are similar.

1. How will I know when a proposed facility has applied for a minor NSR permit?

Unfortunately, in most states, there is no public notice required when a new source applies for a minor NSR permit. See the section above as to major NSR applications for tips on how to track new applications as the methods are largely the same.

2. Will I be able to comment on a draft minor NSR permit?

Although federal regulations require public notice and comment on all minor NSR permits,[144] in practice some states do not allow for public notice and comment on any minor NSR permits, or perhaps only certain types of minor NSR permits.

Even where a state does not allow for public notice and comment on draft NSR permits, it is still worth requesting notice and comment in writing with the permitting authority and likewise raising any potential issues as though you were submitting formal comments.

Public notice and comment on minor NSR permits in Texas. Texas does provide public notice and an opportunity for comment on most minor NSR permits, with exceptions for certain administrative amendments or minor permit modifications. The public notice locations and relevant mailing lists are the same as those listed above for major NSR permits.

Public notice and comment on minor NSR permits in Louisiana. If a proposed facility is a major source for purposes of the Clean Air Act's Title V operating permit program but a minor source for NSR (because, in some circumstances, the Title V applicability threshold is lower than the major NSR threshold), Louisiana requires public notice and comment under its Title V rules.[145] This is because Louisiana issues joint pre-construction and Title V permits (if a facility qualifies for Title V). Most of the petrochemical plants covered by this guide will likely be a major source for Title V, so this should cover most petrochemical facilities. If a source will be minor for both NSR and Title V, then public notice and comment will be provided only at the discretion of LDEQ.[146]

The public notice locations and relevant mailing lists are the same as those listed above for major NSR permits.

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[144] 40 C.F.R. § 51.161.
[145] 33 LAC:III:531(A)(2).
[146] 33 LAC:III:531(A)(1).

3. What issues should I look for in minor and synthetic minor NSR permits?

With all minor NSR permits, the biggest question is whether they are truly minor sources, and this is especially relevant with synthetic minor sources that would otherwise be major sources but have permit limits that purport to reduce potential emissions to below the major source threshold.

a. Underestimating Potential to Emit Calculations

Major source applicability (for NSR, Title V, and NESHAP) depends on the facility's estimated "potential to emit" (PTE). As courts have explained, "PTE is not to be confused with actual emissions, which may be significantly lower."[147] Stated more plainly, PTE is a "worst case emissions calculation."[148] Note, however, that PTE calculations will take into account control technology that the facility is required to use as well as other enforceable production or operation limits.

For example, if an ethane cracking plant is designed to produce 1,000,000 pounds of ethylene per year, but anticipates it will only produce 800,000 pounds, PTE must be calculated based on 1,000,000 pounds unless the permit has an enforceable synthetic minor limit that restricts processing to 800,000 pounds. Synthetic minor limits are discussed in the next section.

Beyond ensuring that PTE is based on the maximum operational and design parameters of the facility, the primary concern when reviewing PTE calculations is whether or not the facility has underestimated its PTE. There are two ways petrochemical plants might underestimate emissions: using underestimated emission rates, usually in the form of emission factors, and assuming overly optimistic destruction efficiencies for pollution controls.

<u>Bad Emission Factors:</u> PTE calculations are usually made using emission factors, and it is important to ensure those emission factors (discussed below in Section I.2) are representative of worst-case emissions. For instance, if AP-42 (again, discussed below) emission factors are used (which is common in the petrochemical industry), this is by default not a "worst case" calculation since the emission factor is based on an average of measured emission rates; roughly half of tested sources emitted more than the AP-42 emission factor.

One way to conceptualize PTE calculations is sort of a reverse BACT determination: what is the worst-emitting similar source? That should be the basis of emission factors within the PTE calculations unless the source can justify something unique about its operations that will reduce potential emissions.

<u>Overly Optimistic Destruction Efficiency (especially for flares):</u> One significant source of underestimated PTE calculations that may be found at petrochemical plants are flares. The issue here is the assumed destruction efficiency of the flare, i.e., to what degree are the pollutants in the gas stream destroyed by the combustion of the flare? Facilities and states often assume very high destruction efficiencies, perhaps 98 or 99%, but even marginally lower destruction efficiencies can have profound impacts on emissions. For instance, if a flare with an assumed destruction efficiency of 99% emits 10 tons of VOCs per year, that same flare with an actual destruction efficiency of 95% will instead emit 50 tons of VOCs!

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[147] *Voigt v. Coyote Creek Mining Co., LLC*, No. 1:15-cv-00109, 2018 U.S. Dist. LEXIS 111913, at *84 (D.N.D. July 3, 2018).
[148] *In re Peabody Western Coal Co.*, 12 E.A.D. 22, 37 (E.P.A. February 18, 2005).

Moreover, a recent scientific study has presented credible evidence that destruction efficiencies for flares are indeed frequently overestimated in a major way.[149] The study measured methane emissions from gas processing plants and other natural gas operations and found that destruction efficiencies averaged around 91% despite most assuming a destruction efficiency of 98%. For more on this topic, see the Affidavit of Dr. Ranajit Sahu, attached to Sierra Club's 2021 comments on the draft permit for Magnolia LNG.[150] Although those comments pertained to flares at an LNG facility, all of Dr. Sahu's arguments are likely applicable to flares at petrochemical plants.

b. Synthetic Minor Limits

If a source's PTE exceeds the major source threshold, the source may opt to utilize controls and/or take limits on the operating or production rates or parameters of the facility that reduce PTE to below the major source threshold. These are synthetic minor limits. Synthetic minor limits may only be considered valid and as part of the PTE calculation if they are "enforceable as a practical matter;" as EPA has consistently explained, a limit intended to restrict PTE "can be relied upon . . . only if it is legally and practicably enforceable."[151] EPA has further explained practical enforceability as such:

> In order to be considered practically enforceable, an emissions limit must be accompanied by terms and conditions that require a source to effectively constrain its operations so as to not exceed the relevant emissions threshold. **These terms and conditions must also be sufficient** to enable regulators and citizens to determine whether the limit has been exceeded and, if so, to take appropriate enforcement action.[152]

In short, a synthetic minor limit is only valid if it will actually constrain emissions to below the major source threshold. Note that the limit should usually constrain actual operations, not simply emissions; for instance, a limit that simply says NOx emissions shall not exceed 249 tpy (just below the default major source threshold) has been held inadequate unless the facility uses continuous emissions monitoring systems (CEMS, discussed in Section 8.G.5.a). Thus, in most instances, the synthetic minor limit should look something like a limit on the hours of operations or the production rate, and must be accompanied by monitoring, recordkeeping, and reporting requirements to enforceable.

c. General Permits

General permits are a broad category of permits implemented by states that usually apply to common and relatively lower-emitting sources, perhaps one to five tons of emissions of criteria pollutants per year at most. They vary somewhat from state to state, but the general idea is that state agencies will develop rules setting forth the requirements for what may qualify for a general permit. Applicants often need only send the agency a notification that they intend to construct and/or operate small sources of emissions pursuant to a general permit and do not need to wait for approval (and indeed, approval may not even be required). General permits will not involve public notice and comment (other than when a state promulgates the rules for the permit).

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[149] Plant, Genevieve, *et al.*, "Inefficient and Unlit Natural Gas Flares Both Emit Large Quantities of Methane," *Science* (Sep. 29, 2022), https://www.science.org/doi/10.1126/science.abq0385.
[150] Appendix 7, at 13.
[151] *In the Matter of Kentucky Syngas, LLC*, Order on Petition No. IV-2010-9, at 30 (E.P.A. June 22, 2013), https://www.epa.gov/sites/production/files/2015-08/documents/kentuckysyngas_response2010.pdf.
[152] *In the Matter of Orange Recycling & Ethanol Prod. Facility, Pencor-Masada Oxynol, llc.*, Order on Petition No. II-2001-05, at 7 (E.P.A. Apr. 8, 2002), https://www.epa.gov/sites/production/files/2015-08/documents/masada-2_decision2001.pdf; *see also In re Piedmont Green Power, LLC*, Order on Petition No. IV-2015-2 (Dec. 13, 2016), at 14.

Although petrochemical facilities may occasionally contain units that qualify for coverage under general permits, essentially all of the facilities covered by this guide will need an NSR permit to construct (either a major, minor, or synthetic minor). As such, challenging general permits will not typically be a fruitful avenue to pursue for advocates, but advocates should be on the lookout for any particularly large source of emissions (roughly 5 tpy or greater) that is being permitted under a general permit.

One critical note, however, is that even if a source at a petrochemical facility is covered by a general permit, the source's emissions must still be included in the overall facility's PTE calculations.

4. How can I challenge a deficient minor NSR permit if my comments are ignored?

Generally, most states allow for administrative appeals on minor NSR permits under the same general provisions set out above for major NSR permit challenges. This is true for both Louisiana and Texas, and advocates should refer to the major NSR permit challenge section above.

Insofar as your concerns pertain to enforceability or inadequate monitoring, you likely can also raise these concerns through the Title V operating permit process, as described in more detail below. As mentioned previously, Louisiana issues a facility's minor NSR permit in tandem with its Title V operating permit, so you will have an opportunity to challenge the facility's Title V operating permit prior to the facility's construction. In most states, including Texas, however, a facility need not apply for a Title V operating permit until after construction. Thus, such a challenge is not part of a strategy to prevent the facility's initial construction.

E. Hazardous Air Pollutants and Air Toxics

The Clean Air Act's NAAQS and major NSR programs seek to protect and improve air quality from the most common pollutants that cause poor air quality like smog and haze. But what about other air pollutants that are toxic or carcinogenic even in small quantities, such as benzene and formaldehyde? This is where regulations on hazardous air pollutants (HAPs) come into play, which are also sometimes referred to as air toxics. HAPs are regulated under the Clean Air Act and consist of 184 pollutants designated by Congress.[153] Pursuant to Clean Air Act § 112, EPA promulgated federal HAP regulations known as the National Emission Standards for Hazardous Air Pollutants (NESHAP). These standards apply directly to sources in specified source categories and are included by some states in construction permits (including typically both Louisiana and Texas). States often also have their own state-law standards that apply to many of the pollutants on the federal HAP list, as well as some that aren't on the federal list. State programs usually call these pollutants "toxic" pollutants or "air toxics."

1. National Emission Standards for Hazardous Air Pollutants

NESHAP is a set of federal standards promulgated by EPA that govern minimum emission and operating standards, as well as monitoring, recordkeeping, and reporting requirements, for particular types of emission sources that emit HAPs. For instance, many petrochemical plants operate boilers that are subject to NESHAP Subpart DDDDD. Such technology standards are referred to as "Maximum Achievable Control Technology" (MACT) standards; unlike BACT standards, however,

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[153] Congress initially listed 188 pollutants as HAPs and gave EPA authority to add or remove pollutants from the list. To date, EPA has only added one HAP and has removed five. The current list is available at: https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications.

these control determinations are established by EPA in rulemaking rather than on a case-by-case basis, except in certain unique situations.[154]

Like NSR and Title V, sources are divided between major and "area" sources (the term "area is often used interchangeably with "minor," but with HAPs, the technical term is "area"), and applicability is determined in a similar manner based on PTE. Major sources are those facilities that have the potential to emit more than 25 tpy of all HAPs in the aggregate, or any single HAP in rates greater than 10 tpy.[155] For example, a source is major if it emits a HAP such as formaldehyde in rates equal to or greater than 10 tpy, or if all of the HAPs emitted by the facility are equal to or greater than 25 tpy.

The key question advocates should consider with regard to NESHAP is whether the facility is properly designated as either a major or area (or has enforceable synthetic minor limits, discussed above). Although there are some standards applicable to certain units at area sources, in many instances there is either no area source standard or if there is, it is less stringent. With regard to petrochemical facilities, for example, gas-fired boilers at major source facilities are subject to the NESHAP standards at 40 C.F.R. 63 Subpart DDDDD, but if the facility is an area source, an identical boiler would be subject to the lest stringent standards of Subpart JJJJJJ. Note that the applicability determination is based on the entire facility's HAP PTE, not the individual units subject to NESHAP.

In practice, all of the larger facilities covered by this guide—ethane crackers, methanol plants, and plastic resin manufacturing plants—will easily qualify as major sources of HAPs. Gas processing plants and NGL fractionating plants, meanwhile, may have low enough emissions to qualify as minor or synthetic minor facilities, but advocates should thoroughly review any such determination. Generally, seeking the advice of an expert reviewer is the best course of action, but the following is a brief checklist for advocates to use to assess the emission estimates:

- Are all relevant pollutants accounted for? There are 184 HAPs to consider, and while most of these are not emitted in significant quantities by petrochemical facilities, all HAPs that are emitted must be included in calculating PTE. It is not uncommon for applicants to omit pollutants that are emitted in relatively low quantities, but if the facility is estimated to emit close to the major source threshold, these additional emissions can mean the facility is really a major source.
- Are fugitive emission sources included? All fugitive emissions must be included;[156]
- What does the facility's VOC emissions look like? Most of the HAPs emitted by petrochemical plants are also VOCs, thus a facility with a high emission rate of VOCs but a low emission rate of HAPs may be a red flag.
- Are emissions from planned startup, shutdown, maintenance included? A facility's PTE calculation must be based on the worst-case scenario and include emissions that can occur

[154] For major sources of HAPs that are not subject to a NESHAP standard, permitting agencies must require MACT-level emission control technology on a case-by-case basis. *See* 42 U.S.C. § 112(g)(2)(b). And unlike BACT, there are no exceptions for economic, environmental, or other considerations; if a control technology has been implemented at a similar source and is technically feasible, it *must* be required as MACT.
[155] 42 U.S.C. § 7412(a)(1).
[156] Unlike certain major NSR applicability determinations that exempt fugitive emissions, the major source definition under NESHAP does not contain any such carve-out and fugitive emissions must be included. 42 U.S.C. § 7412(a)(1).

during all operational modes.[157] It is not uncommon that a source will improperly exclude emissions associated with anticipated startup, shutdown, and maintenance activities, which can be substantial.[158] Notably, in combustion sources like turbines, when the source is starting up or shutting down and the combustion level is low, most HAP emissions actually increase. This is because many HAPs are destroyed by incineration and proper combustion, so lower levels of combustion or temperature tends to increase emissions (especially of organic HAPs such as formaldehyde) as less of the HAPs are destroyed.

- Are destruction efficiency estimates for control technology appropriate? Destruction efficiency is the rate at which a control technology destroys pollutants, and it is often factored into an applicant's emission estimates. If an applicant claims that a flare (which are particularly finicky control devices) will destroy 99% of all emissions, but in reality it will only destroy 98%, that will actually mean that emissions double; if the flare instead only achieves 95% destruction, emissions will be five times–or 400%–higher than the applicant claims. As such, claims associated with destruction efficiencies should be well-supported. See Section 8.I.4 for more information on control technology.
- Are the emission factors reliable? See Section 8.I.2 for a discussion on emission factors.
- If the facility is seeking synthetic minor limits, are they enforceable? See Section 8.C.3.ii for more information on synthetic minor limits.

NESHAPs applicable at petrochemical facilities: Given the wide breadth of facilities covered by this guide, not all of the potentially applicable NESHAP standards are listed, but below is a summary of the most commonly-applicable standards:

- Subpart A: General Provisions. This will apply to any source that triggers one of the following subparts.
- Subparts HH and HHH: these subparts cover oil and natural gas production facilities and natural gas transmission and storage facilities, respectively, and are applicable to gas processing plants.
- Subparts UU, YY, and FFFF: these subparts cover leak detection and repair to minimize fugitive emissions of VOCs, many of which are also HAPs.
- Subpart XX: Applies specifically to ethylene manufacturing and regulates heat exchange systems and waste operations.
- Subpart YYYY: Stationary Combustion Turbines. This subpart establishes minimum operating requirements for combustion turbines that may be present to provide steam and heat at larger petrochemical plants and establishes an emission limit for formaldehyde (91 ppb), along with source testing requirements. Note that this will only apply to turbines located at major sources of HAPs; there is no NESHAP standard for turbines located at area sources.

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[157] EPA, Accounting for Emergency Generators in the Estimate of Potential to Emit, at 2 (Feb. 14, 2006), https://www.epa.gov/sites/default/files/2015-07/documents/generator.pdf ("to determine PTE, a source must estimate its emissions based on the worst-case scenario taking into account startups, shutdowns and malfunctions.").

[158] After a facility is constructed and operating, all of its emissions, including those that occur during malfunction, must be counted when determining whether a facility operates in compliance with a PTE limit. Since malfunctions are unplanned, however, state policies vary regarding whether and the extent to which malfunction emissions must be included in a facility's preconstruction PTE calculation.

- Subpart ZZZZ: Reciprocating Internal Combustion Engines. This subpart will cover stationary reciprocating internal combustion engines—in short, all of the stationary diesel or gasoline engines at the facility, such as emergency engines, generators, and firewater pumps.
- Subpart EEEE: Organic Liquids Distribution (Non-Gasoline). This subpart establishes standards applicable to the storage, transfer, blending, and other handling operations of organic liquids. Here, that includes almost all of the chemicals stored and processed by petrochemical facilities.
- Subpart DDDDD: Industrial, Commercial, and Institutional Boilers and Process Heaters. This subpart covers boilers **and other process heaters that generate steam** located at a major source of HAPs. Thus, while the name of the subpart implies only boilers are included, other units like furnaces at cracking facilities are also covered. Boilers at area sources are covered by Subpart JJJJJJ.
- If the facility handles significant quantities of gasoline, it may also be subject to Subparts R, BBBBBB, and CCCCCC.

Generally, applicants will list which subparts it believes are applicable in the "Regulatory Applicability" portion of the application. Advocates should watch for any instances where an applicant argues that a certain subpart does not apply and the reasons stated.

2. State Air Toxics Requirements

Prior to the Clean Air Act Amendments of 1990, EPA did little to regulate most of the pollutants listed as HAPs. As a result, states often implemented their own regulatory framework for many of these same pollutants (and others that are still today not listed as HAPs), usually referred to as Toxic Air Pollutants. These programs continue to exist today in many states. Because they are state creations, they vary somewhat (and some states have no air toxics regulations), and importantly they are "state-only" requirements, meaning EPA has no oversight or enforcement authority, and the public is usually also cut off from enforcement. That said, they are still usually open to comments when permits are out for public notice and comment.

In general, most state air toxics programs establish health-based ambient air concentration thresholds for each air toxic based on its toxicity, then require that a new or modified source quantify their emissions of listed air toxics and conduct air dispersion modeling to see whether the source's emissions will cause exceedances of the health-based thresholds.

Many of the same issues related to PSD modeling discussed above are relevant for reviewing these air toxics modeling reports. For instance, are reported concentrations close to the threshold? If so, advocates should consult an expert in air dispersion modeling.

<u>Texas Air Toxics</u>

In Texas, air toxics impacts must be assessed for any new or modified source that will emit new or increased levels of air toxics, unless certain exceptions apply. The list of air toxics is defined as any pollutant subject to an "effects screening level," or ESL. A full guide to Texas air toxics requirements, including the ESL lists, is provided in a document titled "Modeling and Effects Review Applicability

(MERA)."[159] Although the screening and modeling requirements can be complex, in short, any facility whose emissions of air toxics are above qualifying thresholds must conduct air dispersion modeling to demonstrate that air toxics emissions from the source or project will not result in ambient concentrations above health-based concentrations, aka the ESLs.

<u>Louisiana Air Toxics</u>

LDEQ implements a state-only air toxics program that regulates all HAPs (i.e., those pollutants listed at 42 U.S.C. § 7412(b)) as air toxics, as well as 14 additional air toxics not listed as HAPs.[160] The rules are set out at LAC:33:III.Chapter 51. Unfortunately, LDEQ's rules exempt a fair number of sources. First, only major sources of HAPs are subject to Louisiana's Chapter 51 air toxics rules, i.e., those with the potential to emit 25 tpy or more of HAPs in the aggregate or 10 tpy or more of any individual HAP or air toxic.[161] This should cover larger petrochemical facilities like ethane crackers, plastic resin plants, and methanol plants, but may exclude smaller facilities. The rules further provide a carveout for emissions from combustion of "virgin fossil fuels," which includes combustion of natural gas in turbines.[162] Thus, when a complex like Formosa that includes combustion turbines calculates its HAP emissions for purposes of determining whether the Chapter 51 air toxics regulations apply, they can subtract emissions from the combustion turbines that will combust natural gas, potentially reducing l HAP emissions to below the major source threshold and enabling the source to avoid MACT applicability (although Formosa's emissions from other units were substantial enough that it easily qualified as a major source regardless).

If a facility is subject to the Chapter 51 air toxics rules, however, it must quantify emission rates of all air toxics and compare those emission rates to the Chapter 51, Table 51.1 list of Minimum Emission Rates (MERs). Any air toxics emitted in rates that exceed the MERs must be modeled to demonstrate compliance with the corresponding Louisiana Ambient Air Standards (Table 51.2).

F. New Source Performance Standards

As discussed above, the New Source Performance Standards are unlike New Source Review, despite the similarity in names. NSR involves a case-by-case, facility-specific application of potential control technologies. NSPS, on the other hand, are standards that EPA develops by rule for specific types of units and operations, e.g., gas turbines. They are conceptually similar to NESHAPs but apply instead to criteria pollutants. The NSPS standards are set out at 40 C.F.R. 60.

<u>NSPS at petrochemical facilities</u>

Below is a list of NSPS standards that commonly apply to petrochemical facilities:

- Subpart A: General Provisions. This will apply to any petrochemical that triggers one of the following subparts.

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[159] TCEQ, Air Permit Reviewer Reference Guide, APDG 5874, Modeling Effects and Review Applicability (MERA) (Mar. 2018), https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/mera.pdf.
[160] The full list can be found at LAC 33:III.Chapter 51, Tables 51.1 - 51.3.
[161] LAC 33:III.Chapter 51, § 5109(B).
[162] LAC 33:III.Chapter 51, § 5105(B).

- Subparts Db and Dc: these subparts regulate steam generating units (i.e., boilers)—Subpart Db regulates boilers with a heat input greater than 100 MMBtus, while Dc regulates smaller boilers.
- Subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels.
- Subpart DDD: Standards of Performance for VOC Emissions from the Polymer Manufacturing Industry (relevant to plastic resin plants).
- Subparts KKK and OOOO: these subparts cover natural gas processing plants and natural gas production, transmission, and distribution, thus they are applicable to gas processing plants and NGL fractionating plants.
- Subpart IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.
- Subpart KKKK: Standards of Performance for Stationary Combustion Turbines, which are often located at large petrochemical complexes but not present at smaller facilities like gas processing plants.
- Subparts VV, VVa, NNN, and RRR: these subparts regulate synthetic organic chemical manufacturing and are applicable to methanol plants and units at plastic resin manufacturing plants.

As above with NESHAPs, the question for a permit review is whether the applicant is attempting to evade any potentially relevant NSPS.

G. Title V Operating Permits

Congress enacted Title V, 42 U.S.C. §§ 7661-7661f, as part of the Clean Air Act Amendments of 1990. Title V's purpose is to simplify enforcement and promote compliance by requiring each major stationary air pollution source (and certain smaller sources) to obtain an operating permit that identifies all applicable Clean Air Act requirements as well as monitoring, recordkeeping, and compliance certification requirements to assure the source's compliance with those requirements. A Title V permit also must include an enforcement schedule of compliance for any source that will not be in compliance at the time of permit issuance.

EXISTING ADVOCATE'S GUIDE TO TITLE V PERMITTING

A guide for advocates called "**The Proof is in the Permit: How to Make Sure a Facility in Your Community Gets an Effective Title V Air Pollution Permit**" covers Title V permitting in depth and is aimed towards a similar audience as this guide. As such, this section will focus largely on petrochemical-specific Title V issues and provide a more minimal overview of Title V generally. The guide is available at: http://www.cacwny.org/docs/Title%20V%20-%20The%20proof%20is%20in%20the%20permit.PDF.

Because Title V permits are operating permits rather than construction permits, federal Title V rules contemplate that a source will apply for a Title V permit after commencing operations (but no later than 12 months[163]). Some states, however, require issuance of a combined preconstruction and Title V operating permit prior to construction, including Louisiana.

EPA's Title V regulations, which contain (among other things) the minimum requirements for state Title V programs, are found at 40 C.F.R. Part 70. As such, Title V is also referred to as Part 70 requirements, or federal operating permits (even though they are implemented by states in most cases).

1. Who needs a Title V permit?

In short, most petrochemical plants covered in this guide will likely require a Title V permit. The Title V threshold is relatively straight-forward: any source with a PTE for the main criteria pollutants (i.e., NOx, CO, PM, VOCs, and SO2) of 100 tpy or more is a Title V source (the threshold may be lower in some nonattainment areas[164]). Major sources of HAPs are also required to obtain a Title V permit, i.e., sources with the potential to emit more than 10 tons of any single HAP or 25 tons of total HAPs per year.

2. Does a new facility subject to Title V have to obtain a Title V permit prior to construction?

Title V permit regulations (40 C.F.R. Part 70) generally contemplate that a new source will apply for a Title V permit after commencing operation, usually needing to submit a complete application within 12 months of commencing operations. This timeframe is implemented in many, if not most, states. However, Texas and Louisiana have implemented different deadlines that do require certain Title V applications or approvals prior to either construction of a new source or operation of new sources.

Louisiana is one state that typically does require a new source to obtain a Title V permit prior to construction.[165] At a minimum, a source must submit a complete Title V application prior to commencing construction. LDEQ may allow construction to commence prior to issuance of a Title V permit if certain conditions are met under LAC 33:III.501.C.3. Those conditions give discretion to LDEQ to "issue authorization to construct to an owner or operator in appropriate circumstances where there is a positive human health or environmental benefit, provided such an authorization is not precluded by any federally applicable requirement or by 40 C.F.R. Part 70." Because the Part 70 rules do not require issuance of a Title V permit prior to construction, it is unlikely that these Part 70 regulations would prevent LDEQ from authorizing construction prior to issuance of a Title V permit.

[163] 40 C.F.R. § 70.5(a)(1)(i).
[164] *See* EPA, *Who Has to Obtain a Title V Permit?*, https://www.epa.gov/title-v-operating-permits/who-has-obtain-title-v-permit (Visited Aug. 15, 2023).
[165] *See* LAC 33:III:507:C:2.

Texas does not require the issuance of a Title V permit prior to commencing construction, but it does require a new source that will be subject to Title V to submit something known as an "abbreviated application" before commencing operations.[166] The abbreviated application must "include at a minimum, a general application form containing identifying information regarding the site and the applicant and a certification by a responsible official."[167]

3. What opportunity is there to comment on a draft permit? Is the permitting authority required to hold a public hearing?

Other than permit revisions that qualify as "administrative" or "minor," all Title V permits and permit revisions must undergo public notice and comment, including all initial Title V permits (this is particularly relevant in Louisiana, where petrochemical facilities will almost certainly be permitted via joint Title V and Major NSR permits). This public comment period must be at least 30 days long, and all application material as well as the "statement of basis"[168] must be available to the public for the entire 30 days.

Advocates may request a public hearing at any time during the 30-day public comment period; if an agency holds a public hearing, it must provide at least 30-days' notice.

In addition to public-notice-and-comment requirements, Title V provides EPA with an opportunity to review proposed Title V permits and object to defective permits. After submitting comments, advocates can petition EPA to object, as discussed below.

4. State and EPA review procedures for Title V Permits; recent rulemaking.

In general, the *Proof is in the Permit* guide referenced above is largely up to date, however EPA recently issued rules formalizing the procedures that states and EPA must follow in reviewing draft permits and responding to public comments. Below is the process and timeline that states and EPA must follow when significant comments are received:

- Once the permitting authority has prepared a **draft** permit and statement of basis, it shall release the draft permit for 30 days of public notice and comment;
- If significant comments are received, the agency must prepare a response to comments addressing comments;
- After completing the response to comments, if no permit revisions are made, the agency may transmit the **proposed** permit, i.e., the permit the agency proposes to issue, along with the response to comments and statement of basis for the permit conditions, to EPA for its 45-day-review period.
    - If significant permit revisions are made, the agency must usually allow for another 30-day public notice and comment on the new draft permit, restarting the timeline.
- Once an agency transmits the draft permit to EPA, EPA then has 45 days to review the proposed permit and record and decide whether to object (typically they will not);

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[166] 30 TAC § 122.130(b)(1).
[167] 30 TAC § 122.132(c).
[168] Title V requires that permitting authorities prepare a "statement of basis" that "sets forth the legal and factual basis for the draft permit conditions (including references to the applicable statutory or regulatory provisions)." 40 C.F.R. § 70.7(a)(5).

- After the conclusion of EPA's 45-day review period, commenters have 60 days to file a petition asking EPA to object. EPA then has 60 days to consider the petition, but in practice EPA almost never acts within this time period. Petitioners may need to sue EPA for missing this deadline to force action on the petition.

5. What issues should I cover in my comments on the draft permit?

The most critical thing to know about making public comments on Title V permits is that, if you intend to petition EPA to object to a Title V permit, you must lay the foundation for that petition in your public comments. If a particular deficiency is not identified in public comments submitted during the comment period (by you or someone else), you are generally prohibited from seeking an objection on that same basis (unless you can demonstrate that "it was impracticable to raise such objections within such period, or unless the grounds for such objection arose after such period,"[169] perhaps if new information is made available after the close of the comment period).

More generally, Title V permits are primarily designed to assure a facility complies with existing Clean Air Act requirements. As such, the most effective Title V comments will be those that identify requirements that have been improperly omitted from or misstated in the permit, or that address the lack of sufficient compliance-assurance conditions like monitoring, recordkeeping, and reporting requirements.

Note again that the *Proof is in the Permit* guide is a great resource for how to spot Title V issues and address them in comments.

a. Does the monitoring, recordkeeping, reporting assure compliance?

In short, a Title V permit must enable the public, EPA, and permitting authorities to promptly ascertain the "applicable requirement[s]" for a facility and whether the facility is complying with these requirements. The term "applicable requirement" is defined at 40 C.F.R. 70.2, but in general it is any Clean Air Act-related requirement, such as NSR limits, NESHAP standards, or NSPS standards. The only exception that might be encountered are "state-only" requirements that are outside the scope of the Clean Air Act and its regulations; one common example is state air toxics regulations.

In other words, almost every limit, standard, or operating condition contained in any Clean Air Act permit, in the relevant state implementation plan, or in an applicable Clean Air Act federal regulation must be wrapped into the Title V permit and paired with adequate monitoring, recordkeeping, and reporting requirements to assure the facility will comply with the condition and that violations are readily discovered and reported.

For instance, if a PSD permit establishes a limit of 1 lb/hr of NOx, but the PSD permit does not include any way to monitor the facility's NOx emissions (which itself is a separate deficiency under NSR, generally speaking), the Title V permit must include monitoring, recordkeeping, and reporting requirements.

<u>What monitoring is common at petrochemical plants?</u>

There are various devices and methods used to monitor compliance with emission limits or other requirements, and they can be arranged in a rough hierarchy in terms of their ability to assure

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[169] 40 C.F.R. § 70.8(d).

continuous compliance. At petrochemical plants, the requisite monitoring is often set forth in NESHAP and NSPS requirements, but advocates should remember that these monitoring requirements are the "floor" of what is required, especially in Title V permits, which must supplement existing monitoring requirements if they are insufficient to assure compliance. This is especially relevant in Louisiana because that state issues combined initial Title V permits and pre-construction NSR permits.

Continuous Emission Monitoring Systems (CEMS): CEMS are generally the best method for directly monitoring emission rates. These are devices installed in a unit's smokestack that directly and continuously measure the emission rate of specific pollutants. CEMS may be required under NSPS or NESHAP standards; for instance, NSPS subpart KKKK requires combustion turbines to install and operate CEMS for NOx emissions. State agencies may independently require CEMS.

Stack Testing is the practice of periodically measuring the emission rate of a pollutant or pollutants directly from the stack. Stack testing may be the only requirement to measure actual emission rates of certain pollutants, or may be used to verify the accuracy of CEMS devices. Typically, where a permit requires stack testing, it will require an initial test within a certain date of initial operations, and then periodic testing thereafter. Note that stack testing alone is inherently deficient to assure compliance with short-term limits. For instance, if a unit is subject to an emission limit on an hourly basis, stack testing once per year will not alone assure compliance with the hourly limit. Although CEMS is ideal in such situations, if stack testing alone is used to demonstrate compliance, it must be paired with continuous parametric monitoring, as described below.

Continuous Parametric Monitoring Systems (CPMS) are devices or systems that monitor the operating parameters that influence emissions. For example, the combustion temperature in a turbine directly influences CO emissions, so a CPMS for CO emissions will measure and correlate temperature and other parameters to calculate estimated CO emission rates. Ideally, these parameters will be verified via stack testing; i.e., all of the relevant measurements will be monitored during a stack test and used to calculate emissions between stack tests.

Continuous Opacity Measurement Systems (COMS) are devices similar to CEMS that directly and continuously measure the opacity of a source's emissions. Most significant emission points at petrochemical plants should be subject to limits on opacity, which is a surrogate for PM emissions, and therefore permits must contain monitoring that ensures compliance with the opacity limits. COMS are ideal as compared to the alternative Method 9 measurement set out below.

Method 9 is EPA's methodology for having humans visually observe a source's opacity. Observers typically must attend a Method 9 training and receive certification, after which permits will require periodic Method 9 monitoring. In practice, this means a person will follow the procedures to determine what the opacity level is of a given source, perhaps on a daily, weekly, or even quarterly basis. This is problematic for several reasons; first, the source is usually free to choose when to make Method 9 observations, and may choose to do so only when the unit is operating optimally. Second, although Method 9 can produce accurate opacity measurements, it is still a subjective measurement and prone to human error. As such, COMS are preferable.

Equations and recordkeeping: permits may also "monitor" emissions by requiring the facility to use calculations and emission factors (described below in Section 8.I.2). For example, a permit might set out an equation that requires a source to multiply the tonnage of ethylene produced by an emission factor to calculate an emission rate and determine compliance with an emission limit. This method is only as good as the emission factor utilized, which often is deficient. At a minimum, such monitoring should be paired with periodic stack testing to determine a "worst case" emission factor that represents maximum emissions.

b. Can I comment on substantive NSR issues in a Title V permit?

Title V permits are primarily intended to assure compliance with existing requirements, such as emission limits established in NSR permits. As such, permitting agencies typically hold that commenters may address Title V's compliance assurance related to those limits, but that the limit itself or related NSR requirements are not open to comment in the Title V context. For example, permitting agencies are generally willing to consider a comment that a Title V permit needs more monitoring to assure compliance with a BACT limit, but generally will not consider an argument that the BACT limit itself is defective (perhaps because the facility did not choose the lowest BACT limit) because the BACT limit was established previously in a major NSR permit proceeding.

Historically, EPA generally agreed with states that concerns regarding what constitutes BACT and other substantive determinations made during a major NSR permit proceeding must be raised in that proceeding rather than in a later Title V proceeding. However, EPA made two exceptions: (1) if the deficiencies in the major NSR permit are so significant that the permit does not meet the fundamental requirement that a source obtain a major NSR permit prior to construction, or (2) if the state has chosen to issue a combined Title V and major NSR permit. It does not appear that EPA has ever identified a circumstance under which the first exception applies. As for the second exception, EPA changed its position in 2017 and declared in an order responding to a Title V petition that even when a state issues a combined Title V/NSR permit, Title V procedures are not available for challenging a substantive determination (e.g., BACT limit) established in a major NSR permit.[170] EPA's change in position was controversial when made and potentially could change again.

Obviously, if an advocate is participating in a state permit proceeding where the state is simultaneously issuing an NSR permit and a Title V permit, or perhaps even issuing one combined NSR/Title V permit, an advocate can and should raise NSR concerns. But even if an advocate is commenting on a draft Title V permit at some point after the state has issued the major NSR permit in question, it does no harm to raise NSR concerns in comments. A state agency always has discretion to correct its own errors. Furthermore, EPA potentially could be persuaded to change its position.

Also in 2017, EPA began declaring in response to citizen petitions to object to particular Title V permits that Title V procedures cannot be used to challenge a state's prior determination that a facility is not subject to major NSR.[171] Environmental groups challenged two such EPA orders, one in the U.S. Court of Appeals for the Fifth Circuit, in Texas, and the other in the U.S. Court of Appeals for the Tenth Circuit, in Colorado. While the Fifth Circuit upheld EPA's new Title V interpretation, the Tenth Circuit found EPA's interpretation to be unlawful and struck it down.[172] Subsequently, EPA explained in another order pertaining to a particular permit that it would not (and could not) apply the

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[170] *In the Matter of Big River Steel, LLC*, Order on Petition No. VI-2013-10 (Oct. 31, 2017), https://www.epa.gov/sites/default/files/2017-10/documents/big_river_steel_response2013.pdf.

[171] *See, e.g.*, *In the Matter of PacifiCorp Energy Hunter Power Plant*, Order on Petition No. VIII-2016-4 (Oct. 16, 2017), https://www.epa.gov/sites/default/files/2021-03/documents/hunter_order_10-16-2017.pdf.

[172] *Sierra Club v. U.S. EPA*, 964 F.3d 882 (10th Cir. 2020).

challenged interpretation in the Tenth Circuit (which includes Oklahoma, Kansas, New Mexico, Colorado, Wyoming, and Utah), but that it would continue to apply the interpretation in all other states, including Texas and Louisiana. Advocates are hopeful that EPA will reconsider that decision and authorize clean air advocates nationwide to utilize Title V permit procedures to challenge a state's prior, erroneous determination that a source's construction or modification did not trigger major NSR applicability.

c. Title V Petitions

One unique aspect of Title V permits as opposed to major or minor NSR permits is that states are statutorily prohibited from issuing a Title V permit without first providing EPA with a 45-day review period, and if EPA objects to its issuance, the state may not issue the permit until the basis for the objection is remedied. In practice, EPA rarely objects to a permit on its own, but the Act also allows advocates to petition EPA to object. EPA must grant a petition to object if the petitioner demonstrates that the permit does not comply with the Act or the requirements of the Title V regulations. The timeline for petitioning EPA is set out above at Section 8.G.2.

When filing a Title V petition, advocates should understand that the petitioner bears the burden of demonstrating that the permit is deficient; petitioners are further expected to acknowledge the state's response to comments and explain why the response is insufficient.

Importantly, advocates must be aware that any issue that they raise in a Title V petition must have been raised with reasonable specificity in their public comments on the draft permit, except in rare circumstances.[173] If there is some reason why it was impracticable or impossible to raise a particular issue in comments on the draft permit, e.g., the information was only made publicly available after the close of the public comment period, the petitioner must make that demonstration in the petition. Do not expect for EPA to fill in the blanks.

You do not need to be a lawyer to file a Title V petition. Nonetheless, an advocate who plans to file a Title V petition is encouraged to consult with an experienced Clean Air Act lawyer who can advise on how to craft arguments in a way that is most likely to result in an EPA objection.

Advocates should also be aware that historically, it has taken EPA far longer than the 60-day deadline set forth in the Clean Air Act to respond to Title V petitions. Moreover, about two-thirds of EPA's responses have come only after the petitioner files a lawsuit in federal court to force EPA to Act (or at least send a Notice of Intent to Sue). Fortunately, the Act provides for attorney fee recovery from the government in a successful citizen suit. Furthermore, assuming that the petition was filed on time, a lawsuit against the government for missing the response deadline is fairly straightforward. Thus, it should not be that difficult to find a lawyer willing to file the case.

Examples of Title V petitions as well as EPA's responses can be found at EPA's Title V Petition Database.[174] Finally, advocates should be aware that EPA has recently set out minimum requirements for the format and contents of Title V petitions.[175]

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[173] As discussed above, if petitioners could not reasonably have raised the issue in the public comments, EPA may consider new arguments in Title V petitions. 40 C.F.R. § 70.8(d).
[174] Available at: https://www.epa.gov/title-v-operating-permits/title-v-petition-database.
[175] 85 Fed. Reg. 6,431 (Feb. 5, 2020), https://www.govinfo.gov/content/pkg/FR-2020-02-05/pdf/2020-01099.pdf.

H. Effective Comment Drafting

This section provides a brief outline of what the authors consider to be best practices when reviewing an air permit for a new facility. Other experienced advocates may have different approaches, but this approach is premised on the back-and-forth nature of the permitting process, which can be viewed as an adversarial proceeding between the applicant, the state, and finally the public.

- Start with the application(s). This is where the company will set out the details of the proposed project, which Clean Air Act requirements they believe apply, and, most critically, which do not, according to them. If there is a close question of applicability for any given requirement, the company will tend to advocate for non-applicability. The concept of "the lady doth protest too much" is a general guiding principle when reviewing permit applications. If the applicant expends significant amounts of ink justifying why something doesn't apply to them, it's worth asking why.

  A review of the application may also include a hard look at emission rates (i.e., emission factors, discussed below) and operating assumptions if the source is claiming certain requirements like major NSR doesn't apply to them. In sum, a deep read of the application and communications between the applicant and the agency is the best way to familiarize yourself with the context of the draft permit.

- Next, read the agency's technical review document. Regardless of the permit type, almost all agencies will provide a document wherein they state their interpretation of the application, whether or not they agreed with the applicant's claims, and how they drafted the permit and its conditions based on the application.

- In many instances, it can be very valuable to review other, similar sources. For instance, what technology and limits have been applied to this type of facility? Has the applicant and state included all similar sources, and not just those in the RBLC (discussed above)?

  What emission rates have been demonstrated in practice at similar sources? Note that this can cut both ways, if another source has achieved lower emissions, that should probably be included in setting limits for your source; alternatively, if a source is claiming it will be a minor or synthetic minor source, but similar sources have been found to emit higher rates than the applicant claims for its facility, is your source trying to evade major source requirements?

- Finally, review the draft permit. Now that you have a grasp on what the applicant is asking for, and how the agency has responded, look at the draft permit itself to see if it contains enforceable conditions related to the applicant's claims and the agency's interpretations. Also look to see if all of the assumptions made in the permitting process are reflected in the permit; if they performed modeling assuming, say, 5,000 hours of operations per year, is there a permit limit reflecting this?

  Again, it can be helpful to review permits for similar sources. Are those permits including limits and requirements that are not included in the permit you're reviewing? If so, why not?

I. Petrochemical Plants Emissions and Control Technology

This section serves as a rough overview of the pollutants emitted by petrochemical export facilities as well as the applicable air pollution control technologies.

1. Pollutants emitted by petrochemical facilities.

This section gives a quick overview of the major pollutants emitted by petrochemical facilities and why they are regulated.

> NOx: Nitrogen Oxides combine with VOCs and sunlight to cause ground-level ozone, also known as smog. Breathing ground-level ozone is harmful to anyone, but especially the elderly, children, and individuals with lung conditions such as asthma. Constituents of NOx also cause acid rain.
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> CO: Carbon Monoxide displaces oxygen and can result in health impacts; the greatest concern is for individuals with certain medical conditions, especially heart conditions, whose ability to get oxygen to their hearts may be especially sensitive.
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> VOCs: Volatile Organic Compounds, like NOx, contribute to ground-level ozone and smog. VOCs are a vast mix of individual chemical compounds, many of which are also hazardous air pollutants (HAPs), meaning they are toxic or carcinogenic even in small quantities.
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> PM: Particulate matter, especially fine particulate matter, or PM2.5 (meaning particles smaller than 2.5 micrometers in diameter) is particularly harmful to any individual because these particles are small enough to cross through the lungs into the blood stream. Exposure to PM2.5 has been linked to increased rates of heart disease and premature death.
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> Methane: Methane is a potent greenhouse gas, and facilities that process or handle natural gas are large sources of methane emissions, i.e., gas processing plants and methanol plants. Methane is not regulated as a criteria pollutant, but rather as a greenhouse gas.
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> HAPs: As discussed above, HAPs are those pollutants listed by Congress as toxic and/or carcinogenic even in small quantities. Most petrochemical plants emit a large amount of HAPs, both from combustion sources and from fugitive emissions (many HAPs are also VOCs, and generally when you see large VOC emissions, there should be large HAP emissions as well). Plastic resin manufacturing plants in particular emit quite high levels of HAPs including: benzene, n-hexane, ethylene glycol, ethylene oxide, and 1,3-butadiene.
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> Ammonia: Although ammonia is not a listed HAP, some states (including Louisiana) list it as an air toxic due to negative human health impacts. Ammonia emissions from petrochemical complexes can be substantial—Formosa estimated its St. James Parish complex would emit 436 tons of ammonia per year.

2. Emission factors.

Prior to constructing a new facility, there will obviously be no direct measurements of the facility's emissions. Yet, to determine what requirements apply (e.g., Title V, Major vs. Minor NSR, NESHAP standards, etc.), applicants must estimate potential emissions for dozens of pollutants from many different types of processes. Emission factors are the most common method of calculating these potential emissions.

An emission factor is the rate a pollutant is emitted per unit of production, throughput, combustion, or other measurable, planned activity. A simple example would be that for every ton of coal burned in a power plant, the plant emits nine pounds of NOx; the emission factor here would be expressed as 9 lb/ton. If a planned coal power plant intends to burn 1 million tons of coal per year, that emission factor would indicate the plant will emit 9 million pounds of NOx (9 * 1,000,000 = 9,000,000), or 4,500 tons of NOx per year.

Another example, a bit more complex but fundamentally the same idea and relevant to many petrochemical sources, would be that for every unit of heat input in a combustion turbine (expressed as million metric British thermal units, or "MMBtus"), the turbine will emit 0.32 pounds of NOx, or 0.32 lb/MMBtu. If a planned new turbine will have a maximum heat input rating of 300 MMBtu per hour (a fairly typical rating), that means the turbine operating at full capacity for the full year will emit 8,409,600 pounds of NOx (4,200 tons) per year: 300 MMBtu/hr * 8760 hours (the number of hours in a year) * 0.32 lb/MMBtu (the emission factor) = 8,409,600 pounds/year; to convert to tons per year, divide by 2,000.

Because these emission factors are so central to estimating emissions, which in turn is vital to regulatory applicability and accurate modeling analyses (after all, if a facility is underestimating emissions, then the model will not be representative), emission factors must be well supported in the record and, more than anything, represent the facility's true PTE.

AP-42: In this industry, and in many others, the most common source of emission factors is EPA's compilation of emission factors known as AP-42. EPA periodically surveys existing data on emission rates (e.g., stack tests) from various industries, puts them together into vast excel documents, and averages the results into emission factors. For instance, AP-42 Chapter 3.1 contains EPA's emission factors for combustion turbines.

The problem with averages and emission factors is that, generally speaking, about 50% of all sources within a source category will have emission rates that are higher than the average emission factor, perhaps vastly so. As such, EPA itself has repeatedly warned against using AP-42 emission factors in applicability determinations.[176] Despite that, applicants and states routinely do just so. As discussed above, this is improper.

Trade Association Data: Some petrochemical applications rely on emission factors developed by trade associations, in particular the American Petroleum Institute (API). These emission factors are similar to AP-42 emission factors in that they are averages of multiple tests and sources, and therefore likewise do not represent potential emissions. Worse yet, with trade association emission factors, the underlying data is often not publicly available as it is treated as proprietary; even permitting agencies may not have access to the underlying data. Advocates should argue that use of such opaque emission factors does not meet the various requirements that require applicants to set forth the basis for a source's emissions calculations.

Manufacturer data: Another common source of emission factors is "manufacturer data" or "manufacturer's guarantee" or something similar. Almost universally, these emission factors will be listed without any supporting information and a mere footnote stating the basis is some iteration of the foregoing. This is problematic as the opaqueness of these emission factors makes it impossible for the public or permit writers to scrutinize how these emission factors were derived. The lack of

[176] U.S. EPA, Enforcement Alert, "EPA Reminder About Inappropriate Use of AP-42 Emission Factors," Publication No. 325-N-20-001 (Nov. 2020), https://www.epa.gov/sites/default/files/2021-01/documents/ap42-enforcementalert.pdf.

transparency alone is grounds for comments that the applicant has not provided sufficient data on emissions calculations.

Moreover, as to manufacturer "guarantees," these guarantees are typically only made one the basis of very specific operation parameters. Yet those parameters are known only to the manufacturer and the applicant, and not the agency or public. To properly rely on that guarantee, the permit should include such operating parameters as enforceable conditions, but almost never do.

Finally, and perhaps most troublesome, is the recurring pattern of applicants listing "manufacturer's data/guarantee" while simultaneously listing the manufacturer as "TBD" in the application forms. Most states require that applicants supply the make and model of each unit in their permit application forms, yet it is quite common to see an applicant simultaneously list the make and model as "TBD" then claim emission factors are based on this unknown manufacturer's guarantee. This is obviously a major contradiction: how can the source have manufacturer's data if they don't know who the manufacturer is?

<u>Engineering estimates:</u> Similar to manufacturer's data above, emission factors are often based in "engineering estimates." And, as above, the bases for these emission factors are largely omitted from the application record. Even if the engineering estimate is a good-faith effort at quantifying emission rates, the bases of the engineer's estimates should be included in the application and any assumptions about the facility's design or operation must be included as enforceable conditions in the permit.

3. Fugitive emissions

Fugitive emissions are defined as "those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening."[177] In the context of petrochemical facilities, most fugitive emissions are VOCs and greenhouse gases (methane in particular) emitted from leaks in valves, flanges, and connectors and from certain venting activities.

Fugitive emissions may or may not count towards a facility's PTE. First, all fugitive emissions of **HAPs** must be counted in determining a facility's status as either an area or a major source of HAPs. But for NSR, the question is trickier. Sources that are on the "list of 28," discussed above in Section B, must include fugitive emissions of criteria pollutants in their NSR applicability determinations;[178] for petrochemical plants, that means those plants that are chemical process plants that have the SIC code beginning with 28: ethane crackers, plastic resin plants, and methanol plants. Facilities not on the list of 28, including gas processing plants and NGL fractionators, are exempt from including fugitive emissions in their PTE calculations.

Note that for major NSR sources, fugitive emissions must be considered in BACT and LAER analyses; industry typically argues that proper design and maintenance is BACT/LAER, but advocates should be aware that technology exists to reduce or eliminate leaks, such as "leakless" valves and fully-welded connections.[179] Additionally, permits should contain monitoring to detect and fix leaks (usually referred to as "Leak Detection and Repair," or LDAR); advocates have argued that optical gas

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[177] 40 C.F.R. § 52.21(b)(20).
[178] 40 C.F.R. § 52.21(b)(1)(iii).
[179] For examples, *see* TCEQ's Air Permit Technical Guidance for Chemical Sources Fugitive Guidance, APDG 6422 (June 2018), https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/fugitive-guidance.pdf.

imaging is a necessary component of adequate monitoring. Note that monitoring itself can qualify as part of BACT/LAER, as better monitoring will reduce emissions.

4. Control technologies at petrochemical plants

The following provides an overview of control technology that is commonly used at petrochemical plants, or that could potentially be used to provide greater level of control. Note that while 'control' may invoke add-on filters that scrub an exhaust stream, in the section "control" means any technology or technique that reduces emissions, regardless of where it is used in the process.

<u>Controls for gas-fired combustion sources</u>

Although there are a wide variety of combustion sources used in the petrochemical sector—boilers, process heaters, cracking furnaces, and combustion turbines, to name the most common—most air pollution controls for gas-fired combustion units are similar or at least similar enough to be considered in BACT/LAER determinations

<u>NOx controls for gas-fired combustion units:</u>

- Selective Catalytic Reduction (SCR) is an add-on control that uses a spray of ammonia in conjunction with a catalyst bed to selectively reduce NOx to nitrogen and water. SCR's control efficiency is often cited as 70 to 90% or greater.
- Selective Non-Catalytic Reduction (SNCR) is an add-on control similar to SCR but without the use of a catalyst bed. Control efficiency is typically cited as 30 to 50%.
- Low-NOx Burners or Dry Low NOx Burners (LNB or DLNB) are a variety of burner designs that engineer combustion so as to reduce NOx formation. These burners can achieve up to 75% or more reduction in NOx formation. Note that LNB and DLNB can be paired with SCR or other add-on controls to achieve even further emissions reduction.
- Water or steam injection: NOx pollution is generally increased as the temperature of combustion increases, therefore injecting water or steam into the combustion chamber to lower the combustion temperature will decrease NOx formation (but may increase CO emissions).
- Electrification: this is the most significant form of NOx reduction; replacing units like combustion turbines with electric compressors will reduce NOx emissions to zero, but may not be an option in many other instances.
- Other proprietary controls: there are a wide range of proprietary NOx controls, such as EMx, NOxOUT, or LoTOx (all trademarked) that typically include some combination of the foregoing techniques to reduce NOx and potentially other pollutants.

<u>Controls for other pollutants emitted by gas-fired combustion units</u>

Generally, industry has argued that controls to reduce VOCs, CO, and PM from gas-fired combustion units should be some form of good combustion practices; industry typically argues that burning gas as opposed to oil or solid fuels like coal is sufficiently clean to not need (or even make feasible) add on controls. One exception is catalytic oxidation, which reduces CO and VOCs by at rates well above

90%.[180] Catalytic oxidation is a common add-on control for combustion turbines but less so for other combustion units like boilers; regardless, advocates should encourage the consideration of catalytic oxidation for boilers when it appears technically feasible.

Controls for SO_2, meanwhile, include flue gas desulfurization (FGD) and wet scrubbers; these have been proposed for controls for gas-fired boilers and combustion turbines, but generally are dismissed by arguing that the concentration of SO_2 in the exhaust stream is too low to make control feasible.

Controls for units other than turbines:

> Flares: Flares are used to burn-off (incinerate) waste gases such as methane. Petrochemical plants operate numerous types of flares depending on the type of process being controlled. One key issue common to flares of all types is overestimating the destruction efficiency of flares, which results in underestimating emissions. For more on this, see the Affidavit of Dr. Ranajit Sahu, attached to Sierra Club's 2021 comments on the draft permit for Magnolia LNG.[181] Although those comments pertained to flares at an LNG facility, all of Dr. Sahu's arguments are potentially applicable to flares at petrochemical plants.
>
> Thermal Incinerators (also known as thermal oxidizers) are conceptually similar to flares except that they combust supplemental fuel (usually natural gas or propane) to incinerate a waste stream, and combustion occurs inside a controlled environment rather than at the tip of a smokestack.

J. Sources of Data and Information Broadly

This section provides resources for advocates looking to learn more about air permitting generally and petrochemical air permitting in particular.

1. Online State Agency Databases

Many states maintain online databases where the state agencies provide access to facility-specific documents, including everything from applications and permits to, in some instances, all communications between a company and the state.

Texas

TCEQ maintains several overlapping, and frankly confusing, online databases for permit related material:

- TCEQ Central File Room Online: This is the electronic version of TCEQ's physical central file room and will contain many documents

HOW TO BULK DOWNLOAD DOCUMENTS FROM ELECTRONIC DATABASES

Advocates may find it easiest to bulk download files from electronic databases for review, and while some databases allow for this, many do not. However, if an electronic database provides links to documents (perhaps several hundred at a time), browser extensions such as Chrome's Batch Link Downloader can save a tremendous amount of time.

[180] EPA, Hazardous Air Pollutant Emission Control Technology for New Stationary Combustion Turbines, at 1 (Aug. 21, 2001), https://www.mdeq.ms.gov/wp-content/uploads/2017/06/CT_HAP.pdf.
[181] Appendix 7, at 13.

related to a facility, including air permits, applications, enforcement and investigation files, and so. In the experience of this author, the online Central File Room may be incomplete or not up to date, but is still relatively useful. If you suspect files are missing, you may need to file a public records request. Available at: https://www.tceq.texas.gov/agency/data/records-services.

- New Source Review and Title V Operating Permits Database: these two parallel databases allow advocates to search for all NSR (including minor NSR) and Title V permits issued in Texas or in particular counties. This includes some pending permits that have yet to be issued. Unfortunately, the actual permits are not available for download here, but instead you can find permit numbers and permitting dates. Available at: https://www2.tceq.texas.gov/airperm/index.cfm.
- TCEQ Commissioners' Integrated Database: this database lists filing dates and agency action on air permits. Typically, the only documents available here are public comments, hearing requests, motions to overturn, and other similar communication from the public. Available at: https://www.tceq.texas.gov/agency/decisions/cc/cc_db.html.

Louisiana

Louisiana provides one comprehensive database which contains almost all documents relevant to air sources; applications, investigations, permits, public comments, etc. The database is called the Electronic Document Management System and is available at https://www.deq.louisiana.gov/page/edms.

2. How to find public comments, petitions, and other advocacy material

A great way to quickly learn about issues with a particular industry is to look at what other advocates have identified as issues in public comments or other documents.

First, we have compiled helpful public comments and Title V petitions related to petrochemical facilities at Appendices 2 through 7. Second, advocates can search for public comments in online databases in many states, as detailed above. Third, advocates should be aware of EPA's Title V petition database, which hosts all public petitions seeking EPA's objection to Title V permits (see the next section for more details).

3. Legal guides and resources

EPA's (Draft) 1990 NSR Manual (sometimes called the "Puzzle Book" because it has puzzle pieces on the cover): Although the Manual is not considered legally binding, it is recognized as the best resource for EPA's interpretation of NSR regulations and requirements. Many of those interpretations have been included in other EPA's documents or decisions that are binding, such as decisions by EPA's Environmental Appeals Board or in Title V petition orders. Note, however, that the manual is NOT up to date, especially regarding NSR applicability to facility modifications. The manual is currently available at: https://www.epa.gov/nsr/nsr-workshop-manual-draft-october-1990.

EPA's New Source Review Policy and Guidance Document Index: EPA has issued hundreds of guidance and policy documents related to NSR since 1976. These include numerous source-specific determinations that may provide valuable citations for concepts set forth in the Draft 1990 NSR Manual—and unlike the Manual, these decisions do have legal authority. EPA maintains a comprehensive online Index as well as a search tool to search all such guidance, available at https://www.epa.gov/nsr/new-source-review-policy-and-guidance-document-index.

EPA's Environmental Appeals Board (EAB) Decisions: These decisions are essentially administrative "case law" issued by the EAB when someone challenges certain NSR permits (primarily those issued by EPA or in permits in states with delegated authority). The primary type of issue heard by EAB is PSD permit appeals, so this resource is most valuable for researching PSD issues like BACT or applicability determinations. Advocates can search these decisions online at: https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Board+Decisions?OpenPage.

Title V permitting: The Proof is in the Permit: This is an excellent guide to all things related to Title V permitting, and is available at: http://www.cacwny.org/docs/Title%20V%20-%20The%20proof%20is%20in%20the%20permit.PDF.

EPA's Title V Petition Database: Title V petitions, and particularly EPA's orders on petitions, can be a valuable tool for researching Title V permit issues. Although only EPA's orders carry legal authority, petitions can also be valuable for assessing how other advocates have made legal arguments. A searchable database of all petitions and orders is at: https://www.epa.gov/title-v-operating-permits/title-v-petition-database.

4. Technical Guides and Resources

This section briefly provides several helpful tools for reviewing the technical aspects of a permit, e.g., emissions calculations.

RACT/BACT/LAER Clearinghouse (RBLC): is a database of air pollution controls that have been required as RACT, BACT, or LAER at new sources. Note that RBLC is notoriously incomplete and should not be relied upon solely when determining RACT/BACT/LAER. Available at: https://cfpub.epa.gov/RBLC/index.cfm?action=Home.Home&lang=en.

AP-42: As discussed above, AP-42 is a compilation of emission factors for various types of sources. Although use of AP-42 emission factors is often inappropriate, the AP-42 database contains informative descriptions of various operations and sources, and the emission factors may still be useful to compare a source's estimates to what stack tests at similar sources have produced. Note that each section of emission factors is accompanied by an Excel spreadsheet that provides details on each stack test that was used to formulate an emission factor. This can be valuable for getting more specific emission rates. Available at https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors.

EPA Control Technology Fact Sheets: A good starting point for learning about a certain control technology is EPA's control technology fact sheets, available at: https://www.epa.gov/catc/clean-air-technology-center-products.

Converting emission rates: Frequently emission rates at petrochemical plants are expressed in one of two emission rates: ppm and lb/MMBtu. This can make it difficult to compare emission rates from one source to another. A handy excel spreadsheet developed by the Santa Barbara County Air Pollution Control District can help convert between the two: https://www.ourair.org/wp-content/uploads/PPMV-to-lb-per-MMBTU.xlsx.

Additionally, some emission rates may be expressed in lb/hr rather than ppm or lb/MMBtu. To convert from lb/hr to either of the two other units, first convert from lb/hr to lb/MMBtu by dividing the lb/hr rate by the MMBtu value of the turbine or combustion source. For instance, if a turbine is rated for 500 MMBtu/hr, and the hourly emission rate is 10 pounds of pollutants per hour, divide 10 by 500 to get lb/MMBtu. Then, if necessary, to convert to ppm, use the above tool to convert from lb/MMBtu to ppm.

Chapter 4

ARMY CORPS OF ENGINEERS' WATER PERMITS AND DECISIONS

CHAPTER FOUR: ARMY CORPS OF ENGINEERS' WATER PERMITS AND DECISIONS

A. Overview

Chapter 4 provides an overview of challenges to permits issued by the Army Corps of Engineers ("the Corps"), namely Clean Water Act Section 404 permits and Rivers and Harbors Act Section 10 permits. When the proposed construction or expansion of a petrochemical facility involves construction in a waterway or wetland or disruption of land adjacent to such areas, the proposed facility likely will need one or both these permits *before* construction. Challenging these permits is therefore an effective tool for advocates. Note that most petrochemical facilities covered by this guide will also need a National Pollution Discharge Elimination (NPDES) permit to discharge after they've been constructed; because a NPDES permit is not necessary to begin construction, the guide does not cover these permits.[182]

This chapter has six sections. **Section B** introduces advocates to the Corps' role in permitting petrochemical facilities. **Section C** describes the Corps' review of Section 404 permits, one of the primary water-related permits that a proposed project may require. **Section D** provides an overview of how other agencies, such as EPA and the U.S. Fish and Wildlife Service, participate in the Section 404 permit process. **Section E** offers suggestions for challenging Section 404 permits. **Section F** briefly describes Section 10 permits, which are needed when a proposed project impacts "navigable waters."

B. The Corps' Role in Permitting Petrochemical Facilities

The Corps must protect waters within its jurisdiction. Under Section 404 of the Clean Water Act, the Corps must protect "waters of the United States" from discharge of dredged and fill material. Under Section 10 of the Rivers and Harbors Act, the Corps must protect "navigable waters" from construction-related activities. This introductory section addresses:

1. Should I get involved in a Corps permit challenge?
2. How does the Corps determine if a proposed project falls within its jurisdiction?
3. Does the Corps allow expedited review for some projects?
4. Who in the Corps will I be working with?
5. What other agencies are involved in the Corps' permitting process?
6. How can advocates challenge Corps permits?

Where a petrochemical facility is located is the most important consideration in evaluating the Corps' authority over a proposed facility. Naturally, proposed petrochemical facilities that include shipping operations will require a Corps permit, as will facilities located on or adjacent to wetlands that are continuously connected to jurisdictional waters. Facilities lacking such a water-related nexus and

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[182] Advocates looking to learn more about NPDES permitting should consult the manual by Ellen J. Kohler entitled "A Citizen's Guide to Water Quality Permitting" (2005) available at: https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Programs/WRD/NPDES/NPDES-Citizens-Guide.pdf?rev=4f50fb13ccaa4d16be7247202271b8b3. Although this manual is focused on NPDES permitting in Michigan, most of the material is relevant in most other states.

located far from aquatic resources most likely will not require a Corps permit. The scope of the Corps' jurisdiction is a heavily litigated, fact-intensive issue. Advocates should consult with an attorney early in the process to evaluate the scope of the Corps' jurisdiction.

Advocates have challenged Corps permits for proposed petrochemical facilities, such as the now-abandoned Kalama methanol refinery proposed along the Columbia River in Washington and the Formosa plastics facility proposed along the Mississippi River in Louisiana in the heart of Cancer Alley. The Kalama project was abandoned after Washington denied a state shoreline permit for the methanol refinery.[183] A challenge to the Section 404 and Section 10 permits for the Formosa St. James Parish petrochemical complex—which would be the largest plastics production facility in the world—persuaded the Corps to reconsider the permit based on a "potential" defect in the Section 404 alternatives analysis.[184] As a result of advocates' successful challenge, the U.S. Army Corps is now preparing an "environmental impact statement" for the facility—the most rigorous environmental analysis required under the National Environmental Policy Act.[185] Both the Kalama and Formosa projects required Section 404 and Section 10 permits.

1. Should I get involved in a Corps permit challenge?

There are two primary benefits to challenging a Corps permit: (1) advocates can raise wide-ranging concerns about a proposed project; and (2) doing so can achieve substantive benefits for communities and the environment, even if the Corps issues the permit. Additionally, such challenges could help increase the transparency of the Corps' decision-making process, including through building relationships with local Corps staff. However, challenges to Corps permits can be resource-intensive.

By law, the Corps must evaluate an array of impacts to the natural and human environment before issuing a permit. The Corps must evaluate the environmental impacts of the project to wetlands and waterways and any impact that might harm the public's interest, including impacts to the local economy, historical sites, and safety.[186] In total, the Corps must weigh at least twenty-one different factors addressing how a project could affect the "needs and welfare of the people."[187]

The Corps may only grant permits that avoid, minimize, and compensate for the destruction of or impact to wetlands and waterbodies affected by the project.[188] Thus, challenging a Corps permit could halt the project or significantly reduce the harm the project might cause.

Permit challenges, however, can require significant resources, both in terms of costs and human capital. Advocates should be prepared to fund a multi-year legal challenge, hire experts, engage and educate the community, conduct and document site visits, and build relationships with local Corps staff and with local staff from other federal and state agencies. To manage such resource needs, advocates can partner with other groups and retain experts who have engaged in similar permit

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[183] Troy Brynelson, *Kalama Methanol Plant on Lower Columbia River Called Off By Developers*, Or. Pub. Broad., June 11, 2021, https://www.opb.org/article/2021/06/11/kalama-washington-methanol-plant-called-off/.
[184] Letter from Letitia James et al., New York Attorney General, to Colonel Stephen Murphy, U.S. Army Corps of Eng'rs (May 24, 2021) (Appendix 8).
[185] Valerie Volcovici, *U.S. Army Orders Environmental Review of Louisiana Plastics Project*, Reuters, Aug. 18, 2021, https://www.reuters.com/legal/litigation/us-army-orders-environmental-review-louisiana-plastics-project-2021-08-18/.
[186] 33 U.S.C. §§ 403 ("Section 10" permits), 1344 ("Section 404" permits); 33 C.F.R. § 320.4.
[187] 33 C.F.R. § 320.4(a)(1).
[188] *Types of Mitigation Under CWA Section 404*, EPA (Apr. 20, 2022), https://www.epa.gov/cwa-404/types-mitigation-under-cwa-section-404-avoidance-minimization-and-compensatory-mitigation.

fights in the region. Further, much of the work on Corps permits will dovetail with advocates' efforts under the National Environmental Policy Act (NEPA). The Corps' permit analyses and NEPA analysis often mirror each other. Thus, advocacy on Corps permits can support other legal challenges and help advance public education efforts by supplying advocates with more information about the harm a project may cause.

2. How does the Corps determine if a proposed project falls within its jurisdiction?

Whenever a proposed project might impact the Corps' "jurisdictional resources," the applicant needs a Corps permit. As the diagram below shows, the scope of resources covered by Section 404 is broader than the scope of resources covered by Section 10.

Section 404 of the Clean Water Act protects **"waters of the United States,"** including some wetlands, from the indiscriminate discharge of material capable of causing pollution.[189] Thus, a project that involves discharging dredged or fill materials (e.g., sediment or dirt) into waters of the United States requires a Section 404 permit. As explained in **Section C** below, the definition of "waters of the United States" is in flux and heavily litigated.

Section 10 of the Rivers and Harbors Act ensures the continued navigable capacity of **"navigable waters."** An applicant must obtain a Section 10 permit for any work or structures in or affecting the course, condition, or capacity of such waters, including when a proposed project modifies, excavates materials within, or fills these waterways.[190] As explained in **Section F**, what constitutes a navigable water is reasonably straightforward.

To evaluate its jurisdiction, the Corps often relies on information supplied by the applicant. The Corps also may engage in its own investigation, for example, by visiting the site or reviewing aerial photographs. To determine the scope of its jurisdiction, the Corps answers three questions:

- First, does the site contain jurisdictional resources that the Corps must protect?
- Second, if so, what permit(s) must the project applicant obtain?
- Third, does the site contain any areas warranting heightened protection, i.e., "special aquatic sites"?

Section C explains how the Corps answers these questions for Section 404 permits, and **Section F** explains how the Corps answers such questions for Section 10 permits.

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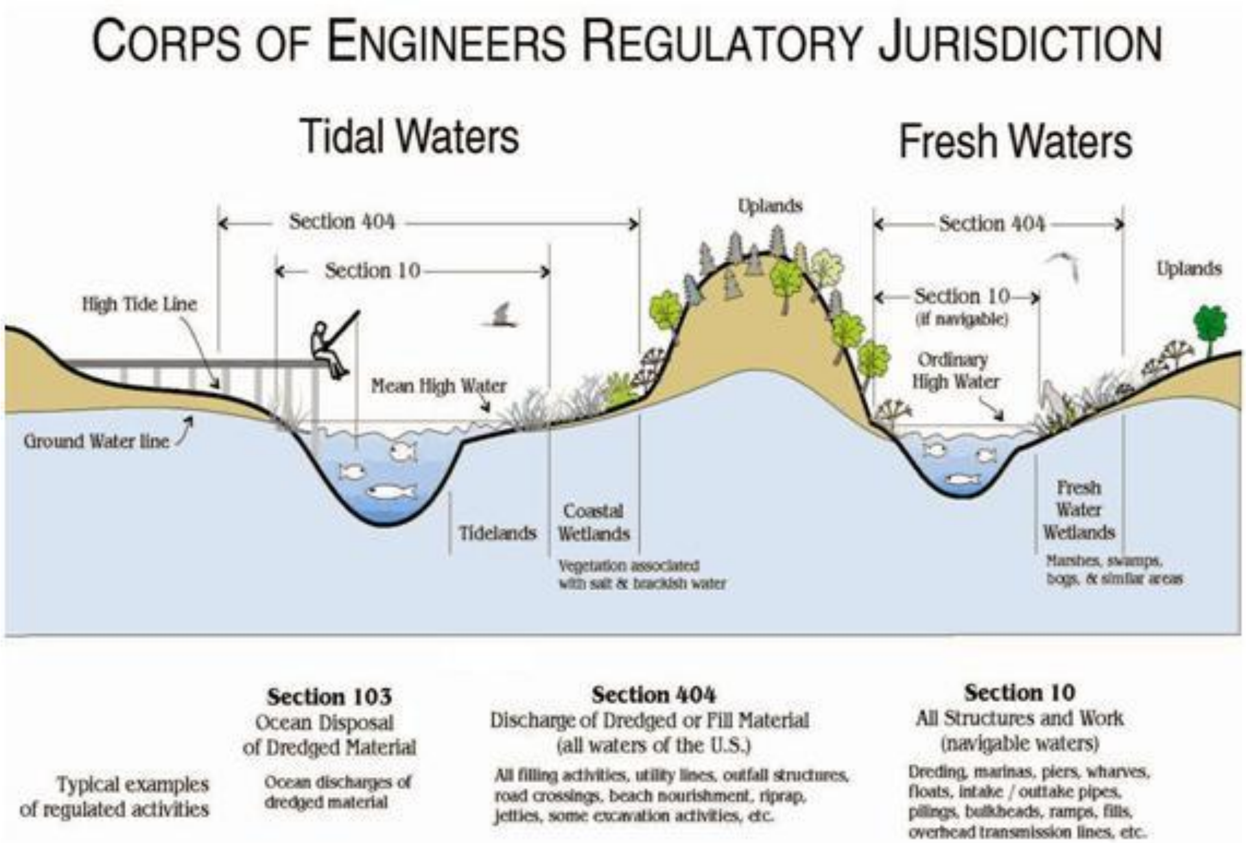
[189] 33 U.S.C. § 1344; *see also* 33 U.S.C. §§ 1251(a), 1311(a).
[190] 33 U.S.C. § 403.



Source: U.S. Army Corps of Engineers

3. Does the Corps allow expedited review for some projects?

There are two types of Corps permits: individual permits and general permits. The Corps' initial review of a proposed project determines the type of Section 404 and Section 10 permit an applicant needs. Projects that qualify for coverage under a general permit often proceed on a faster permitting track.

Large projects such as the initial construction or major expansion of a petrochemical facility generally require an **individual permit**. Individual permits are issued to specific projects. The permits may limit how a project may be constructed, require that construction be halted during breeding seasons, or prohibit certain activities entirely.[191] For activities that will cause only minimal harm, the Corps may allow an applicant to obtain coverage under a **general permit**. A general permit is issued to no particular project and multiple dischargers may obtain coverage under the same general permit. Projects that obtain coverage under a general permit receive less scrutiny. An applicant need only comply with the general permit's terms, and the Corps generally need not take any further action.[192] This chapter focuses on individual permits.

[191] 40 C.F.R. §§ 230.5(c)-(*l*), 230.70-230.77.
[192] 40 C.F.R. § 230.5(b).

4. Who in the Corps will I be working with?

The Corps is divided into Divisions that are further subdivided into geographic Districts, as the diagram below shows.[193] Although each District operates slightly differently, typically Districts have decision-making authority for jurisdictional determinations and issuing permits. Thus, advocates challenging the Corps' treatment of petrochemical facilities will primarily work with the local District office during the permit process.

Source: U.S. Army Corps of Engineers

5. What other agencies are involved in the Corps' permitting process?

Other federal agencies, including EPA, U.S. Fish and Wildlife Service, and National Marine Fisheries Service also may be involved in the Corps' Section 404 permitting process. The table below shows the general division of authority among these agencies, as well as the Corps.

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[193] *Where We Are*, U.S. Army Corps of Eng'rs, https://www.usace.army.mil/locations.aspx (visited Aug. 14, 2023).

FEDERAL AGENCY	ROLE
Army Corps of Engineers	• Administers day-to-day Section 404 program, including individual and general permit decisions • Conducts or verifies jurisdictional determinations • Develops policy and guidance; and • Enforces Section 404 permit provisions
Environmental Protection Agency (EPA)	• Develops and interprets policy, guidance, and environmental criteria used in evaluating permit applications; • Determines scope of geographic jurisdiction and applicability of exemptions; • Approves and oversees state and tribal assumption of Section 404; • Reviews and comments on individual permit applications; • May prohibit, deny, or restrict the use of any defined area as a disposal site; • May "elevate" specific cases, including individual permits, when EPA has concerns about a proposed project; and • Enforces Section 404 provisions
National Marine Fisheries Service & U.S. Fish and Wildlife Service	• Evaluate impacts on fish and wildlife of all new federal projects and federally permitted projects • May "elevate" specific cases or policy issues, including individual permits, when the agencies have concerns

6. How can advocates challenge Corps permits?

Engaging in the permitting process for both Section 404 and Section 10 individual permits is worthwhile. Efforts on one permit can support advocacy on the other permit, and generally the two processes run concurrently. Of the two provisions, Section 404 imposes more substantive restrictions on projects than Section 10, and Section 404 permits often require an applicant to participate in compensatory mitigation projects. As a result, individual permits issued under Section 404 pose more regulatory stumbling blocks for an applicant (and the Corps) than Section 10 permits. Thus, advocates should generally center a challenge on a Section 404 permit.

In chronological order, advocacy opportunities include:

1. **Regularly search federal and state agency websites for updates about a project and the pace of the permitting process.** Important information includes whether the applicant has started approaching the Corps for a jurisdictional determination or permit. The Corps' website is often a good resource for these purposes. Some state environmental agencies, and occasionally the companies themselves, provide status updates. Advocates also can obtain such information by developing a relationship with the relevant Corps staff soon after they find out about a project.
2. **Request that the relevant District office add your contact information to its public notice distribution list.** Upon request, the Corps will add anyone's name to the distribution list to receive public notices.

3. **Mobilize and listen to community groups and other advocates who might organize against the permit.** Enlist their help in researching the project and surrounding area to understand and document the expected impacts of the project. Try to identify the types of waterbodies that might be affected. Site visits (if public access is available), mapping, and reviewing publications about the local area and the type of petrochemical facility can all shed light on potential impacts.
4. **Submit public records requests to obtain more information.** Such information can be useful in challenging the jurisdictional determination and the permit.
5. **Identify and retain possible experts.** Experts should have experience addressing the specific ecological features at the proposed project location. Economics experts also may be helpful for some permits, as explained in Section C.
6. **Identify the Corps project manager (e.g., from the public notice) and other relevant regulatory personnel.** Building a relationship with local Corps staff can be a powerful tool for influencing permit decisions and may help advocates quickly obtain environmental documents, the permit application and supporting documents, the issued permit, the record of decision, and other information about the permit process.
7. **Advocate behind-the-scenes with local officials including the Corps and consulting agencies (e.g., EPA, U.S. Fish and Wildlife Service) and relevant state agencies.** Raise specific concerns about harm to aquatic resources and, when possible, provide supporting documentation. Keep in mind that communications with agency staff are subject to public records laws—the communications are not private.
8. **Appeal in federal court any final approved jurisdictional determination** that identifies what, if any, aquatic resources are jurisdictional.
9. **Request the agency hold a public hearing** on the permit application if the public notice does not identify that one has been scheduled.
10. **Submit written comments** after an applicant files an application for a Corps permit and the public notice issues. Build a robust administrative record with all necessary supporting information. The comments should raise all relevant issues directly, describe concerns in detail (including citations to legal authority and factual support), and attach all supporting documents as exhibits. If litigation becomes necessary, these steps will help ensure that all issues are preserved for litigation such that a court will entertain them.[194]
11. **Participate in the public hearing** on the permit application if a hearing is granted. Work with partners to encourage broad public participation in the hearing.
12. **Track the progress of the permit and any administrative appeal filed by the applicant** by communicating with the Corps and, if necessary, by submitting public records requests for permitting and environmental review documents.[195]
13. **Litigate the final permit decision.**

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[194] Detailing all possible issues, with supporting evidence attached, during the comment period helps ensure that all important issues can be raised during litigation.
[195] Advocates may not participate in an administrative appeal. *See* **Section C**.

C. Corps' Section 404 Permit Decisions

Section 404 of the Clean Water Act protects "waters of the United States" from the indiscriminate discharge of material capable of causing pollution and from the actual dredging, digging up, or clearing of any wetland or other protected water.[196] Only some proposed petrochemical facilities and expansions will require a Section 404 permit. This section focuses on Section 404 individual permits, which the Corps reviews more rigorously than general permits.

There are three main steps to the Corps' issuance of a Section 404 individual permit:

- First, the Corps evaluates the proposed site to determine whether it has jurisdiction during its **"initial evaluation."** To do so, the Corps evaluates which, if any, aquatic resources are jurisdictional and whether the project will impact "special aquatic sites." U.S. Supreme Court case law and the Corps' and EPA's regulations govern this review. If the Corps finds (or assumes) that jurisdictional resources may be impacted, an applicant must obtain a Section 404 permit. Around this time, the Corps also will determine what type of Section 404 permit a project needs—a general permit or an individual permit.
- Second, if the applicant needs an individual Section 404 permit, the Corps evaluates whether to issue or deny a Section 404 permit. The Corps must deny a Section 404 permit if the proposed project does not comply with EPA's 404(b)(1) Guidelines—the substantive environmental criteria the Corps uses to evaluate a proposed project—or if the project fails the Corps' "public interest review."
- Third, the Corps must ensure that the project complies with other applicable laws.[197] These laws include Section 401 of the Clean Water Act, the Endangered Species Act, Section 106 of the National Historical Preservation Act, the National Environmental Policy Act, and the Coastal Zone Management Act.

During its review, the Corps will consult with other agencies, including the EPA and federal and state wildlife agencies. These agencies—particularly EPA—can have significant influence over the Corps' Section 404 permit decisions. The Corps considers all comments received, including those made during a public hearing.

1. Initial Evaluation: Is an Individual Section 404 Permit Required?

The Corps' initial review evaluates whether a proposed project will impact jurisdictional resources, including "special aquatic sites," and what type of permit—a general permit or an individual permit—the applicant must obtain. The quantity and type of jurisdictional aquatic resources identified at this stage is important. These considerations impact whether the project moves forward, what conditions the Corps imposes on a permit, and what mitigation the Corps requires. "Special aquatic sites," for example, receive heightened protection under Section 404 of the Clean Water Act.

a. Will the project impact jurisdictional resources?

As explained, under Section 404, jurisdictional resources are defined as **"waters of the United States,"** which includes some wetlands. What qualifies as a "water of the United States" is a fact-intensive inquiry, and the legal definition is in flux and heavily-litigated. Some aquatic resources fall

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[196] *See* 33 U.S.C. § 1344.
[197] 40 C.F.R. § 230.11(b).

well within the definition. These waterbodies include perennial (always-flowing) streams, rivers, lakes, and ponds connected to interstate navigable waters. For other waterbodies, such as wetlands, the analysis is much more complicated, and a May 2023 U.S. Supreme Court decision drastically limits the reach of Section 404.[198] Under that recent decision, wetlands adjacent to jurisdictional waters fall within the scope of the Act's protections if they have a continuous connection with a jurisdictional surface water, "making it difficult to determine where the [jurisdictional] 'water' ends and the 'wetland' begins."[199] Wetlands that do not meet this definition do not fall within the Corps' jurisdiction.

Typically, to determine whether a project impacts jurisdictional resources, a permit applicant submits a preliminary jurisdictional determination with supporting documentation to the Corps at the beginning of the permit application process, which the Corps evaluates. In doing so, an applicant may request either (1) that the Corps issue an **"approved jurisdictional determination"** (a lengthy process) before processing the permit application; or (2) that the application proceed based only on a verified **"preliminary jurisdictional determination"** (a shorter process).[200] The Corps also may conduct its own investigation, which might include visiting the site, reviewing aerial photographs, or evaluating historical data.

An applicant's first option—an approved jurisdictional determination—provides greater assurance to an applicant about the scope of jurisdictional resources that a project may impact, but the process takes more time. An approved jurisdictional determination is a Corps document stating the presence or absence of waters of the United States on a parcel and identifies the limits of any such jurisdictional resources.[201] The document explains the Corps' justification, and the determination is considered a final agency decision.[202] In contrast, a preliminary jurisdictional determination is not a final agency decision—it is advisory only, but the process is quicker. A preliminary determination is a written indication that there "may be" waters of the United States on a parcel, and the document also may identify the approximate location of jurisdictional resources.[203]

There are two options for challenging the above jurisdictional decisions. First, because approved jurisdictional determinations are final agency decisions, advocates may immediately challenge such determinations in federal court if they can show that they have a cognizable interest in the decision (i.e., they can establish "standing").[204] However, because preliminary jurisdictional determinations are not final agency decisions, advocates may not immediately appeal such determinations to federal court. Instead, they must wait to raise concerns about the Corps' jurisdictional determination in their advocacy on the Section 404 permit itself, which is issued later. This second option—challenging jurisdictional determinations via the Corps 404 permit itself—may be used for either approved

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198 *See Jurisdictional Information*, U.S. Army Corps of Eng'rs, https://www.usace.army.mil/missions/civil-works/regulatory-program-and-permits/juris_info/ (visited July 18, 2023).
199 *Sackett v. EPA*, No. 21-454, slip op. at 21-22 (S. Ct. May 25, 2023) (acknowledging that "temporary interruptions in surface connection may sometimes occur because of phenomena like low tides or dry spells").
200 *Section 404 of the Clean Water Act*, U.S. Env't Protection Agency (Apr. 6, 2023), https://www.epa.gov/cwa-404/what-jurisdictional-delineation-under-cwa-section-404; U.S. Army Corps of Eng'rs, Regulatory Guidance Letter No. 16-01, *Jurisdictional Determinations* (Oct. 2016), https://www.spn.usace.army.mil/Portals/68/docs/regulatory/resources/RGL/RGL16-01.pdf.
201 33 C.F.R. § 331.2.
202 U.S. Army Corps of Eng'rs v. Hawkes Co., 136 S. Ct. 1807, 1815-16 (2016).
203 33 C.F.R. § 331.2.
204 *U.S. Army Corps of Eng'rs v. Hawkes Co.*, 136 S. Ct. 1807, 1815-16 (2016). To evaluate "standing," advocates should consult with an attorney.

jurisdictional determinations or preliminary jurisdictional determinations. In doing so, advocates would submit comments on the complete 404 permit application showing that proposed permit does not properly account for the project's impacts on all jurisdictional resources. After the Corps issues the final Section 404 permit, advocates may raise similar arguments in court.

In deciding whether to challenge a jurisdictional determination, advocates should focus on the site's potential for overlooked wetlands. Wetlands receive heightened protection under Section 404. Other fruitful avenues include focusing on whether the Corps disregarded certain mudflats and sandflats that fall within the Corps' jurisdiction. Experts, such as wetlands delineation and ecosystem experts, and community members familiar with the site often are essential to successfully challenging to a jurisdictional determination. Documenting the ecosystem through site visits (if there is public access) and using GIS to map the ecological characteristics also can be very helpful. Advocates should learn as much as possible about the area and consult with an attorney to determine the best legal path forward given the particular facts. The box below identifies tools that advocates can use to determine whether a project might impact jurisdictional resources. Given the legal complexity, advocates also should consult an attorney early in the process to discuss the scope of jurisdictional resources that might be impacted by a project and to determine what types of evidence advocates should include in the administrative record to best support their concerns.

b. Will the project impact "special aquatic sites"?

"Special aquatic sites" are a subset of jurisdictional resources. These sites have national importance and the "degradation or destruction" of them "is considered among the most severe environmental impacts covered by the[] Guidelines."[205] When these resources are present, the Corps must take a harder look at impacts and evaluate whether the applicant must do more to avoid harm to these areas. Ensuring that the Corps properly identifies special aquatic sites is important, as it can provide leverage during a Section 404 permit challenge and help build public opposition.

Special aquatic sites vary in size and possess crucial ecological characteristics, including productivity, habitat, wildlife protection, or other important and easily disrupted ecological values.[206] Special aquatic sites include wetlands, sanctuaries and refuges, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes. The sites receive special protection because of their unique contributions to the ecosystem's overall health.

c. What type of Section 404 permit is required?

Two types of Section 404 permits authorize the disposal of dredged or fill material into protected waters: general permits and individual permits. Large projects such as the initial construction or major expansion of a petrochemical facility generally require an individual permit. Individual permits require a more rigorous review of environmental impacts. If the Corps allows a proposed petrochemical facility to proceed under a general permit (an expedited process), advocates should consult an attorney. General permits cover an array of discharges, including those from oil and gas pipeline activities (Nationwide Permit 12), bank stabilization activities (Nationwide Permit 13), and stormwater management activities (Nationwide Permit 43). A list of nationwide general permits is

[205] 40 C.F.R. § 230.1(d).
[206] 40 C.F.R. § 230.3(q-1).

available on the Corps' website.[207] A list of regional and state general permits can be obtained from the local Corps office.

For **individual permits**, the Corps must evaluate the specific project to ensure that the project avoids and minimizes harm to protected waters and is in the public interest. Because individual permits anticipate a relatively high level of impact, the Corps' review is comprehensive, and the level of other agency and public involvement are important. These permits may limit how a project may be constructed, require that construction be halted during breeding seasons, or prohibit certain activities entirely.[208] The Corps must provide notice and an opportunity for public comment on the permit application.

In contrast, for certain categories of activities, the Corps may allow an applicant to obtain coverage under a **general permit**, which the Corps issues on a nationwide, regional, or state basis. A general permit is not issued to any particular project, and multiple dischargers may obtain coverage under the same general permit. However, an applicant may only obtain coverage under a general permit if (1) the proposed activities have no more than "minimal adverse impacts," individually and cumulatively; and (2) the applicant satisfies all the general permit's criteria, including those that limit the type of activity and the size of the impact.[209] Unless all requirements are met, an applicant may not obtain coverage under a general permit. Advocates should check for region-specific limitations that ensure the general permit properly reflects a given region's ecology, and ensure that the general permit, in fact, offers coverage where the project is located. General permits, including nationwide

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[207] *2021 Nationwide Permit Information*, U.S. Army Corps of Eng'rs, https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Nationwide-Permits/ (visited July 18, 2023).
[208] 40 C.F.R. §§ 230.70-230.77.
[209] 40 C.F.R. § 230.7.

permits, may exclude some areas. If a project satisfies all general permit requirements, the Corps need not provide notice and public comment.

ADVOCACY TIPS: SITE EVALUATION—JURISDICTIONAL DETERMINATION & SPECIAL AQUATIC AREAS

1. **Research the footprint of the proposed petrochemical facility or expansion** to identify jurisdictional waters and special aquatic sites. To do so, ask the local Corps office for resources, visit the area, identify areas that collect water, identify wetland plants, review soil maps, use mapping tools, and review the public notice documents and the related environmental documents, including those for the NEPA review. Specific tools include:
- **Local Corps office list:** http://www.usace.army.mil/Contact/Office-Locator
- **Wetland plants:** https://wetland-plants.usace.army.mil
- **National Wetland Inventory:** http://www.fws.gov/wetlands
- Aerial photos and maps:
    - Google Earth: www.google.com/earth
    - USGS EarthExplorer: https://earthexplorer.usgs.gov
    - NOAA CoastWatch: https://coastwatch.noaa.gov/cwn/index.html
    - USDA Geospatial Data Gateway: https://datagateway.nrcs.usda.gov
- **Corps Wetlands Delineation Manual:** https://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf
- **Corps regional wetland information:** https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/reg_supp/

2. **Retain an expert**, such a wetlands delineation expert, if funds allow, and **engage the local community** to help document the resources on the site.
3. **Research the area** by reviewing scientific articles and agency literature (e.g., EPA or U.S. Fish and Wildlife Service).

Use this information to answer the following questions:

1. Are there **aquatic resources** on site?
2. If so, do these resources satisfy the WOTUS definition, i.e., **are they jurisdictional**?
- Commonly jurisdictional: ocean, river, lakes, wetlands, mudflats, sandflats
- Often not jurisdictional: isolated irrigation districts

3. Are any jurisdictional waters "**special aquatic sites**"?
- E.g., wetlands, sanctuaries, mudflats, vegetated shallows
- Special aquatic sites are jurisdictional resources that receive heighted protection

ADVOCACY TIPS: INCIDENTAL FALLBACK

An applicant must obtain a Section 404 permit for discharging dredged material into protected waters and for the actual dredging, digging up, or clearing of any wetland or other protected water.[1] By law, these types of activities are presumed to result in the discharge of dredged material into protected waters.[2] Thus, the Corps will require a Section 404 permit even when the dredged material is disposed of on dry land. An applicant, however, may try to show that the dredging, digging up, or clearing will result in only **"incidental fallback"** of the dredged material. If the Corps agrees, the Corps will not require a Section 404 permit.

"Incidental fallback" is defined as the addition or redeposit of small volumes of dredged material that is incidental to excavation activities.[3] A project will produce more than incidental fallback if more than a small amount of dredged material will be deposited into an area that is not adjacent to the area being dredged.[4] The Corps presumes that activities that involve mechanized landclearing, ditching, channelization, and other excavation activity in a protected water will involve more than incidental fallback, thus requiring a Section 404 permit.

If the Corps refuses to require a permit based on incidental fallback, advocates should:

1. submit a public records request seeking evidence that establishes that the proposed project will result in no more than incidental fallback; and
2. obtain evidence showing that a proposed project will result in larger deposits of material into wetlands and other protected areas and thus may not be considered "incidental fallback."

[1] 33 U.S.C. § 1344(a); *see* 33 C.F.R. § 232.2(d).
[2] *See* 33 C.F.R. § 232.2(d).
[3] 33 C.F.R. § 232.2(d).
[4] 33 C.F.R. § 232.2(d)(2)(ii); *see also Nat'l Mining Ass'n v. U.S. Army Corps of Eng'rs*, 145 F.3d 1399, 1403-04 (D.C. Cir. 1998).

d. The Corps' Evaluation: Should the Corps Grant, Condition, or Deny a Section 404 Permit?

In evaluating a permit application, the Corps must ensure that the proposed project complies with EPA's 404(b)(1) Guidelines and satisfies the Corps' "public interest review." The Corps has the authority to grant, condition, or deny a Section 404 permit.

EPA's 404(b)(1) Guidelines

The 404(b)(1) Guidelines, prepared by the EPA in consultation with the Corps, are the federal environmental regulations that govern the filling of waters and wetlands. A proposed project must address all relevant portions of the Guidelines, and the Corps must deny a Section 404 permit if a project does not comply with them.[210] The Guidelines prohibit certain discharges and establish the criteria the Corps must follow in evaluating a permit application. The Guidelines seek to avoid the unnecessary filling of waters and wetlands and identify measures to avoid, minimize, and compensate for impacts. When a proposed project threatens significant harm, the Corps' analysis must be more rigorous.[211]

The Guidelines expressly prohibit discharges:

- where less environmentally damaging practicable alternatives exist;
- that result in violations of state or federal water quality standards, the Endangered Species Act, and the Marine Sanctuaries Act;
- that cause or contribute to significant degradation of waters and wetlands;
- where all appropriate and practical mitigation has not been taken; or
- where there is not sufficient information to determine compliance with the Guidelines.[212]

The Corps begins its review by defining the "basic project purpose" and the "overall project purpose."[213] Each purpose guides the Corps' review of a proposed project. The **basic project purpose** is the fundamental or irreducible reason for the project (e.g., to provide housing, to provide sufficient water capacity, to increase the capacity of the school system). The Corps uses this purpose to determine whether a project is water dependent (e.g., docks). For projects that do not depend on water, the Corps presumes that practical alternatives exist that do not involve filling wetlands or other special aquatic sites.[214] To overcome this presumption, the applicant must clearly show that practical alternatives do not exist.[215] If the applicant does not do so, the Corps will not issue a Section 404 permit. Thus, when a proposed project threatens wetlands or other special aquatic sites, advocates should evaluate whether a project is water dependent and, if not, identify alternative options.

The **overall project purpose** serves as the basis for evaluating practical alternatives to avoid filling waters and wetlands.[216] To define the overall project purpose, the Corps further defines the basic project purpose in a manner that more specifically describes the applicant's goals for a project and allows for the evaluation of a reasonable range of alternatives. In doing so, the Corps may consider the geographical location and the type of project.

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[210] 40 C.F.R. § 230.5(*l*).
[211] 40 C.F.R. § 230.6(b).
[212] 40 C.F.R. §§ 230.10(a), (b)(1)-(4), (c).
[213] U.S. Army Corps of Eng'rs, Guidelines for Preparation of Analysis of Section 404 Permit Applications Pursuant to the Section 404(b)(1) Guidelines of the Clean Water Act 2 [hereinafter Corps' Guidelines to 404(b)(1) Guidelines], https://www.sas.usace.army.mil/Portals/61/docs/regulatory/IP_SAS_404_b_1_Guidelines.pdf (visited Aug. 7, 2022).
[214] 40 C.F.R. § 230.10(a)(3); Memorandum of Agreement Between U.S. Dep't of Army and EPA, *Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines* 3-4 (Feb. 6, 1990) [hereinafter 404(b)(1) Memorandum of Agreement], https://www.epa.gov/cwa-404/memorandum-agreement-regarding-mitigation-under-cwa-section-404b1-guidelines-text.
[215] 40 C.F.R. § 230.10(a)(3).
[216] 40 C.F.R. §§ 230.3(q), 230.10(a)(2); *see also* Corps' Guidelines to 404(b)(1) Guidelines, at 2-3.

Next, the Corps evaluates **alternatives**. The Corps prioritizes avoiding impacts; then considers mitigation options; and, for unavoidable impacts, requires compensatory mitigation, as the diagram below shows.[217] The Corps sequentially evaluates: (1) offsite alternatives; (2) onsite project modifications to avoid and minimize impacts;[218] and (3) compensatory mitigation to replace functions and values unavoidably impacted.[219] When impacts are unavoidable, the Corps requires all appropriate and practical compensatory mitigation, which may include restoring or preserving nearby wetlands. As explained, when a project is not water dependent, the applicant must clearly show that no practicable alternative exists that does not involve filling wetlands or other special aquatic sites. Otherwise, the Corps may not issue the permit.

ALTERNATIVES ANALYSIS: SECTION 404 VERSUS NEPA

In many cases, the alternatives analysis required under the National Environmental Policy Act (NEPA) will guide the Corps' evaluation of alternatives under the Guidelines.[1] However, the Corps must ensure that the NEPA alternatives analysis provides sufficient detail to satisfy all requirements of the Guidelines. If the NEPA analysis falls short, the Corps must supplement the NEPA documents. **Chapter Six** discusses NEPA.

[1] 40 C.F.R. § 230.11(a)(4).

As part of its review, the Corps makes **written factual determinations**. The written findings must address the potential short-term and long-term effects of proposed discharges, including the cumulative and secondary (indirect) effects on the aquatic ecosystem.[220] EPA's Guidelines emphasize that while a given discharge might constitute a "minor change," the cumulative effect of numerous such changes "can result in major impairment" of water resources and aquatic ecosystems.[221]

The **types of potential direct, secondary, and cumulative resource impacts** that the Corps must consider are broad, including impacts to:

- the physical and chemical characteristics of the aquatic ecosystem;[222]
- plants, fish, and wildlife, including threatened and endangered species;[223]
- special aquatic sites, including sanctuaries, refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and poll complexes;[224] and

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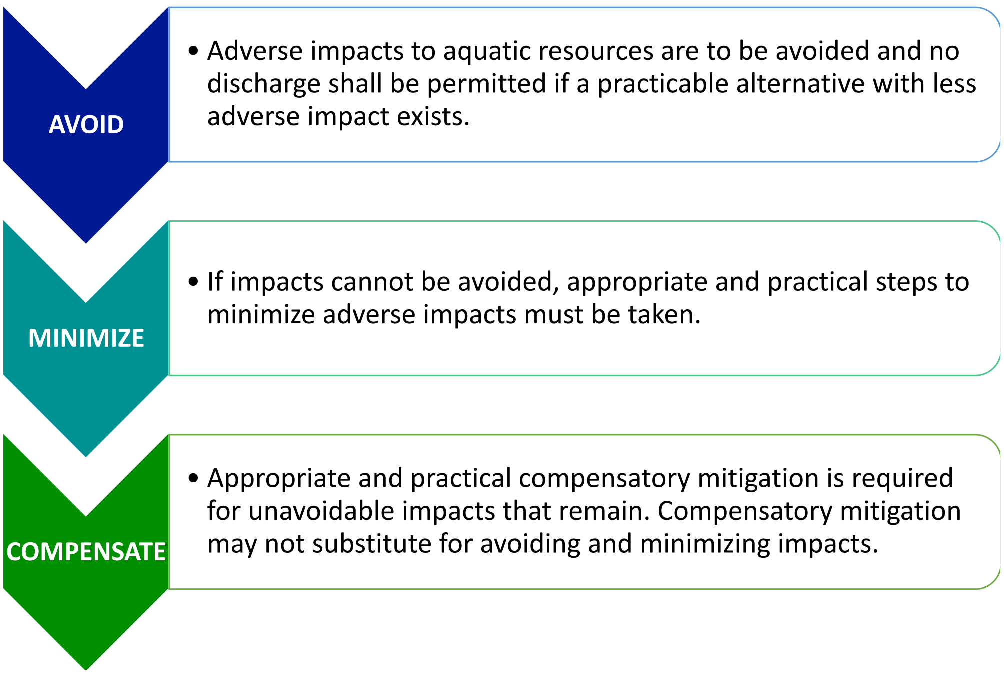
[217] 404(b)(1) Memorandum of Agreement, § II. The diagram is adapted from EPA, *Wetlands Compensatory Mitigation*, https://www.epa.gov/sites/default/files/2015-08/documents/compensatory_mitigation_factsheet.pdf (visited Oct. 11, 2022).
[218] EPA regulations identify examples of minimization measures, including preventing the creation of habitat that would attract "undesirable predators," avoiding sites that have unique habitat or other values, and habitat development and restoration." 40 C.F.R. § 230.75(d).
[219] Compensatory mitigation projects are intended to achieve the federal government's national goal of "'no net loss' of wetland acreage and function." Compensatory Mitigation for Losses of Aquatic Resources, 73 Fed. Reg. 19,593, 19,593 (Apr. 10, 2008). Typically, the applicant prepares an initial compensatory mitigation plan. The Corps and other agencies, such as EPA, evaluate whether the plan is sufficient. The Corps decides whether to approve the plan.
[220] 40 C.F.R. § 230.11(g)-(h).
[221] 40 C.F.R. § 230.11(g).
[222] 40 C.F.R. § 230.20-230.25.
[223] 40 C.F.R. § 230.30-230.32.
[224] 40 C.F.R. § 230.40-230.45.

- socioeconomic and community impacts, including those municipal and private water supplies, recreational and commercial fisheries, water-related recreation, aesthetics, parks, national and historic monuments, national seashores, wilderness areas, and research sites.[225]

Corps' Evaluation of Section 404 Permits



In practice, the Corps routinely issues Section 404 permits that destroy wetlands. An applicant need only avoid harm with no "practicable alternatives."[226] In determining what is "practicable," the Corps considers costs, existing technology, and logistics in light of the overall project purpose.[227] For unavoidable impacts, the Corps limits the required mitigation to what is "appropriate and practicable."[228]

To stop a Section 404 permit, an advocate must show that the Corps failed to follow the law, e.g., by failing to properly apply all relevant provisions of the 404(b)(1) Guidelines. Advocates should carefully compare the permit application to each part of the Guidelines: a proposed action must address all relevant portions of the Guidelines.[229] Advocates also should identify—and support with evidence—robust mitigation options that help minimize the harm a project will cause, even if the Corps allows the project to proceed.[230] The Corps may only issue a permit for the "least environmentally damaging practicable alternative."[231]

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[225] 40 C.F.R. § 230.50-230.54.
[226] 40 C.F.R. § 230.10(a).
[227] 40 C.F.R. § 230.10(a)(2). At least one court has held that the applicant must clearly demonstrate there are no practical alternatives. *See Nw. Env't Def. Ctr. v. Wood*, 947 F. Supp. 1371, 1374 (D. Or. 1996).
[228] *See* 40 C.F.R. § 230.12.
[229] 40 C.F.R. § 230.5(*l*).
[230] Practicable alternatives may include other locations for the project so long as the applicant could "reasonably obtain[]" the alternative site. 40 C.F.R. § 230.10(a)(2).
[231] 404(b)(1) Memorandum of Agreement, at 3; *see also* 40 C.F.R. §§ 230.7(b)(1), 230.10(a).

The structure of the 404(b)(1) Guidelines offers a tool for identifying gaps in the Corps' analysis. As the diagram below shows, several parts of the Guidelines serve as advocacy checklists (yellow boxes). For example, the Guidelines specify the types of resource impacts that the Corps must consider (Subparts C to F), identify actions to minimize adverse effects (Subpart H), and establish how the Corps must evaluate compensatory mitigation options (Subpart I). To arrive at a permit decision, the Corps may need to follow an iterative process—the result of one Guideline step may require a re-examination of previous steps.[232]

Other useful resource include:

- a 1990 memorandum between the Corps and EPA that guides the Corps' evaluation of Section 404 permit applications[233]; and
- a Corps guide to the 404(b)(1) Guidelines that describes how the Corps reviews projects.[234]

Corps Districts also often publish information on their websites about how they review Section 404 permit applications. Such information can help identify flaws in a permit application and the Corps' review of it.

Navigating the 404(b)(1) Guidelines

Subpart A: General (§§ 230.1-230.7)
- Purpose & definitions
- Applicability & other relevant guidance (§ 230.2)
- Mandatory procedures (§ 230.5)
- Required documentation & scope of review (§ 230.6(b))

Subpart B: Guidelines Compliance (§§ 230.10-230.12)
- Four conditions that must be satisfied
- Required factual determinations (§ 230.11)

Subpart C: Potential Impacts, Physical & Chemical Characteristics (§§ 230.20-230.25)
- List of impacts Corps must consider
- **Checklist** for challenging Corps' determinations

Subpart D: Potential Impacts, Biological Characteristics (§§ 230.30-230.32)
- List of impacts Corps must consider
- **Checklist** for challenging the Corps' determinations

Subpart E: Potential Impacts, Special Aquatic Sites (§§ 230.40-230.45)
- List of impacts Corps must consider
- **Checklist** for challenging Corps' determinations
- Heightened scrutiny required
- Impacts "among the most serve environmental impacts"

Subpart F: Potential Effects, Human Uses (§§ 230.50-230.54)
- List of impacts Corps must consider
- **Checklist** for challenging Corps' determinations

Subpart G: Evaluation & Testing (§§ 230.60-230.61)
- Guidelines may be updated soon

Subpart H: Actions to Minimize Adverse Effects (§§ 230.70-230.77)
- List of options for minimizing harm
- **Checklist** for challenging Corps' determinations

Subpart I: Planning to Shorten Permit Process Time (§ 230.80)
- Identification of potential future disposal sites & areas unsuitable for disposal

Subpart J: Compensatory Mitigation (§§ 230.91-230.98)
- Compensatory mitigation considerations
- **Checklist** for challenging Corps' determinations

232 40 C.F.R. § 230.5(*l*).
233 404(b)(1) Memorandum of Agreement.
234 Corps' Guidelines to 404(b)(1) Guidelines.

Public Interest Review

In addition to EPA's 404(b)(1) Guidelines, the Corps must evaluate "the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest."[235] This **"public interest review"** balances the benefits and detriments of a proposed project. The review is intentionally broad, capturing all relevant issues that could impact the environment, human health and well-being, and natural resources. Considerations include but are not limited to:[236]

- conservation
- economics
- aesthetics
- wetlands
- cultural values
- fish & wildlife values
- floodplain values
- flood hazards
- food & fiber production
- energy needs
- navigation
- shore erosion & accretion
- recreation
- water supply & conservation
- safety
- needs & welfare of people
- private ownership considerations
- general environmental concerns

Wetlands receive special attention under both the 404(b)(1) Guidelines and the public interest review. The Corps' regulations recognize, for example, that wetlands "perform functions important to the public interest," including among others, food production, habitat, protection of natural drainages and sedimentation patterns, and water purification.[237] Given this heightened attention, advocates should pay close attention to whether the Corps properly delineated all wetlands and how a proposed project might harm wetlands. As explained above in **Section C.1** ("Will the project impact jurisdictional resources?"), an expert often is needed to determine whether the Corps properly identified all wetlands and how a project might impact them. Community members familiar with the ecology of the area also can be very helpful, as are the resources identified in the Box at the end of that section.

Advocates also can raise concerns about environmental justice (a "needs and welfare of people" consideration) and climate change (a "general environmental concerns" consideration), as well as opportunities for mitigating such harm. **Chapter Six**, which discusses NEPA, explains the serious threat that petrochemical facilities pose to environmental justice communities and the climate.

Advocates also should address how a proposed petrochemical facility or expansion will likely exacerbate existing environmental and social harms, including those that extend beyond the proposed project's footprint. The public interest review is not limited to a project's immediate impact area—the Corps must consider cumulative impacts.[238]

The breadth of the public interest review is unique. However, the Corps often adopts a narrow view of its obligations—it frequently fails to consider impacts beyond a project's footprint. Advocates should emphasize the broad scope of the Corps' review in written comments, oral testimony, and

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[235] 33 C.F.R. § 320.4(a)(1).
[236] 33 C.F.R. § 320.4(a)(1).
[237] 33 C.F.R. § 320.4(b)(2).
[238] 33 C.F.R. § 320.4(a)(1).

informal conversations. The Corps violates its regulations when it considers only the impacts of construction and other permitted activities.

e. Additional Legal Obligations: Does the Project Comply with Other Federal Laws?

The Corps must ensure that a proposed project complies with other federal laws.[239] Such laws include Section 401 of the Clean Water Act, the National Environmental Policy Act, the Endangered Species Act, Section 106 of the National Historical Preservation Act, and the Coastal Zone Management Act. Many of these laws require that the Corps consult with other federal and state agencies. When these laws apply, advocates should look for disagreements among agencies. Such disagreements are powerful advocacy tools for challenging the Corps' permit decisions. Evidence of disagreements can undermine the Corps' rationale for issuing a permit.

A summary of each of the above laws follows. **Chapter Five** describes Clean Water Act Section 401 certifications, and **Chapter Six** explains the Corps' environmental review under the National Environmental Policy Act.

Section 401 of the Clean Water Act provides states and authorized tribes with a tool to protect water quality within their borders. Before issuing a Section 404 (or Section 10) permit, Section 401 requires that the Corps first obtain either a water quality certification or a waiver of that requirement.[240] States and authorized tribes where the discharge would originate generally are charged with granting, denying, conditioning, or waiving Section 401 certification. When a proposed petrochemical project may impede achieving water quality goals, states and authorized tribes can prevent or modify the project through this provision of the Clean Water Act, as **Chapter Five** explains.

The **National Environmental Policy Act (NEPA)** directs federal agencies to rigorously evaluate the environmental consequences of "major federal actions significantly affecting the environment" and to alert the public to those consequences.[241] Whenever the Corps considers a project requiring an individual Section 404 permit, the Corps generally must evaluate the impacts of the proposed project under NEPA. Often the Corps' NEPA review proceeds concurrently with its evaluation of Section 404 permits. **Chapter Six** describes the Corps' NEPA obligations.

The **Endangered Species Act (ESA)** protects listed endangered and threatened species, including their habitat.[242] Consistent with the ESA, the 404(b)(1) Guidelines prohibit discharges that will likely jeopardize the continued existence of endangered or threatened species or result in the likely destruction or adverse modification of habitat designed as critical for these species.[243] Section 7 of the ESA requires the Corps to consult with the relevant wildlife agency—either the U.S. Fish and Wildlife Service (freshwater and land species) or the National Marine Fisheries Service (marine species)—to ensure its Section 404 permit decisions do not violate the ESA.[244] The consultation process concludes with a "biological opinion" that states whether the Corps has ensured that its action complies with the ESA.

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[239] *See* 40 C.F.R. §§ 230.10(b).
[240] *See* 33 U.S.C. § 1341.
[241] 42 U.S.C. § 4332(C).
[242] 16 U.S.C. § 1531.
[243] 40 C.F.R. § 230.30; *see also* 16 U.S.C. § 1536(a)(2).
[244] 16 U.S.C. § 1536(a)(2).

Section 106 of the National Historical Preservation Act requires federal agencies to consider how a permitted activity might affect historic properties. If an activity has the potential to affect historic properties, a Section 106 review is required.[245] These reviews can involve various parties, including the state (or tribal) historic preservation officer, local government, and interested tribes. The review identifies potentially adverse impacts to historic properties and considers how to avoid, minimize, or mitigate such harms.

The **Coastal Zone Management Act**, discussed further in Chapter 6, seeks to "preserve, protect, develop, and where possible, to restore or enhance" the nation's coastal resources.[246] For activities that affect coastal resources, the Act establishes a formal review process commonly known as "federal consistency," typically administered by states.[247] This consistency review ensures that Section 404 permits (as well as other federally permitted and licensed activities) are consistent with a state's enforceable coastal policies including those that protect coastal resources, recreation, and public access; manage coastal development; govern coastal-dependent uses; preserve historic and cultural resources; and facilitate marine and estuarine research and education. These reviews may provide another opportunity for written public comment and, potentially, a hearing. Through this process, a state may work with the Corps or applicant to amend the proposed activity to be consistent with the state's coastal policies.

f. The Corps' Section 404 Permit Decision, Administrative Appeals, and Litigation

The Corps may either issue, condition, or deny a Section 404 permit. The above laws and regulations govern that decision-making process. However, it is not always apparent when a Section 404 permit issues. Advocates should check in with the Corps' project manager and District office about a permit's status and may need to submit a public records request for the permit.

If the Corps denies a permit or attaches conditions the applicant disagrees with, the applicant may administratively appeal the permit decision.[248] If the appeal substantially changes the Corps' permit decision, the Corps should re-issue the permit for public comment, which starts the process over again.[249] Advocates may not file or participate in administrative appeals. Before advocates may challenge a permit in federal court, they must wait for any administrative appeal to conclude or at least sixty days after the Corps issues a permit, when the applicant's time to appeal expires—whichever is later.[250] At this point, a permit becomes "final" and appealable to federal court.

Challenging a permit in federal court will not automatically suspend the permit. A permit may be suspended in two circumstances—both of which are unusual. First, the Corps may decide to voluntarily suspend a permit if new circumstances warrant reconsideration, such as proposed changes to the project.[251] Second, a court may issue a "preliminary injunction" that prevents a project

[245] 16 U.S.C. § 470.
[246] 16 U.S.C. § 1452.
[247] 16 U.S.C. § 1456.
[248] 33 C.F.R. § 331.2.
[249] 33 C.F.R. § 331.10(b).
[250] *See* 33 C.F.R. § 331.5(a).
[251] While the first judicial challenge to Rio Grande LNG's permits was being briefed, the Corps suspended the LNG facility's permit because of changes the applicant had proposed to the terminal and pipeline. See *Shrimpers v. Corps*, No. 20-60281 (Brief for Respondent) at 1 (5th Cir. Aug. 13, 2020), http://climatecasechart.com/climate-change-litigation/wp-content/uploads/sites/16/case-documents/2020/20200813_docket-20-60281-_brief.pdf. The Corps reissued the permit in September 2021. This and additional briefing in this case are included as Appendices 9 to 11.

from proceeding during litigation. The burden of proof for a preliminary injunction is high. Advocates must show a reasonable probability of success on the merits, a real and immediate threat of irreparable harm absent an injunction, that the balance of the equities and the hardships favors an injunction, and that an injunction is in the public interest. To evaluate litigation options, advocates should consult with an attorney.

D. Section 404 Permits: Role of EPA and Federal and State Wildlife Agencies

Under the Clean Water Act, EPA has discretionary authority to oversee the Corps' implementation of Section 404 permit requirements. Section 404(q) of the Clean Water Act identifies how EPA may raise concerns with the Corps' permit process, and Section 404(c) gives EPA authority to object to a proposed permit.[252] The U.S. Fish and Wildlife Service also may raise concerns about the Corps' permit process, as may other wildlife agencies.[253]

1. Environmental Protection Agency

a. EPA's authority to formally "elevate" concerns about Section 404 permits (Section 404(q))

Section 404(q) of the Clean Water Act gives EPA oversight authority over the Corps' Section 404 permit process. A 1992 memorandum of agreement guides how the Corps and EPA coordinate reviews of permit decisions.[254] Under this agreement, EPA may comment on applications pending before the Corps. If serious concerns arise, the EPA Regional Administrator may "elevate" an individual permit. The Regional Administrator may do so when, in its view, the project will have substantial and unacceptable impacts to "aquatic resources of national importance," including special aquatic sites.[255] Elevating an individual permit helps ensure that the 404(b)(1) Guidelines are carefully followed.[256] When EPA elevates an individual permit, the headquarters of both EPA and the Corps review the permit and assume decision-making authority over it.[257] EPA's concerns may include those about water quality, even if the state or an authorized tribe issued a Section 401 certification for the project. If EPA and the Corps fail to resolve their disagreements, EPA may veto the permit—though, in practice, EPA rarely does so.

EPA's Section 404 oversight is very valuable. Through this authority, EPA may closely scrutinize the Section 404 process for an individual permit and help ensure that all regulations are followed and that all necessary conditions are added to a permit before it issues. Because of EPA's veto power, EPA's concerns carry considerable weight.

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[252] 33 U.S.C. § 1344(c), (q); *see also* Memorandum of Agreement between EPA & Dep't of Army, *CWA Section 404(q)* (Aug. 11, 1992) [hereinafter EPA 404(q) Memorandum of Agreement], https://www.epa.gov/cwa-404/cwa-section-404q-memorandum-agreement-between-epa-and-department-army-text.
[253] 33 U.S.C. § 1344(m); 33 C.F.R. §§ 320.3(e), 320.4(c).
[254] EPA 404(q) Memorandum of Agreement.
[255] *Id*, Part IV(1); *see also* 40 C.F.R. § 230.1(d).
[256] EPA 404(q) Memorandum of Agreement, Part IV(1).
[257] *Id.*, Part II.

Advocates should reach out to EPA early in the permit process to express concerns, to offer evidence documenting such concerns, and to demonstrate broad public opposition to a proposed project. Doing so may help persuade EPA to scrutinize the project and to work with the Corps to improve a permit. If advocates' concerns are particularly serious, advocates should become familiar with the 404(b)(1) Guidelines and the 404(q) procedures under which EPA may elevate the permit. The 404(q) process has short deadlines, follows a specific format, and narrowly focuses EPA's attention on a project's "substantial and unacceptable impacts aquatic resources of national importance."[258] Advocates may need to coach regional EPA staff through this process. For a list of examples of EPA exercising its authority under Section 404(q), visit Chronology of CWA Section 404(q) Actions, EPA (June 21, 2022), https://www.epa.gov/cwa-404/chronology-cwa-section-404q-actions.

SECTION 404(Q) TIMELINE: EPA'S AUTHORITY TO ELEVATE INDIVIDUAL PERMITS

1. **The Regional Administrator must submit a letter during the public comment period for the permit.** The letter must state that, in EPA's opinion, the project may result in "substantial and unacceptable impacts to aquatic resources of national importance."
2. **Within twenty-five calendar days after the comment period closes, the Regional Administrator must submit a more detailed letter.** The letter must explain why the project will have a substantial and unacceptable impact on aquatic resources of national importance and why the permit must be modified, denied, or conditioned.
3. If the Corps District Engineer believes that the permitting process should proceed (either after modifications to the permit or without changes), the Corps forwards the draft permit and a Notice of Intent to Proceed to EPA.
4. **Within fifteen calendar days of receiving the Corps' draft permit and notice, the Regional Administrator must notify the Corps District Engineer of its intent to elevate review** of the issues to a higher level, namely the Assistant Secretary of the Army for Civil Works.

Advocates can encourage EPA to move through this process by supplying EPA with information about the harm the project will cause and mobilizing public opposition. To be effective, advocates should begin engaging with EPA as soon as they become aware of a proposed petrochemical facility—i.e., well before the public comment period begins.

b. EPA's veto power (Section 404(c))

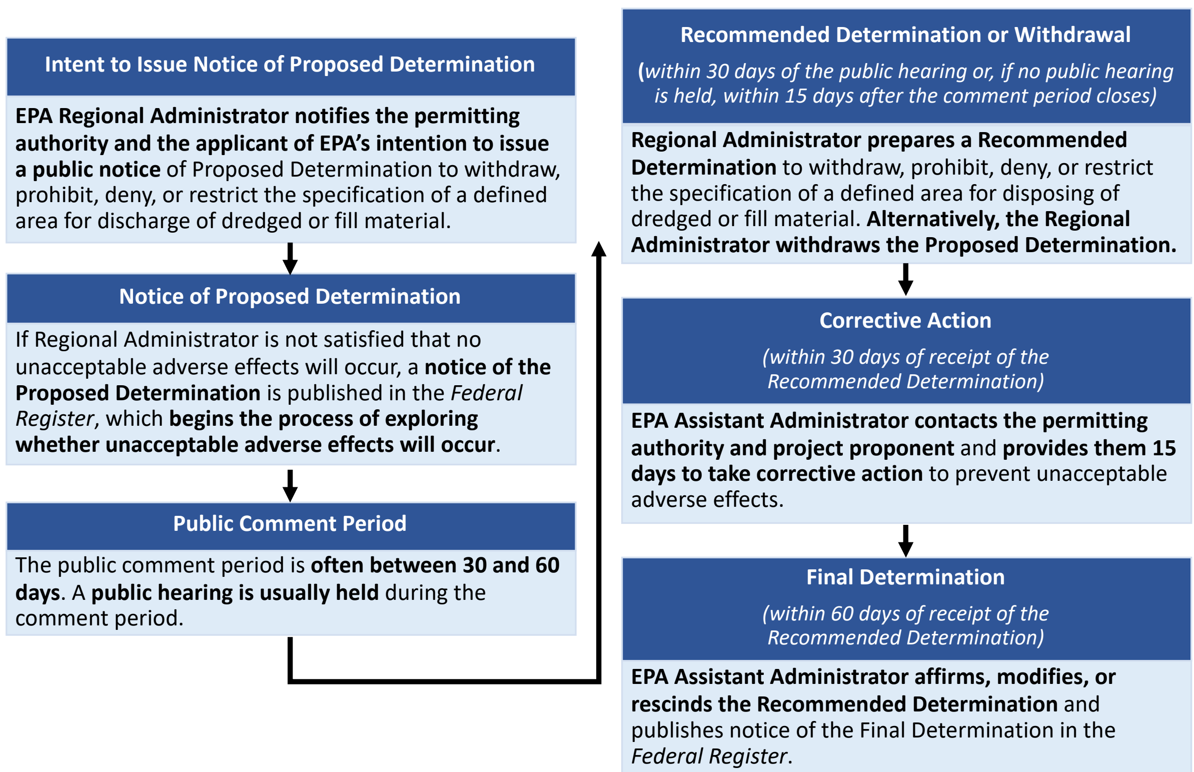
Under Section 404(c), EPA may veto Section 404 permits whenever the EPA Administrator determines that the discharge will have unacceptable adverse effects on certain aquatic areas.[259] EPA rarely exercises this authority. Since 1972, EPA has initiated only thirty Section 404(c) cases and

[258] EPA 404(q) Memorandum of Agreement, Part IV(3)(a).
[259] 33 U.S.C. § 1344(c).

only thirteen of those have resulted in modified permits.[260] EPA last exercised its authority in 2011 for a massive surface coal mining project in West Virginia.[261] Although seldomly used, EPA's veto power gives EPA's comments on Section 404 permits outsized weight.

Specifically, Section 404(c) authorizes EPA to restrict, prohibit, deny, or withdraw the use of an area as a disposal site for dredged or fill material if the discharge "will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas . . . , wildlife, or recreational areas."[262] EPA may exercise this authority (1) before an applicant applies for a permit, (2) while a permit application is pending, or (3) after a permit has issued. The diagram below shows the steps involved.[263] To date, EPA has issued most vetoes for very large projects with significant public and political opposition.

Section 404(c) Veto Process



2. Consultation with Federal and State Wildlife Agencies

The Corps must consult with the relevant federal wildlife agency (i.e., the U.S. Fish and Wildlife Service or the National Marine Fisheries Service), as well as the state wildlife agency, whenever a project may threaten federally listed endangered or threatened species or their habitat. The Corps must "give full consideration to the views of those agencies on fish and wildlife matters in deciding

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[260] EPA, *Clean Water Act: Section 404(c) "Veto Authority"* (Jan. 2022) [hereinafter EPA Section 404(c) Veto Power], https://www.epa.gov/sites/default/files/2016-03/documents/404c.pdf. On average, the Corps authorizes about 74,000 permit activities in the nation's waters each year. *Id.*
[261] *See* Liz Judge, *Federal Court Upholds EPA Veto of Spruce Mountaintop Removal Mine,* Earthjustice, Sept. 30, 2014, https://earthjustice.org/news/press/2014/federal-court-upholds-epa-veto-of-spruce-mountaintop-removal-mine.
[262] 33 U.S.C. § 1344(c).
[263] Adapted from EPA Section 404(c) Veto Power, *supra* note 261.

on the issuance, denial, or conditioning of individual or general permits."[264] Within ninety days of receiving notice of a permit application, the U.S. Fish and Wildlife Service must submit any comments on a proposed project.[265] Similar to EPA, the U.S. Fish and Wildlife Service has the authority to elevate certain permits and policy issues under Section 404(q)—but it may not veto permits.[266]

The process through which the U.S. Fish and Wildlife Service may elevate a permit is nearly identical to the EPA process. When disputes between regional U.S. Fish and Wildlife Service and Corps staff arise, they may elevate the disputes to their headquarters. As with EPA, the U.S. Fish and Wildlife Service may only elevate an individual permit in "cases that involve aquatic resources of national importance."[267] Although this term is not defined, generally the Fish and Wildlife Service will only elevate issues that impact nationally important special aquatic sites.

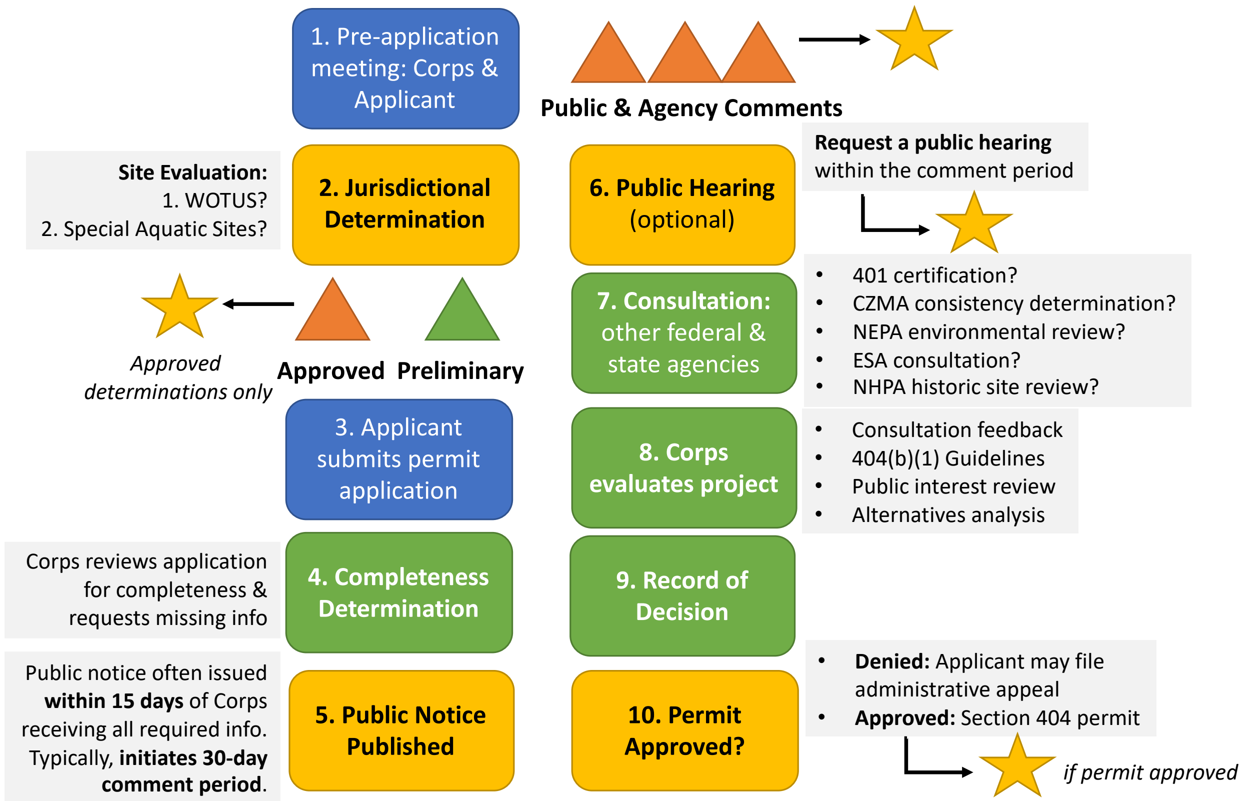
E. Challenging Section 404 Permits

There are several ways to engage on Section 404 permits. Advocates should try to challenge a permit from as many angles as possible. For example, advocates can educate the public, collaborate with other stakeholders, reach out to the Corps, engage other federal and state agencies, challenge an approved jurisdictional determination, file comments on Section 404 permit applications, participate in a public hearing on the proposed project (if one is scheduled), and challenge a final permit in court.

The diagram below summarizes the Corps' Section 404 permit process. Yellow boxes and stars identify opportunities where advocates can engage formally. Green boxes identify key decision points in the Section 404 process. Blue boxes identify important procedural steps. Formal and informal opportunities for engagement are described below.

[264] 33 C.F.R. § 320.4(c).
[265] 33 U.S.C. § 1344(m).
[266] Memorandum of Agreement between Dep't of Interior & Dep't of Army, *CWA Section 404(q)* (Dec. 1992) [hereinafter FWS 404(q) Memorandum of Agreement], https://www.fws.gov/sites/default/files/documents/memorandum-of-agreement-on-clean-water-act-section-404q_0.pdf.
[267] *Id.*

Section 404 Permit Process



a. Educate the public

Spreading awareness about a proposed petrochemical facility builds pressure on the Corps, the applicant, and other federal agencies, such as EPA and the U.S. Fish and Wildlife Service. Describing the harm through first-hand accounts from community members, disseminating factsheets, hosting webinars and community meetings, alerting the public to comment and hearing opportunities, and engaging the press can be very effective. The best time to begin such outreach is as soon as advocates become aware of a proposed project. Building robust public opposition early is a powerful tool for capturing decision-makers' attention.

b. Collaborate with other stakeholders

Collaborating with other stakeholders, such as commercial and recreational users of the area, can be very effective. Doing so can provide insight into how jurisdictional waters are used and the project's likely impacts. Such collaboration also can show widespread opposition. First-hand accounts from users of the area, such as observations about how dredged material might interfere with their enjoyment of the area, clarifies the harm the project likely will cause and can be used as leverage to pressure the Corps and the applicant to better avoid and minimize such damage.

c. Reach out to the Corps

Developing a relationship with the relevant Corps District office, including the project manager, allows advocates to share their concerns before the public comment period begins, gather more information about a proposed facility, learn about the anticipated project timeline (including the agency decision-making process), and obtain pertinent documents (e.g., the permit application and related materials). The earlier advocates reach out the better. As the permit process progresses, advocates should try to stay in touch with the Corps. Keep in mind that the Corps and other federal and state agencies are subject to public records laws—communications with agencies are not private.

d. Engage other federal and state agencies

Soon after advocates learn about a proposed petrochemical facility, advocates should consider contacting other federal and state agencies—including local EPA and U.S. Fish and Wildlife Service staff—to highlight key concerns, ascertain whether the agencies share their concerns, and encourage the agencies to comment on the project. Advocates should provide agency staff with details about their concerns and supporting documentation. Providing this information before the comment period opens is critical. If advocates wait, the agencies likely will not have enough time to engage. As the permit process progresses, advocates should try to stay in touch with the agencies. If the agencies file comments, advocates can help elevate issues the agencies identify by echoing them in conversations with the Corps and in written comments on the permit application.

e. Stay informed about formal public participation opportunities

Typically, the Corps issues a public notice within fifteen days of receiving all required information from an applicant. Advocates can stay informed about formal public participation opportunities by signing up for public notice distribution lists (often on the District website), monitoring the District website for notices and jurisdictional determinations, and developing a relationship with District staff.

f. Obtain information about the project

Advocates should begin gathering information about the proposal as they become aware of it. To obtain information, advocates can engage with other stakeholders (including community members), retain experts, conduct independent research (e.g., mapping tools, studies about the area, and agency websites), reach out to federal and state agency staff, and file public records requests.

If advocates have a good relationship with the relevant agency staff, asking them directly for documents may be the easiest—and fastest—option. If agency staff are not forthcoming, advocates should promptly file a public records request under the Freedom of Information Act (FOIA) with the relevant District office. It may take a while before the Corps produces documents. To file a public records request, advocates should review the Corps' FOIA materials, which include a sample request.[268] By default, agencies charge for producing documents; however, advocates can request that those fees be waived.

Agencies must let a requester know within twenty days whether the agency will grant or deny the request. If the FOIA office has not responded within twenty days, advocates should contact the FOIA officer for the District. If the request is granted, the agency must produce the documents promptly thereafter.[269] If advocates struggle to obtain requested documents, advocates should consult with an attorney. There are various options for pressuring the Corps to release documents.

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[268] *Freedom of Information Act Page*, U.S. Army Corps of Eng'rs, https://www.usace.army.mil/FOIA.aspx (visited Aug. 14, 2023).
[269] *See* 5 U.S.C. § 552(a)(6)(C)(i); *see also* Dep't of Justice, *Department of Justice Guide to the Freedom of Information Act* 34-35 (Sept. 9, 2022), https://www.justice.gov/oip/doj-guide-freedom-information-act-0.

Categories of information that advocates should consider requesting include (1) all permit application documents, including supporting documentation; (2) all permit documents and supporting materials; (3) the record of decision for the permit; (4) all communications between the Corps and the applicant from the relevant time period; and (5) all communications between the Corps and other relevant federal and state agencies about the proposed project from the relevant time period. Advocates also might consider filing public records requests with other consulting agencies (e.g., EPA and the U.S. Fish and Wildlife Service) soon after they learn about a proposed project.

ADVOCACY TIPS: PUBLIC RECORDS REQUESTS

Before filing a public records request, advocates should seek to obtain the documents informally by reaching out to agency staff familiar with a proposed project and asking them for the documents. Obtaining documents through formal records requests can take a long time.

When a formal records request is necessary, advocates should prioritize the most important information and ask for that information first. Agencies likely will respond more quickly to narrow public records requests that seek specific documents. Thus, advocates might consider filing separate requests: first filing a FOIA request narrowly tailored to the most important information (e.g., the application materials); and then filing a broader FOIA request (e.g., for communications between the Corps and other relevant agencies).

When filing a public records request:

1. **Keep track of each request**, including a spreadsheet of when the request was filed, all communications with the FOIA office, and any document productions.
2. **Ensure you receive confirmation** that the agency has received the FOIA request and a **tracking number**.
3. Identify the FOIA tracking number in all communications with the FOIA office.
4. **Periodically email or call the FOIA office about the status of a FOIA request and document all such communications.** Doing so puts pressure on the agency to produce documents. Moreover, if litigation becomes necessary, demonstrating your efforts to work with the agency can be very helpful.
5. **Become familiar with the relevant FOIA timelines and the FOIA office's duties** in working with requestors (e.g., regarding findings, exceptions or exemptions claimed, records produced, and rights to administrative appeals).

g. Challenge an approved jurisdictional determination

As explained above, advocates may appeal an approved jurisdictional determination to federal court before a permit issues, but not a preliminary jurisdictional determination.[270] The Corps publishes approved jurisdictional determinations once final, and there is no public notice and comment period.

[270] *See U.S. Army Corps of Eng'rs v. Hawkes Co.*, 136 S. Ct. 1807, 1815 (2016). For more information about approved jurisdictional determinations, visit EPA's website: *Clean Water Act Approved Jurisdictional Determinations*, EPA (June 25, 2021), https://watersgeo.epa.gov/cwa/CWA-JDs/FAQ/.

Approved jurisdictional determinations often are published on the relevant District's website. A permit application also may indicate whether the Corps has issued a final (appealable) jurisdictional determination.

Although not often pursued, challenging an approved jurisdictional determination could be valuable. Correcting a flawed jurisdictional determination could significantly alter how the Corps approaches its review of the permit application. The key question on appeal is whether the Corps properly identified all "waters of the United States" that might be impacted by a proposed project.

To persuade a court that the Corps' determination is wrong, advocates must show that the Corps' decision is "arbitrary and capricious"—a deferential standard of review. Engaging an ecosystem expert, thus, is important. Other support may include soil maps (which may indicate the presence of a wetland)[271], aerial photographs and mapping tools (to identify wetlands and other protected areas)[272], and the National Wetland Inventory (a map prepared by the U.S. Fish and Wildlife Service).[273] Although advocates likely will not be permitted to visit a site, there may be public access on the periphery. If so, advocates should look for and document wetland plants, pooled water, and soil types typical of wetland areas. Community groups that use the area to recreate or fish also may be familiar with the site, including how its characteristics vary seasonally.

If advocates choose not to challenge an approved jurisdictional determination in court (e.g., to help preserve resources for challenging the permit), advocates can raise many of the same issues in comments on the permit application. Advocates should consult with an attorney to evaluate the best legal strategy.

h. Participate in a public hearing

If the public notice for the comment period does not identify a public hearing date, advocates interested in a public hearing must request one during the public comment period.[274] The Corps' regulations state that the Corps "shall" grant hearing requests "unless the district engineer determines that the issues raised are insubstantial or there is otherwise no valid interest to be served by a hearing." Where there is doubt, "a public hearing shall be held."[275] Yet the Corps rarely holds public hearings for Section 404 permits.

In a public hearing request, advocates should quote the above language and demonstrate widespread concern about a proposed petrochemical facility. Advocates should describe the harm a proposed facility might cause to the environment and the community, identify the number of public outreach sessions advocates have held, quantify the number of stakeholders (both people and organizations) raising concerns about the project, and attach relevant newspaper and magazine articles. The more public interest that advocates can demonstrate, the more likely that the Corps will

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[271] *Web Soil Survey*, U.S. Dep't of Agric. (July 31, 2019), https://websoilsurvey.nrcs.usda.gov/app/.
[272] Helpful mapping tools include Google Earth (www.google.com/earth), U.S. Geological Survey's EarthExplorer (earthexplorer.usgs.gov), National Oceanic and Atmospheric Administration's CoastWatch (coastwatch.noaa.gov), and USDA's Geospatial Data Gateway (datagateway.nrcs.usda.gov).
[273] *Wetlands Mapper*, U.S. Fish & Wildlife Serv., https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper (visited Aug. 14, 2023).
[274] *See* 33 C.F.R. § 327.4(b).
[275] 33 C.F.R. § 327.4(b)-(c).

hold a public hearing. Advocates also should encourage other stakeholders to request a public hearing. Political opposition can be particularly persuasive.

Before the public hearing, advocates should encourage broad community participation, including from those who reside in the communities most at risk from the project and from those who use such areas. Oral comments about how a project will impact someone directly are particularly powerful. At the hearing, the applicant and project supporters also will have an opportunity to speak.

Both oral and written comments made during a public hearing become part of the administrative record. The Corps' permit decision must address all "substantial and valid" issues raised in a hearing, which is another reason to encourage people to testify, including those with diverse concerns.[276] In addition, the Corps must accept public comments for at least ten days after the public hearing concludes.[277]

i. File written public comments on a Section 404 permit application

Submitting robust written comments is a powerful advocacy tool. Comments assist the Corps in determining whether to issue, condition, or deny a Section 404 permit. The Corps often closely evaluates information about impacts to jurisdictional resources (including special aquatic sites), endangered or threatened species, historic properties, water quality, general environmental impacts, and the other considerations and public interest factors identified above. Comments also may inform the Corps' environmental review under NEPA and help the Corps evaluate the need for a public hearing and the public's interest in a project.

The public notice will specify how and when comments will be received and whether a public hearing has been scheduled. Typically, comments are due within thirty days of the notice's issuance; though, occasionally, comment periods are only fifteen days. Under the Corps' regulations, the Corps may only shorten the 30-day default comment period after considering various factors including whether the proposed project is "routine or noncontroversial," the need for comments from remote areas, and comments from similar proposals. The Corps may extend the original comment period by 30 days if it deems that doing so is "warranted."[278]

The public notice might not include the permit application or supporting documents. If it does not, advocates should promptly request those documents, which may require viewing the documents in person. For complex projects, advocates may request that the Corps extend the comment period. To support an extension request, advocates should note any difficulties with obtaining relevant information, widespread public interest in the project, and the volume and complexity of the issues.

Advocates should raise all issues in their comments and attach all documentary evidence. Doing so helps ensure that the permit is as protective of the environment and communities as possible and preserves the issues for litigation. In preparing comments, advocates should use all available information, including existing environmental reviews for the proposed project, public records requests, and information gleaned from site visits and mapping, experts, websites, and literature reviews. Summarize all such support in the written comments and attach all documentation to the comments as exhibits, including any opinions from experts. If additional information comes to light

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[276] 33 C.F.R. § 327.9.
[277] 33 C.F.R. § 327.8(g).
[278] 33 C.F.R. § 325.2(d)(2).

about the project after the public comment period closes, advocates should submit additional comments and explain why the information was not presented during the comment period. The Corps has discretion to consider late comments.[279]

Effective comments might adopt the following structure:

- **Describe the aquatic resources impacted.** Identify any jurisdictional resources that should be jurisdictional but have not been identified as such. Highlight wetlands and other "special aquatic sites" that will receive more scrutiny. Specifically explain how the proposed project will harm or threaten these jurisdictional resources.
- **Evaluate how the "basic project purpose" and the "overall project purpose" are defined.** If incorrectly defined, specify how the Corps should define the project's basic and overall purposes.

  As explained, the **basic project purpose** determines whether the project is "water dependent." For projects that do not depend on water, the Corps presumes that practical alternatives exist that do not involve filling wetlands or other special aquatic sites.[280] If the project includes several smaller component projects, evaluate whether some component projects are properly considered "water dependent" (e.g., docks), while others should not be considered "water dependent" (e.g., pipelines, work camps, and storage facilities). For portions that are not water dependent, the applicant must clearly show that alternative sites are not available that do not involve filling wetlands or other special aquatic sites. Absent this showing, the Corps may not issue the permit.[281] Alternative sites may include those not presently owned by the applicant.[282]

  The **overall project purpose** guides the Corps' evaluation of alternatives. An overly narrow definition of the overall purpose will improperly restrict the Corps' alternatives analysis.[283]
- **Tick off each of the Corps' responsibilities and ensure that the application complies with all of them.** The Corps' obligations include the duty to avoid, minimize, and compensate for adverse impacts; comply with all relevant Section 404(b)(1) Guidelines; protect endangered and threatened species; protect water quality under Section 401 of the Clean Water Act; balance the benefits and detriments of a proposed project under the Corps' "public interest review"; and support the decision with sufficient evidence. Advocates should (1) review the Section 404(b)(1) Guidelines one-by-one; (2) identify how the project conflicts with the Corps' obligations; (3) quote the Guidelines to show how the project violates the Corps' obligations, and (4) point out any required analyses that are missing.[284] Explain what the Corps should do to fix any flaws.
- **Ensure that the alternatives analysis considers all practical options**, first, to avoid adverse impacts and, second, to minimize such harm. Alternatives may include moving the project, shrinking the project's footprint, or limiting when and how construction may occur. Ensure that any proposed or likely conditions are readily enforceable. Concerns about enforceability may

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[279] *See* 33 C.F.R. § 337.1(d).
[280] 404(b)(1) Memorandum of Agreement, at 3-4.
[281] 40 C.F.R. § 230.10(a)(3).
[282] 40 C.F.R. § 230.1(d).
[283] *Sylvester v. U.S. Army Corps of Eng'rs*, 882 F.2d 407, 409 (9th Cir. 1989).
[284] *See* 40 C.F.R. § 230.5(*l*) (the Corps must address all relevant provisions of the Guidelines).

include insufficient Corps resources to investigate violations and to monitor compliance. If enforcement is questionable, explain that concern.

- **Evaluate whether the project may impair water quality**, including whether a Section 401 certification has issued and whether point-source discharges from the project may violate applicable toxic effluent standards under Section 307 of the Clean Water Act.[285] If a waterbody has a history of heavy industrial use, dredging may dislodge toxins from the soil. Consulting an expert about the likely toxic discharges from a petrochemical facility could help show that the project might violate Section 307. If an evaluation of water quality standards is missing from the record, advocates should emphasize that in their comments. Advocates also can contact EPA to see if EPA shares their concerns.
- **Walk point-by-point through the public interest factors and explain how the project, on balance, is not in the public interest.** Emphasize that the Corps' review is broad—the Corps must evaluate cumulative impacts, including those beyond the project's footprint.
- **Analyze the compensatory mitigation plan** to determine whether the mitigation will accomplish the intended outcome. Advocates can investigate the compensatory mitigation measures likely to be approved and how those mitigation measures relate to the mitigation methodology that the District uses.[286] In addition to the Section 404(b)(1) Guidelines, EPA and the Corps have published several guidance documents and handbooks that address requirements for compensatory mitigation plans. The Guidelines and these additional documents identify several options for satisfying compensatory mitigation requirements.
- **Identify any missing information from the application.** Explain why the missing information is necessary to an informed decision and include citations to legal authority. For example, the missing information might be necessary for the Corps to make an informed jurisdictional determination or to fulfill the Corps' responsibilities under the Section 404(b)(1) Guidelines, the public interest review, or the other laws identified above.
- **Attach all supporting documents as exhibits, including comments filed on other permits or environmental reviews for the project.** Attaching all substantive documents is critical to preserving issues for litigation; do not just supply URLs. Additionally, advocates should highlight, in the body of the comments, comments filed on other permits and environmental reviews for the project and attach these additional comments as exhibits. Doing so ensures that the Corps is on notice of all deficiencies, which is helpful if the permit is litigated.

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[285] *See* 40 C.F.R. §§ 230.10(b).
[286] For example, the New Orleans District uses the Louisiana Wetlands Rapid Assessment Method (LRAM), accessible here: https://www.mvn.usace.army.mil/Missions/Regulatory/Mitigation/Assessment_Method/ (visited Aug. 14, 2023).

ADVOCACY TIP: WORKING WITH EXPERTS

Experts can make arguments more persuasive by providing "expert opinions." The Corps and a reviewing court may give expert opinions particular weight. For Section 404 permits, experts may help

- delineate wetlands,
- evaluate how dredged and fill material harms aquatic resources and potential alternatives, and
- explain the economic impacts of a project, including the ecological benefits of the natural area.

j. Challenge an approved permit in court

Once a permit is final, Section 404 permits can be challenged in federal court under the Administrative Procedure Act (APA). The Corps' decision on the permit is reviewed under the APA standard of review—whether the Corps' actions, findings, or conclusions are "arbitrary, capricious, an abuse of discretion, or not otherwise in accordance with law."[287]

All issues raised during the comment period can be raised during litigation, including issues raised by other groups. An issue not raised during the comment period generally can only be raised litigation in limited circumstances, for example if the issue did not arise until after the comment period closed.[288]

F. Section 10 Rivers and Harbors Act Permits

Section 10 of the Rivers and Harbors Act governs certain activities that impact navigable waters. Specifically, Section 10 regulates the discharge of refuse into navigable waters, the excavation or filling of navigable waters, and construction in navigable waters, including activities affecting the course, condition, location or capacity of navigable waters.[289] "Navigable waters" include waters that are subject to the ebb and flow of the tide or may be used to transport interstate or foreign commerce.[290] Petrochemical facilities that are adjacent to or include construction in navigable waters may require a Section 10 permit.

When Section 10 applies, the Corps often combines its review of the Section 10 permit with its review of the Section 404 permit. The EPA and U.S. Fish and Wildlife Service can comment on both permits, and public participation options are the same for both permits. The major difference is that the 404(b)(1) Guidelines do not apply to Section 10 permits.

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[287] *Sierra Club v. U.S. Army Corps of Eng'rs*, 909 F.3d 635, 643 (4th Cir. 2018) (quoting 5 U.S.C. § 706(2)(A)).
[288] *See Sierra Club v. Bostick*, 787 F.3d 1043, 1048-51 (10th Cir. 2015).
[289] 33 U.S.C. § 403. If the project involves the alteration, occupation, or use of a Corps civil works project—such as federally-maintained navigation channels or federal levees—an applicant also must receive permission under Section 14 of the Rivers and Harbors Act to ensure that the activity will not harm the public interest or impair the authorized purpose of the civil works project. 33 U.S.C. § 408.
[290] 33 C.F.R. § 322.2(a).

1. Section 10 prohibitions

Section 10 prohibits three types of activities: (1) *"any obstruction not affirmatively authorized by Congress, to the navigable capacity of any water of the United States"; (2) building a structure in navigable waters without the Corps' permission; and (3) altering or modifying "the course, location, condition, or capacity" of a navigable water without the Corps' permission.*[291]

The Corps has broad authority to grant or deny a Section 10 permit and to determine what constitutes an "obstruction." Structures deemed obstructions may include docks, houseboats, sunken vessels, and riprap (material used to reinforce shorelines). Courts generally will not question the Corps' decision. Thus, successfully challenging a Section 10 permit can be difficult.

2. Section 10 permit decisions

In evaluating whether to issue a Section 10 permit, the Corps will consider "the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest."[292] This framework is the same "public interest review" that the Corps uses for Section 404 permits. The Corps balances the reasonably foreseeable benefits of a project against its reasonably foreseeable detriments.[293] As explained, the public interest review is intentionally broad. The review evaluates all relevant issues that could impact the environment, human health, and natural resources. The review includes issues that extend beyond those directly related to the impacts of in-water work.[294]

The same non-exhaustive list of factors guides the Corps' public review:[295]

- conservation
- economics
- aesthetics
- wetlands
- cultural values
- fish & wildlife values
- floodplain values
- flood hazards
- food & fiber production
- energy needs
- navigation
- shore erosion & accretion
- recreation
- water supply & conservation
- safety
- needs & welfare of people
- private ownership considerations
- general environmental concerns

Advocates' options for challenging Section 10 permits generally track those for challenging Section 404 permits.

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291 33 U.S.C. § 403.
292 33 C.F.R. § 320.4(a)(1).
293 33 C.F.R. § 320.4(a)(1).
294 *See* 33 C.F.R. § 320.4(a)(1).
295 33 C.F.R. § 320.4(a)(1).

Chapter 5

STATE WATER QUALITY CERTIFICATIONS

CHAPTER FIVE: STATE WATER QUALITY CERTIFICATIONS

A. Overview

Chapter Five addresses Section 401 of the Clean Water Act. As explained in **Chapter 4**, Section 401 provides states and authorized tribes with a tool to protect water quality within their borders. Before issuing a Clean Water Act Section 404 permit or Rivers and Harbors Act Section 10 permit, Section 401 requires that the state or tribe where the discharge is located either certify that the project will not harm water quality or waive that requirement.[296] When a proposed petrochemical project may impede achieving water quality goals, states and tribes may prevent or modify the project through Section 401 of the Clean Water Act.

This Chapter has four sections. **Section B** introduces states' and authorized tribes' authority under Section 401. **Section C** describes the legal regime, focusing on the federal legal requirements. **Section D** offers suggestions for how advocates might engage in the Section 401 certification process.

FEDERAL REGULATIONS IN FLUX

The federal regulations governing Clean Water Act Section 401 Certifications are in flux. Currently, the regulations issued by EPA in 2020 and codified at 40 C.F.R. 121 apply. An EPA rulemaking to revise the regulations is ongoing. Final rules are expected in 2023.

In the meantime, EPA has provided clarification, including a Q&A, here: https://www.epa.gov/cwa-401/qa-2020-rule-vacatur.

Status updates on the rulemaking's progress are available here: https://www.epa.gov/cwa-401/proposed-clean-water-act-section-401-water-quality-certification-improvement-rule.

B. States' Role in Providing Water Quality Certifications

Section 401 provides states and tribes with a powerful tool to protect water quality within their borders. However, from a state or tribe perspective, the process is resource-intensive and can be expensive. States and tribes typically cover the cost of the certification process, rather than receiving permitting fees from project applicants. As a result, states and tribes frequently "waive" their certification authority. To encourage states and tribes to use this powerful tool, advocates should develop strong relationships with local regulators, supply them with robust evidence about the harm a particular project will cause, and offer concrete recommendations about how they can mitigate that harm through the Section 401 process.

This section (1) describes what a Section 401 certification is; (2) identifies who is involved in the process; (3) explains why engaging in the Section 401 process might be beneficial; and (4) suggests how advocates can get involved.

[296] *See* 33 U.S.C. § 1341.

1. What is a Section 401 water quality certification?

Section 401 of the Clean Water Act provides states and tribes with a powerful tool to protect waters within their borders from harm resulting from federally licensed or permitted projects, such as those that require Clean Water Act Section 404 permits or Rivers and Harbors Act Section 10 permits.

The central feature of Section 401 is the state's or tribe's ability to grant, grant with conditions, deny, or waive certification. Granting certification allows the federal permit or license to be issued consistent with any conditions the state or tribe imposes on the certification. Any conditions imposed in the certification become part of the federal permit or license. Denying certification prohibits the federal permit or license from being issued. Waiver allows the federal permit or license to be issued without state or tribal comment.[297]

Section 401 thus helps states and tribes ensure that federally permitted or licensed projects within their borders do not impair water quality below the standard that the state or tribe deems acceptable. The Corps may not issue a permit or license for an activity that may result in a discharge into a "water of the United States" without a Section 401 water quality certification or waiver.[298] Applicants bear the burden to obtain all necessary certifications.[299]

However, states and tribes cover the cost of evaluating and certifying projects. Because the process is resource-intensive, they frequently waive certification—either affirmatively or by failing to timely act on the certification opportunity.[300]

2. Who is involved in Section 401 certifications?

Three primary entities are involved in Section 401 certifications: the project applicant, the federal permitting or licensing agency (such as the Corps), and the certifying authority—either the state or authorized tribe where the discharge originates. EPA serves as the certifying authority if there is no authorized tribe.[301]

Neighboring states/tribes also may be involved when a discharge from a project "may affect" water quality within their borders. In these cases, the neighboring states/tribes have an opportunity to object to the issuance of the federal permit or license and to impose conditions on the project.[302]

3. Why challenge a Section 401 certification?

There are two primary benefits to challenging a Section 401 certification: (1) the certification serves as a check on the federal decision-making; and (2) the scope of conditions that may be included in the federal permit or license is broader under Section 401 than under Section 404 or Section 10.

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[297] 33 U.S.C. § 1341(a); 40 C.F.R. § 124.55(a). If a certifying authority fails to act on a Section 401 application in a timely manner, the state/tribe will waive its authority under the Clean Water Act, and the project may seek federal permits without a Section 401 certification. 33 U.S.C. § 1341(a)(1).
[298] **Chapter 4** discusses the definition of "waters of the United States." As explained in that chapter, the definition is fact-intensive and heavily litigated.
[299] *See* 33 U.S.C. § 1341.
[300] As explained below, states/tribes must act on a certification opportunity "within a reasonable period of time," not to exceed one year. 33 U.S.C. § 1341(a). The amount of time a state/tribe has to act varies from project to project and depends on what federal regulations are in place.
[301] 33 U.S.C. § 1341(a)(1).
[302] 33 U.S.C. § 1341(a)(2).

Through Section 401, certifying authorities may be able to better protect water quality and nearby communities or stop harmful projects altogether.

Certifying authorities have considerable discretion in determining what conditions a permit must include. Such conditions may include limitations (such as those for effluent) and monitoring requirements necessary to assure compliance with Clean Water Act Sections 301, 302, 306, and 307 and "any other appropriate requirement of State law."[303] However, as explained below, the scope of a certifying authority's' discretion depends on what federal regulations are in place.

4. How can advocates get involved?

The Section 401 certification process often lacks transparency, which can make it difficult to participate. When resources are limited, it may be best to focus on other avenues unless the state is friendly to environmental or community health interests, or otherwise appears opposed to a project. Comments addressing Section 401 also can be included, as a separate section, in comments on other water-related federal permits and licenses, such as Section 404 and Section 10 permits and, in some states, National Pollution Discharge Elimination (NPDES) permits issued under the Clean Water Act.

Best advocacy practices include:

- **Review the state's or tribe's Section 401 procedures.** Read the state statute, rules, and any guidance from the state certifying office. When reviewing this information seek to answer the following questions: Does the state or tribe specify a certification standard? Does state law or related guidance impose any limits on the state's/tribe's ability to impose conditions on a project through the Section 401 certification process? May the state or tribe certify both Section 404 individual and general permits or just individual permits? May the state or tribe waive Section 401 certification? Must the state or tribe post a public notice before it moves ahead with certification and, if so, how long is the notice period? Reach out to the local certifying office for tips on how the public can get involved and, as early as possible, start making a case that the certifying office should scrutinize the proposed petrochemical facility.
- **Engage with the state/tribal certifying authority as early as possible.** Reach out to the certifying authority to make sure they are aware of the project and to educate staff about the harms the project might cause. Where possible, provide documentation verifying such concerns. Learn as much as possible about the state's/tribe's position on the project, and how they might approach certification.

  Advocates also can request that the public notice be issued after the state/tribe has made preliminary decisions about what kinds of conditions might be included in the certification, and that the state/tribe include that information in the public notice. Absent such requests, the regulator may issue a public notice that states only that state/tribe is considering exercising its Section 401 authority, without any concrete information about what the state/tribe has in mind. Such barebones public notices make it difficult for advocates to draft robust, persuasive comments. If the certifying authority declines to issue a more robust public notice, engaging

[303] 33 U.S.C. § 1341(d).

closely with local regulator before the public notice issues can help advocates fill in the knowledge gaps.

- **Educate the public and develop a broad coalition opposing the project.** Educate the public, other stakeholders, and the press about the harms the proposed project might cause. Try to draw as much attention as possible to the project. Engaging with nearby communities also may provide advocates with information about the scope and severity of the harm the project might cause.
- **Comment if there is a public comment period.** Contact the certifying authority if it is not clear whether a public comment period will be held. Comments about Section 401 issues also can be included, as a separate section, in comments on other water-related federal permits, such as Section 404 and Section 10 permits and, occasionally, NPDES permits.
- **Request and participate in any hearing.** Many states/tribes do not require public hearings on Section 401 certifications, but advocates may request a hearing. To do so successfully, demonstrate broad public concern and interest in a hearing. The request for a hearing should be made during the Section 401 certification comment period (if there is one) and during the comment period for any federal permits or licenses.
- **Advocate for improved Section 401 public participation.** In states/tribes where public participation is limited, pressure the state/tribe to provide more opportunities for public engagement. Drawing upon examples of the broad public concern over projects requiring Section 401 certification and demonstrating the significant harm such projects pose to the water quality and communities may be particularly persuasive.
- **Litigate.** Section 401 certifications can be challenged in court.

C. State and Applicant Responsibilities Under Section 401

The Clean Water Act, as well as federal and state regulations, govern what an applicant and a certifying authority must do to comply with Section 401. This section focuses on the requirements outlined in Section 401 of the Clean Water Act and related EPA regulations. The section (1) explains when Section 401 certification applies; (2) describes what types of water quality concerns are under consideration; (3) identifies the types of activities that might impair water quality; and (4) highlights anticipated changes to the federal regulations, which are expected in 2023. As of July 2023, the 2020 federal regulations apply.

This Chapter does not address rules that states or tribes have issued to implement their Section 401 certification authority. Certifying authorities have their own rules that govern how they process certification requests. These rules may include public participation requirements (e.g., where a public notice is published, the length of any public comment period, and public hearing procedures); application requirements; the scope of, and limitations on, their certification authority; and the administrative appeals process (if any). Advocates should research the state Section 401 regulations in the state or tribe where the discharge originates.

1. When is Section 401 certification triggered?

Section 401 certification is triggered for a broad range of activities—whenever an applicant seeks a "Federal license or permit to conduct any activity" that "*may* result in any *discharge* into the navigable waters."[304] To trigger Section 401, the permit or license must (1) be issued by a federal agency; (2) for an activity that has the potential to discharge; (3) into a water of the United States. In such circumstances, the applicant must provide the federal licensing or permitting agency a certification from the certifying authority where the discharge originates or a waiver of that requirement, as well as from any other state/state that may be affected by the discharge.[305] The applicant must do so for each potential discharge. Importantly, Section 401 certification is triggered even if the discharge does not involve the addition of pollutants.[306]

For petrochemical facilities, the federal permits most likely to require Section 401 certification include Section 404 and Section 10 permits. **Chapter 4** discusses Section 404 and Section 10 permits and the definition of "waters of the United States," which is a fact-intensive inquiry that often becomes a central issue in litigation.

2. What water quality requirements are under consideration?

Water quality requirements vary from state to state and from water to water. The scope of what states and tribes may consider when exercising their Section 401 certification authority depends on what federal regulations are in place.

As explained below, states and tribes enjoy more discretion under EPA's proposed 2022 rules than under the 2020 rules, which are in place as of July 2023. Under the current 2020 rules, the certification analysis is limited to the Clean Water Act provisions enumerated under Section 401 and to state/tribal regulatory requirements that apply to the project's point source discharges.[307] In contrast, under the proposed rules (2022), the certification analysis focuses on whether the activity as whole will comply with all applicable water quality requirements including those enumerated under Section 401; any federal, state, or tribal laws or regulations implementing those sections; and any other water quality-related requirement of state or tribal law, including those that address nonpoint source discharges.[308] Under the proposed rules, states and authorized tribes, thus, may consider both the discharge(s) itself, as well as the water quality impacts of the project as a whole.

At minimum, EPA-approved "**water quality standards**" must be used when evaluating whether to grant, condition, or deny certification requests.[309] The standards describe the desired condition of a waterbody and how that condition will be protected or achieved.[310] Water quality, at minimum, must satisfy these standards, and states and tribes may develop water quality standards more stringent than EPA's regulations require.[311]

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[304] 33 U.S.C. § 1341(a)(1) (emphasis added).
[305] 33 U.S.C. § 1341(a)(2).
[306] *See S.D. Warren Co. v. Maine Bd. of Env't Prot.*, 547 U.S. 370, 379 n.5 (2006) (an addition of a pollutant is not "fundamental to any discharge").
[307] 2020 Final Rule, 85 Fed. Reg. 42,210, 42,234 (July 13, 2020) (codified at 40 C.F.R. § 121.3). As explained below, under Section 401, states/tribes may consider whether a potential discharge will comply with Sections 301, 302, 303, 306, and 307 of the Clean Water Act. 33 U.S.C. § 1341(a)(1). Sections 301, 302, 306 address effluent limitations and standards of performance for new and existing discharge sources; Section 303 addresses water quality standards and implementation plans; and Section 307 addresses toxic pretreatment effluent standards.
[308] *See PUD No. 1 of Jefferson Cnty v. Wash. Dep't of Ecology*, 511 U.S. 700, 712 (1994) (citing 40 C.F.R. § 121.2(a)(3)); 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,342 (June 9, 2022) (to be codified at 40 C.F.R. § 121.3).
[309] 40 C.F.R. §§ 131.5, 131.21(d).
[310] 40 C.F.R. § 131.2; *Standards for Water Body Health*, EPA (Apr. 14, 2022), https://www.epa.gov/standards-water-body-health/what-are-water-quality-standards.
[311] 40 C.F.R. § 131.4(a).

Water quality standards include three core components: (1) one or more "**designated uses**" of a waterbody; (2) numeric and narrative "**criteria**" to protect designated uses; and (3) an **antidegradation policy** that protects existing uses and high quality/high value waters.[312] Specifically, these core components involve:

- States and authorized tribes must specify goals and expectations for how each waterbody is used, so-called "**designated uses.**" Designated uses may include protection and propagation of fish, shellfish, and wildlife; recreation; public drinking water supply; and agricultural, industrial, navigational, and other such purposes.[313]
- To protect designated uses, water quality standards establish numeric and narrative "**criteria.**"[314] Numeric criteria include those that limit the amount of pollution in a waterbody. Narrative criteria include those that describe the desired conditions of a waterbody being "free from" harmful conditions. States and authorized tribes generally adopt both numeric and narrative criteria.
- The Clean Water Act's "**antidegradation policy**" has three tiers and is designed to protect existing uses.[315] Tier 1 protects existing uses and establishes a minimum level of protection for all waters.[316] Tier 2 applies to waters whose quality exceeds the baseline necessary to protect the Clean Water Act's goals. For these waters, water quality may not fall below the level necessary to fully protect the fishable/swimmable uses and other existing uses.[317] Tier 3 applies to "outstanding national resource waters" where the ordinary use classifications and supporting criteria may not be sufficient or appropriate. The quality of these waters must be "maintained and protected."[318]

To challenge a Section 401 certification, advocates should review EPA-provided resources, including EPA's Water Quality Standards Academy, https://www.epa.gov/wqs-tech/water-quality-standards-academy. This tutorial includes webinars that teach the basics of water quality standards. EPA's water quality standards handbook is another helpful resource, https://www.epa.gov/wqs-tech/water-quality-standards-handbook.

Advocates also should research state-specific water quality standards for the waterbody. EPA maintains an updated list of state and tribal water quality standards, https://www.epa.gov/wqs-tech/state-specific-water-quality-standards-effective-under-clean-water-act-cwa. Understanding the full suite of a state's or tribe's concerns about a particular waterbody can help advocates identify the concerns that might be particularly persuasive to the certifying authority, including how those concerns relate to EPA-approved water quality standards.

Advocates do not need to be water quality experts to raise valid concerns about how a proposed petrochemical facility's construction and operation might impair water quality. However, consulting a water quality expert that understands the applicable water quality standards may be helpful.

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[312] *See* 33 U.S.C. §§ 1313(c)(2), (d)(4)(B); 40 C.F.R. § 131.6 & pt. 131, subpart B.
[313] *See* 33 U.S.C. §§ 1251(a), 1313(c)(2); 40 C.F.R. § 131.10.
[314] 40 C.F.R. §§ 131.3(b), 131.11.
[315] 40 C.F.R. § 131.12.
[316] 40 C.F.R. § 131.12(a)(1).
[317] 40 C.F.R. § 131.12(a)(2).
[318] 40 C.F.R. § 131.12(a)(3).

3. How might a proposed petrochemical facility affect water quality?

Petrochemical facilities can impair water quality in various ways. For example, petrochemical facilities frequently discharge high levels of toxic chemicals, including PFAS, benzene, butadiene, and phthalates, along with plastic pellets, flakes, granules, and powders. Some of these toxic pollutants are carcinogens like PFAS, benzene, vinyl chloride, and tri-chloroethylene, and they include more than 100 chemicals that can harm human health, including causing birth defects, developmental disorders, and impairment of the central nervous system and endocrine system.[319] These chemicals, in turn, are eaten by migratory birds, fish, and other wildlife, collect in sediments, contaminate drinking water sources, and may impair recreational uses of nearby waters. But many states do not have water quality standards for these highly toxic pollutants. Thus, advocates should ask states to include in their 401 certifications fish tissue monitoring and other "big picture" data collection methods, in addition to instream monitoring for specific chemicals. Advocates can raise such concerns without an expert.

Additionally, discharges of pollutants or soil could occur during construction of the facility, pipelines, and temporary construction roads or piles. Runoff from built structures could enter wetlands and point source discharges could enter waterways. Runoff and discharges often increase how turbid (cloudy) the water is and how many toxins and pathogens are in the water. High turbidity also could cause dissolved oxygen levels to decrease because the suspended solids block light to underwater vegetation. When suspended solids block light, the underwater vegetation photosynthesizes less and releases less oxygen into the water. These factors deteriorate the aquatic environment and could make it difficult for fish, shrimp, and other aquatic life to survive.[320] If the designated uses of the affected waterways include the protection and propagation of fish, shellfish, and/or other aquatic life, advocates should ensure that the certifying authority scrutinizes such impacts. Advocates can raise such concerns without an expert.

A petrochemical facility that includes shipping facilities, such as a terminal, could increase dredging and ballast water discharge. Such activities could impair aquatic habitat for fish, shrimp, and other species by, for example, decreasing dissolved oxygen levels, increasing turbidity, or dislodging toxins from the soil into the water, particularly when the channel has a history of industrial use. If so, the certifying authority should scrutinize such activities in its Section 401 certification analysis. Advocates also can raise such concerns without an expert.

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[319] Ryan Talbott & Erica Jackson, Earthworks & FracTracker, *Petrochemical Toxics in the Ohio River Watershed* (Sept. 30, 2021), https://earthworks.org/resources/petrochemical-toxics-in-the-ohio-river-watershed/.
[320] Interstate Comm'n on Potomac River Basin, *Water Ways: Stream Ecology and Monitoring* (Aug. 2017), https://www.potomacriver.org/wp-content/uploads/2017/09/WaterWays-ChemistryInfoCardsHS.pdf.

4. How are the federal Section 401 regulations changing?
Currently, EPA's 2020 regulations apply; revised regulations are expected in 2023. Updates about the status of the regulatory process are available on EPA's website: https://www.epa.gov/cwa-401/proposed-clean-water-act-section-401-water-quality-certification-improvement-rule.

In the 2020 EPA rules, the Trump administration overhauled the regulations that had been in place since 1971 and significantly curtailed state authority to condition certification orders. The box below compares key provisions of 1971 regulations, 2020 regulations, and the anticipated 2023 regulations.

OTHER FEDERAL AGENCY REGULATIONS

Other federal agencies, including the Corps, have their own rules governing Section 401 compliance. If there is a conflict with EPA's regulations, EPA's Section 401 regulations govern.

The Corps' Section 401 regulations are located at 33 C.F.R. § 325.2(b)(1).

When reviewing examples of Section 401 certification comments, advocates should keep these regulatory changes in mind. The relevant EPA regulations are available as follows:

- **1971 regulations:** https://www.govinfo.gov/content/pkg/CFR-2018-title40-vol24/pdf/CFR-2018-title40-vol24-part121.pdf
- **2020 regulations:** https://www.epa.gov/sites/default/files/2020-07/documents/clean_water_act_section_401_certification_rule.pdf
- **2022 proposed regulations:** https://www.govinfo.gov/content/pkg/FR-2022-06-09/pdf/2022-12209.pdf

Reviewing EPA's proposed (2022) regulations also can help advocates understand the scope of the 1971 regulations and the 2020 regulations.

EPA's Section 401 Regulations: 1971 (former), 2020 (current), 2023 (anticipated)

Under the 1971 regulations, states enjoyed significant discretion to issue, condition, deny, or waive certification. The 2020 regulations curtailed that discretion. The anticipated 2023 regulations are expected to provide more discretion to states than the 2020 rules. The regulatory provisions below highlight how state discretion has shifted with respect to two issues: (1) the review timeline and what information an applicant must submit to start the certification clock; and (2) the scope of the review and the conditions that states/tribes may impose.

- **Timelines for review and action & application requirements.** Under Section 401 of the Clean Water Act, certifying authorities must act on a certification request "within a reasonable period of time (which shall not exceed one year) after receipt of such request."[321] If not acted upon, certification is waived. There are three key timing issues: (1) what constitutes a "reasonable period"; (2) when the certification clock starts; and (3) whether the clock can be restarted or paused.

[321] 33 U.S.C. § 1341(a)(1).

- 1971 (former): Federal permitting and licensing agencies retained discretion to establish certification timeframes so long as the period did not exceed one year. EPA's rules did not define what constitutes a "**reasonable period**," though did state that the period would generally be six months.[322] EPA's rules did not specify **what triggers the certification "clock"** nor did the rules identify what information a certifying authority needed to begin its review.[323] The 1971 rules did not **prevent certifying authorities from pausing the certification clock**.[324]
- 2020 (current): The 2020 rules specify that the federal agency sets the **reasonable period** of time and identifies the criteria the federal agency should consider in determining the length of that period.[325] The **certification "clock" starts** when the certifying authority receives the application components identified in the 2020 rules.[326] Certifying authorities may not wait for "complete applications" as defined under state or tribal regulations to start the clock.[327] The federal agency may extend the certification period so long as the period does not exceed one year.[328] However, a state/tribal certifying authority may not extend the period without the federal agency's permission.[329]
- 2023 (anticipated): Federal agencies and certifying authorities jointly set the "reasonable period" for the certification decision. The default period is 60 days.[330] The **certification clock starts** when the certifying authority receives a complete application, as defined by both EPA and the certifying authority.[331] Among other requirements, the application must include a copy of the draft federal permit or license, as well as existing information related to potential water quality impacts and water quality data collected by the applicant.[332] The certification period **may be extended in two circumstances**—(1) automatically to satisfy public notice requirements or for force majeure events, e.g., natural disasters; and (2) by agreement between the certifying authority and the federal agency. In either case, the period may not exceed one year from receipt of the complete application.[333]

- **Scope of certification.** Under Section 401 of the Clean Water Act, certifying authorities may evaluate whether a potential discharge to waters of the United States will comply with Sections 301, 302, 303, 306, and 307 of the Clean Water Act.[334] The Act provides certifying authorities significant discretion in determining what conditions are appropriate.[335] Under the rules, there

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[322] 40 C.F.R. § 121.16(b) (2019).
[323] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,332 (June 9, 2022).
[324] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,340 (June 9, 2022).
[325] 40 C.F.R. § 121.6 (2020); *see also* 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,338 (June 9, 2022).
[326] 2020 Final Rule, 85 Fed. Reg. 42,210, 42,285 (July 13, 2020) (codified at 40 C.F.R. §§ 121.1, 121.5, 121.6).
[327] 40 C.F.R. § 121.1(m), 121.5, 121.6 (2020); *see also* 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,331 (June 9, 2022).
[328] 40 C.F.R. § 121.6(d) (2020).
[329] 40 C.F.R. § 121.6(e) (2020).
[330] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,337-38 (June 9, 2022) (to be codified at 40 C.F.R. § 121.6).
[331] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,332-34 (June 9, 2022) (to be codified at 40 C.F.R. §§ 121.1(k), 121.5, 121.6).
[332] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,332 (June 9, 2022) (to be codified at 40 C.F.R. § 121.5).
[333] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,340 (June 9, 2022) (to be codified at 40 C.F.R. § 121.6(b)).
[334] 33 U.S.C. § 1341(a)(1). Clean Water Act Sections 301, 302, 306 address effluent limitations and standards of performance for new and existing discharge sources; Section 303 addresses water quality standards and implementation plans; and Section 307 addresses toxic pretreatment effluent standards.
[335] *See* 33 U.S.C. § 1341(d) (certifications "shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that [a proposed project] will comply with any applicable effluent limitations and other limitations, . . . , or prohibition . . . , and with *any other appropriate requirement of State law* set forth in such certification" (emphasis added)).

are two key scope issues: (1) what water quality impacts a certifying authority may consider; and (2) the scope of conditions a certifying authority may impose.

- 1971 (former): The scope of review is the **activity as a whole** so long as the activity includes discharges that trigger Section 401.[336] For example, certifying authorities may consider impacts on water quantity, e.g., minimum stream flow requirements to protect fish. Additionally, certifying authorities **may consider nonpoint source discharges** into federal waters once Section 401 certification is triggered.[337] Certifying authorities **may add conditions as necessary** to assure compliance with the enumerated sections of the Clean Water Act and "and ***any other appropriate*** requirement of State [or Tribal] law."[338]
- 2020 (current): The 2020 rules constrain the scope of review—certifying authorities may not consider the activity as a whole.[339] Instead, they may only consider potential water quality impacts from a project's **point source discharges** and they may not consider impacts to nonfederal waters.[340] Certifying authorities **may only add conditions** as necessary to assure compliance with the enumerated sections of the Clean Water Act under Section 401 "and state or tribal regulatory requirements ***for point source discharges*** into waters of the United States."[341]
- 2023 (anticipated): The scope of review is the **activity as a whole** so long as the activity includes discharges that trigger Section 401.[342] The scope includes point source and nonpoint source discharges. Similar to the 1971 rules, certifying authorities **may add conditions as necessary** assure compliance with the enumerated Clean Water Act sections, as well as "and ***any other appropriate*** requirement of State [or Tribal] law."[343]

The National Association of Wetland Managers also has a helpful table that compares the 1971 (former), 2020 (current), and 2022 (proposed) rules, https://nawm.org/pdf_lib/cwa/nawm_comparison_table_of_401_cert_regs.pdf.

5. What might the Section 401 certification timeline look like under the 2023 rules?

The timeline below highlights how the certification process may proceed under EPA's proposed rules (2022).[344] This timeline may help advocates identify when information about a proposed project might be available from a certifying authority. Advocates should check this timeline against EPA's final rules, expected in 2023.

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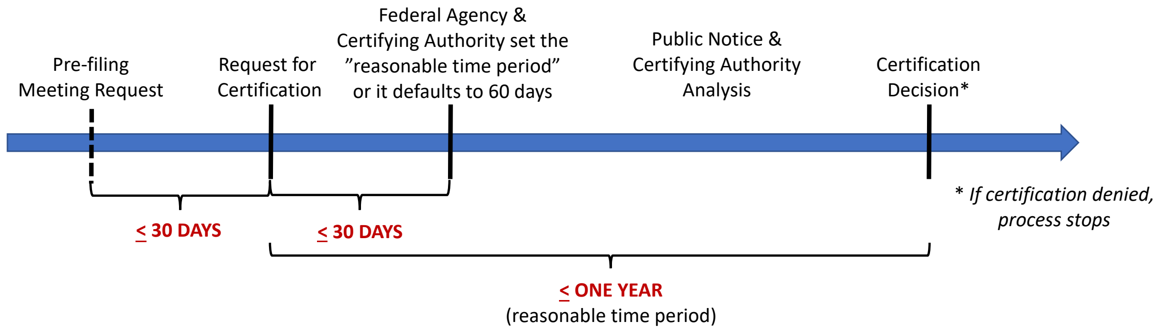
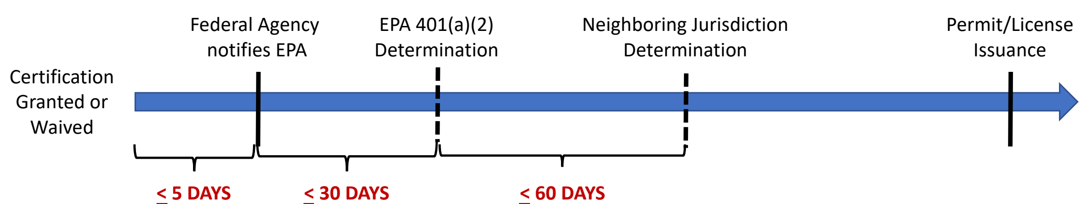
[336] *PUD No. 1 of Jefferson Cty. v. Wash. Dep't of Ecology*, 511 U.S. 700, 710 (1994) (citing 40 C.F.R. § 121.2(a)(3)); *see also* Laura Gatz & Kate Bowers, Cong. Rsch. Serv., R46615, *Clean Water Act Section 401: Overview and Recent Developments* 16 (Aug. 24, 2022) [hereinafter CRS Section 401 Overview], https://sgp.fas.org/crs/misc/R46615.pdf.
[337] CRS Section 401 Overview, at 16.
[338] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,342 (June 9, 2022) (quoting 33 U.S.C. § 1341(d)) (emphasis added).
[339] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,342 (June 9, 2022).
[340] 2020 Final Rule, 85 Fed. Reg. 42,210, 42,234 (July 13, 2020) (codified at 40 C.F.R. § 121.3); *see also* CRS Section 401 Overview, at 17.
[341] 40 C.F.R. §§ 121.1(n), 121.3 (2020) (emphasis added); *see also* 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,342 (June 9, 2022).
[342] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,342 (June 9, 2022) (to be codified at 40 C.F.R. § 121.3).
[343] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,342, 35,347 (June 9, 2022) (to be codified at 40 C.F.R. § 121.7); *see also* 33 U.S.C. § 1341(a)(1) & (d).
[344] EPA, *Proposed Clean Water Act Section 401 Water Quality Certification Improvement Rule* 8 (July 28, 2022), https://www.epa.gov/system/files/documents/2022-07/r9-rtoc-2022-07-presentation-CWA-Section-401-Proposed-Rule.pdf (visited Aug. 14, 2023).

Certification Process



Post-Certification Process



Under the proposed rules, applicants must request a pre-filing meeting before the formal request for certification, the latter of which starts the certification clock.[345] Both the 2020 rules and EPA's proposed rules require that applicants submit certain information to the certifying authority to start certification clock. Under the proposed rules (but not the 2020 rules), this documentation includes the draft federal permit or license, as well as information about how the project may impact water quality, including water quality data collected by the applicant.[346]

Advocates, thus, may be able obtain such water quality and project information from the certifying authority about thirty days after the pre-filing meeting, either by asking agency staff for it or by filing a public records request. The information obtained may include the conditions and limitations the federal agency is considering, as well as data and information about a proposed project developed by federal agencies and the applicant.[347]

6. What happens if a state or tribe fails to act by the certification deadline or waives certification?

States and tribes are not required to weigh in on whether a project will harm state water quality. They may "waive" their certification rights. When that happens, an applicant may proceed with a proposed project without obtaining a Section 401 certification. However, a waiver of certification authority may provide advocates with leverage in the Corps' Section 404 permitting process.

A certifying authority may either explicitly waive Section 401 certification, or it may do so implicitly by not timely acting on a certification request. A certifying authority that does not act on a

[345] The certifying authority may waive the pre-filing meeting requirement. 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,329 (June 9, 2022) (to be codified at 40 C.F.R. § 121.4).
[346] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,332 (June 9, 2022) (to be codified at 40 C.F.R. § 121.5).
[347] *See* 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,333 (June 9, 2022) (to be codified at 40 C.F.R. § 121.5).

certification request "within a reasonable period of time (which shall not exceed one year) after receipt of such request" waives its right to certify.[348] Exactly when this period begins—i.e., what qualifies as "receipt" or what qualifies as a "request"—has been heavily litigated. Both EPA's proposed rules and the 2020 rules seek to clarify when the certification clock starts. Under both, the certification clock starts once an applicant has submitted all required information, as defined under the applicable regulations.[349]

Certifying authorities that waive Section 401 certification authority may complicate the Corps' Section 404 permitting process. Some Corps districts rely on Section 401 certifications to show that proposed permits will comply with state water quality standards, as required under EPA's 404(b) regulations.[350] If the Corps fails to ensure such compliance after a state has waived Section 401 certification, the Corps permit may be vulnerable to successful legal challenges.

When a certifying authority waives certification, it can be difficult to determine how to best engage. When waiver might be an issue, advocates should consult with an experienced attorney to evaluate the best strategies. Advocates also may reach out to the certifying authority to determine when an applicant requested certification and encourage the certifying authority to timely act on the request. Understanding the pace of the certification process also can help advocates estimate the timeline for the federal permitting process. The Corps may not issue a final Section 404 permit until a state/tribe has either issued a Section 401 certification or waived that authority.

STATE AND TRIBAL DISCRETION

State and tribal certifying authorities have considerable discretion in deciding whether to grant, condition, deny, or waive Section 401 certification. Section 401 of the Clean Water Act and EPA's regulations place few requirements on what certifying authorities must do when reviewing a project's impact on water quality, though, as explained, the scope of a certifying authority's discretion varies considerably depending on what regulations are in place.

State and tribal regulations also govern what a certifying authority must do, including when a certifying authority may waive certification. For example, some states, such as Louisiana, do not list waiver as an option.[1] If advocates believe certification was improperly waived, consult an attorney.

D. Challenges to Section 401 Certifications

Successful challenges to Section 401 certifications might focus on the issues below. These issues can be raised in comments on the Section 401 certification or in comments on other water-related permits, such as a Section 404 permit.

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[348] 33 U.S.C. § 1341(a)(1).

[349] 40 C.F.R. §§ 121.1(m), 121.5 (2020); 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,332-34 (June 9, 2022) (to be codified at 40 C.F.R. §§ 121.1(k), 121.5).

[350] 33 C.F.R. § 320.4(d).

To obtain more information about a proposed project, advocates can request information from the federal permitting agencies and the state/tribal certifying authority, either by requesting the information informally from agency staff (e.g., by sending an email) or formally through a public records request.

Reaching out to the certifying authority with concerns can provide additional information about a proposed project and may help influence the Section 401 decision-making process. As elsewhere, demonstrating broad public opposition to a proposed petrochemical facility or expansion can be very effective. Broad opposition can help persuade states/tribes to exercise their certification authority to mitigate the project's harm.

1. Did the applicant request all necessary water quality certifications for the entire project?

The applicant for a federal permit or license is responsible for obtaining all water quality certifications or waivers necessary for a proposed project.[351] Thus, advocates should evaluate whether the applicant has applied for Section 401 certification for all potential discharges from a proposed petrochemical facility.[352]

Example: Jordan Cove liquified natural gas — Jordan Cove Energy Project L.P., 174 FERC ¶ 61,057, at ¶ 35 (Jan. 19, 2021), https://www.ferc.gov/sites/default/files/2021-01/C-16-CP17-494-003.pdf.

2. Did the applicant provide all required information to the certifying authority?

Both EPA's 2020 Section 401 regulations and its proposed regulations (2022) require applicants to submit certain information to certifying authorities. Under the proposed regulations, the required information includes (1) a copy of the draft federal permit or license; (2) information about potential water quality impacts from the federal permitting/licensing agency and the applicant; (3) water quality data collected by the applicant; and (4) any information required by the certifying authority.[353] Advocates should address any omissions in their comments.

3. Will the project comply with the applicable water quality requirements?

When certifying a proposed project, a certifying authority must ensure that the federally permitted or licensed activity will comply with all applicable water quality requirements.[354] As explained, the scope of what a state/tribe may consider in exercising their certification authority depends on which Section 401 regulations apply. Under EPA's proposed rules (2022), certifying authorities may consider whether a proposed petrochemical facility will comply with the enumerated Clean Water Act sections, as well as any appropriate requirement of state or tribal law, including those for nonpoint source discharges—not just EPA-approved water quality standards.[355] The certifying authority must indicate in its written decision whether the "activity as a whole, as opposed to the discharge, will comply with water quality requirements . . . for the life of the license or permit and not

[351] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,328 (June 9, 2022).
[352] *See* 33 U.S.C. § 1341(a)(1).
[353] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,332 (June 9, 2022) (to be codified at 40 C.F.R. § 121.5).
[354] 33 U.S.C. § 1341; *see also* 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,353 (June 9, 2022).
[355] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,352 (June 9, 2022) (to be codified at 40 C.F.R. § 121.1(m)). As explained, the 1971 regulations are similar, but the scope of the 2020 rules is substantially more constrained.

just at the moment the license or permit is issued."[356] In addition, a certifying authority may need to consider climate change impacts.[357]

Advocates should (1) review the relevant federal Section 401 regulations; (2) identify the applicable water quality requirements, which vary from state to state and water to water; and (3) evaluate whether the federally permitted or licensed activity will comply with those requirements.[358] EPA-approved water quality standards are available online, https://www.epa.gov/wqs-tech/state-specific-water-quality-standards-effective-under-clean-water-act-cwa. Advocates also should research state-specific water quality requirements.

When evaluating a petrochemical facility's impact on EPA-approved water quality standards, advocates should consider whether the project will (1) degrade water quality or (2) violate a state's/tribe's numeric and narrative criteria for the affected water, which signals that the project may impair the water's designated uses.

- A project that might **degrade water quality** may violate the state's/tribe's antidegradation policy. To protect against degradation, monitoring generally is necessary and, thus, must be required under the Section 401 certification.[359] If no monitoring is proposed or if the proposed monitoring is insufficient, advocates should raise those concerns.

  If the water is designated as a Tier 2 water, then the Section 401 certification must include conditions to prevent significant deterioration of the waterbody. As explained, Tier 2 applies to waters whose quality exceeds the baseline necessary to protect the Clean Water Act's goals. For these waters, water quality may not fall below the level necessary to fully protect the fishable/swimmable uses and other existing uses.[360]
- The **applicable numeric and narrative criteria** for the water are key to understanding how a project might impair the designated uses of the water. Engaging an expert may be helpful, especially for evaluating the applicant's assumptions about the project's impacts.

To ensure that designated uses are protected, advocates should (1) recommend, as a condition, monitoring with "triggers" that require certain actions to be taken when, for example, pollution levels reach a specified level;[361] and (2) request that all data be made readily available on the state agency's website and presented in a manner that the public can easily understand.[362]

Additionally, if the proposed 2022 regulations apply, advocates should evaluate whether the certifying authority has considered the "activity as a whole . . . for the life of the license or permit."[363] Under the proposed rules and the 1971 rules, the relevant discharges include both point source and

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[356] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,352-53 (June 9, 2022) (to be codified at 40 C.F.R. § 121.3).
[357] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,353 (June 9, 2022).
[358] Both the 2020 rules and EPA's proposed rules (2022) adopt a "will comply" standard, rather than the 1971 rules' "reasonable assurance" standard. Proposed Section 401 Regulations, 87 Fed. Reg. 35,318, 35,353 (June 9, 2022).
[359] 33 U.S.C. § 1341(d) ("Any certification provided under this section shall set forth any . . . monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply . . . .").
[360] 40 C.F.R. § 131.12(a)(2).
[361] For a discussion of examples of triggers and adaptative management practices that agencies have used, see Martin Nie & Courtney Schultz, *Decision Making Triggers in Adaptative Management* (Nov. 1, 2011), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5367512.pdf.
[362] *See* 33 U.S.C. § 1341(d).
[363] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,352-53 (June 9, 2022) (to be codified at 40 C.F.R. § 121.3).

nonpoint source discharges. Advocates should ensure that the certifying authority has considered the full suite of potential water quality-related harms that may arise over the life of the project. Certifying authorities may not limit their review to the point source discharge itself or to the moment the permit issues. The evaluation also may require consideration of climate change impacts.[364]

[364] 2022 Proposed Regulations, 87 Fed. Reg. 35,318, 35,353 (June 9, 2022).

Chapter 6

NATIONAL ENVIRONMENTAL POLICY ACT

CHAPTER SIX: NATIONAL ENVIRONMENTAL POLICY ACT

A. Overview

This Chapter discusses how advocates might challenge environmental analyses under the National Environmental Policy Act (NEPA). NEPA requires federal agencies to evaluate and disclose the environmental consequences of a proposed action before committing to a course of action. The range of actions that trigger NEPA is broad. They include agency decisions on permit applications, such as the Corps' decisions on Clean Water Act Section 404 and Rivers and Harbors Act Section 10 permits.

NEPA requires that an agency fully explain to the public the impacts and tradeoffs that would result from a proposed action and the agency's rationale for selecting its "preferred alternative." NEPA does not require an agency to select the option with the least environmental impacts. However, NEPA documents frequently inform agency decisions on underlying permit applications, which do require agencies to mitigate the likely harm a project a may cause. As **Chapter 4** explains, Section 404 of the Clean Water Act requires the Corps to avoid, minimize, and compensate for impacts to aquatic resources. Engaging in the NEPA process can support work on other challenges to petrochemical facilities and, consequently, help advocates achieve substantive environmental benefits.

This Chapter has four sections. **Section B** provides an overview of agencies' responsibilities under NEPA. **Section C** explains the underlying legal regime, including the types of environmental documents that may be required and how the NEPA process relates to the Corps' evaluation of Section 404 and Section 10 permits. **Section D** offers suggestions for how advocates might engage in the NEPA process.

B. Agencies' NEPA Responsibilities

Three basic principles ground NEPA: (1) **transparency**, federal agencies must disclose their plans to the public; (2) **informed decision-making**, federal agencies must study in detail how a project will be built and the consequences—both good and bad—for local communities and the environment; and (3) **giving the public a voice**, agency decisionmakers must solicit public input.

This section addresses (1) the types of actions that trigger NEPA; (2) NEPA's core requirements; (3) who is charged with implementing NEPA; (4) how NEPA relates to the Corps' permitting decisions; and (5) options for staying informed about the NEPA process for a proposed facility.

1. When does NEPA apply?

NEPA applies to "**major federal actions**" that might have significant environmental consequences.[365] "Major federal actions" include federal agency decisions on permit applications, such as Clean Water Act Section 404 and Rivers and Harbors Act Section 10 permits.[366] When NEPA applies, a federal agency may not make a final decision on a permit application, or other proposal, until the NEPA process is complete.

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[365] 33 U.S.C. § 4332; 40 C.F.R. § 1508.1; *see also* Fiscal Responsibility Act, Pub. L. No. 118-5, § 111 (2023) (to be codified at 42 U.S.C. § 4336e) (refining the definition of "major federal action").
[366] 40 C.F.R. § 1508.18.

There are several exceptions to NEPA. For example, many EPA actions under the Clean Water Act are exempt from NEPA.[367] Additionally, EPA's actions under the Clean Air Clean Act, including those related to air permits, are exempt from NEPA.[368] Even so, EPA has important NEPA responsibilities. EPA must review NEPA environmental impact statements prepared by other federal agencies and comment on the adequacy and acceptability of the environmental impacts of a proposed action.[369]

NEPA also does not apply to actions taken by state or local governments unless a non-exempt federal action is connected with the state or local actions, such as the issuance of federal permits or the provision of federal funding.

2. What are NEPA's core requirements?

NEPA requires federal agencies to evaluate whether their proposed actions will have significant environmental effects; to consider the reasonably foreseeable environmental and related social and economic effects of their proposed actions; to analyze a reasonable range of alternatives to their proposed actions; and to make these analyses available to the public.[370] Although NEPA requires federal agencies to consider alternatives, NEPA does not require federal agencies to select the environmentally preferable alternative or to mitigate environmental harm. Instead, NEPA requires decisionmakers to be informed of the environmental consequences of their decisions, to disclose such consequences to the public, and to involve the public in their decision-making process. Section C describes NEPA's core requirements in more detail.

3. Who is responsible for implementing NEPA?

NEPA applies to all federal agencies within the Executive Branch. One agency is responsible for leading the required environmental review, with support from other federal agencies.[371] This "**lead agency**" must develop a schedule in consultation with each supporting ("**cooperating**") agency, the applicant, and other entities that the lead agency deems appropriate. The lead agency may also designate state, tribal, or local agencies as "**joint lead agencies**." Typically, the lead agency will

NEPA REGULATIONS IN FLUX

CEQ's NEPA regulations are in flux. In 2020, the Trump administration made wholesale revisions to CEQ's 1978 regulations. CEQ revised some of those changes in April 2022. Additional revisions are ongoing. Updates on the regulatory process are available here: https://ceq.doe.gov/laws-regulations/regulations.html.

Additionally, the June 2023 Fiscal Responsibility Act amended NEPA. Some of the changes may require CEQ and the Corps to revise their NEPA regulations. For a helpful summary of the amendments, see this Legal Planet article: https://legal-planet.org/2023/06/05/the-new-nepa-a-users-guide/.

Advocates should pay attention to which NEPA regulations apply.

367 33 U.S.C. § 1371(c). EPA-issued National Pollutant Discharge Elimination System (NPDES) permits for "new sources" trigger NEPA's requirements. 33 U.S.C. § 1371(c).
368 15 U.S.C. § 793(c)(1).
369 42 U.S.C. § 7609.
370 42 U.S.C. § 4332.
371 Fiscal Responsibility Act, Pub. L. No. 118-5, § 107(a) (2023) (to be codified at 42 U.S.C. § 4336a) (codifying historical practice).

prepare the required environmental documents. However, under June 2023 amendments to NEPA, project sponsors may prepare them.[372]

The White House Council on Environmental Quality (CEQ), in the Office of the President, oversees NEPA implementation and ensures that federal agencies satisfy their NEPA obligations. CEQ does so primarily by issuing guidance and regulations that implement NEPA's procedural requirements. CEQ also reviews and approves federal agency NEPA procedures. CEQ's NEPA regulations apply to all federal agencies that implement NEPA.

EPA also plays a significant role. EPA must review and comment on the adequacy of "environmental impact statements" (EIS) prepared by other agencies. If EPA determines that a proposed action may cause unsatisfactory harm to the environment, EPA must refer the matter to CEQ.[373] EPA's review includes environmental justice concerns, among others.[374]

For proposed petrochemical facilities, the Corps most often serves as the lead agency. The Corps will assume this responsibility because proposed permits under Clean Water Act Section 404 and Rivers and Harbors Act Section 10 likely will serve as the main NEPA trigger. As the primary NEPA decision-maker, the Corps will supervise the NEPA process, including the preparation of environmental documents regardless of whether a given issue falls within the Corps' jurisdiction (e.g., concerns related to air quality or endangered species).[375]

In fulfilling its NEPA obligations, the Corps may consult will various agencies including the EPA, National Marine Fisheries Service, and U.S. Fish and Wildlife Service, as the table below shows. Such "**cooperating agencies**" have jurisdiction by law or special expertise over an environmental impact involved in the proposed action.[376] Typically, all agencies consulted on a particular project will be listed in the environmental review documents.

Other Federal Agencies' Role in NEPA Process

FEDERAL AGENCY	ROLE
Environmental Protection Agency	EPA reviews NEPA environmental documents prepared by other federal agencies and comments on the adequacy and acceptability of the environmental impacts of a proposed action. Matters within EPA's expertise include those related to air, water, hazardous substances, and noise.
National Marine Fisheries Service	The National Marine Fisheries Service, housed within the U.S. Department of Commerce, advises on how a proposed action may impact marine species and their habitat. Among others, the agency ensures that a proposed action will comply with the Magnuson-Stevens Act, Endangered Species Act, and Marine Mammal Protection Act. An explanation of each of these laws is available on

[372] Fiscal Responsibility Act, Pub. L. No. 118-5, § 107(f) (2023) (to be codified at 42 U.S.C. § 4336a). How the NEPA process would unfold if a project sponsor opts to prepare the required environmental documents is unclear. Under the recent legislation, the lead agency "shall prescribe procedures" to allow a project sponsor to do so.
[373] 42 U.S.C. § 7609.
[374] *Environmental Justice Guidance for National Environmental Policy Act Reviews*, EPA (May 27, 2022), https://www.epa.gov/nepa/environmental-justice-guidance-national-environmental-policy-act-reviews.
[375] *See* 40 C.F.R. § 1501.7; 33 C.F.R. pt. 325, app'x B.8(b).
[376] 40 C.F.R. § 1501.8.

	the agency's website: https://www.fisheries.noaa.gov/topic/laws-policies/magnuson-stevens-act.
U.S. Fish and Wildlife Service	The U.S. Fish and Wildlife Service, housed within the U.S. Department of Interior, advises on how a proposed action may impact terrestrial species, including fish, wildlife, and plants, as well as their habitat. Among others, the agency ensures that a proposed action will comply with the Endangered Species Act and Migratory Bird Treaty Act.

Each federal agency that relies on a NEPA environmental analysis must ensure that the review is sufficient before issuing any permits.[377] Advocates may challenge a flawed NEPA analysis for a permit even if the agency issuing the permit differs from the agency that led the NEPA process.

4. How does NEPA's environmental review relate to other federal decisions?

NEPA is thought of as the umbrella integrating all other environmental compliance requirements. Thus, the NEPA process typically proceeds concurrently with all other project-related decisions made by federal agencies.[378] For example, proposed actions that require NEPA also might impact endangered species, historic properties, marine areas, cultural resources, or low-income communities. NEPA can facilitate all such environmental reviews.

For proposed petrochemical facilities, these other environmental reviews may include those under the Clean Water Act, Endangered Species Act, National Historic Preservation Act, Clean Air Act, the Environmental Justice Executive Order, and other federal, state, tribal, and local laws and regulations. Ensuring that environmental reviews under NEPA accurately document the environmental impacts of proposed projects and consider a reasonable range of alternatives to proposed projects can have far-reaching benefits. As explained, agencies rely on NEPA analyses to reach their decisions.

Additionally, when proposed activities by private or non-federal entities will be subject to federal permits, CEQ's NEPA regulations require agencies to apply NEPA early.[379] Early NEPA review helps ensure that environmental factors are fully considered and helps avoid a situation where the applicant effectively eliminates all alternatives to the proposed action before the NEPA process is complete.[380]

5. How can advocates find out about the NEPA process for a particular project?

Advocates may request that the lead agency notify them of all NEPA-related hearings, public meetings, and other opportunities for public engagement, and the availability of environmental documents. The lead agency must provide such notice to anyone who asks.[381] Additionally, as explained below, several NEPA documents must be made available on the Federal Register, including notices of intent to prepare "environmental impact statements" (EISs) and the availability of draft and final EISs. For EISs, agencies also must conduct outreach to potentially affected communities. EPA provides links to draft and final EISs on its website: https://cdxapps.epa.gov/cdx-enepa-II/public/action/eis/search?search=&commonSearch=openComment. In contrast, information about

[377] *See, e.g.*, 33 C.F.R. pt. 325, app'x B.8(c).
[378] 40 C.F.R. § 1502.25.
[379] 40 C.F.R. § 1501.2.
[380] NEPA Regulations FAQ, 46 Fed. Reg. 18,026 (Mar. 23, 1981), https://www.energy.gov/nepa/downloads/forty-most-asked-questions-concerning-ceqs-national-environmental-policy-act.
[381] 40 C.F.R. § 1506.6(b).

"environmental assessments" (EAs) varies across agencies. Many agencies list pending EAs and EISs on their websites. For the Corps, advocates should check the relevant district office website.

Advocates also can reach out to the local federal agency, such as the Corps' district office, to inquire about what NEPA processes will be used, opportunities for public engagement, and to ask to be added to distribution list for information about a proposed action. The primary NEPA contacts for each federal agency are available here: https://ceq.doe.gov/nepa-practice/agency-nepa-contacts.html.

Given the requirement that agencies apply NEPA early, advocates should reach out to the Corps district office and other interested federal agencies soon after they learn about a proposed petrochemical facility to learn more about upcoming environmental reviews.[382]

C. NEPA's Core Requirements

NEPA requires federal agencies to consider the environmental consequences of all proposed "major federal actions," such as decisions on Section 404 permits, unless specifically exempt by statute or regulation. NEPA does not require federal agencies to mitigate environmental impacts or to select the least environmentally harmful alternative. Instead, NEPA requires that federal agencies closely evaluate the environmental impacts of their proposed actions and make this information available to the public. For actions that may have significant environmental consequences, NEPA regulations require a more detailed analysis and more extensive public involvement.

The following sections discuss: (1) an overview of the NEPA processes; (2) the process for preparing an "environmental assessment" (EA); (3) the process for preparing an "environmental impact statement" (EIS); (4) what elements must be included in an EIS; (5) how the Corps defines the

[382] *See* 40 C.F.R. § 1501.2.

“affected environment”; (6) the types impacts that must be considered, i.e., direct, indirect, and cumulative impacts; and (7) when impacts might be considered “significant,” thereby requiring an EIS.

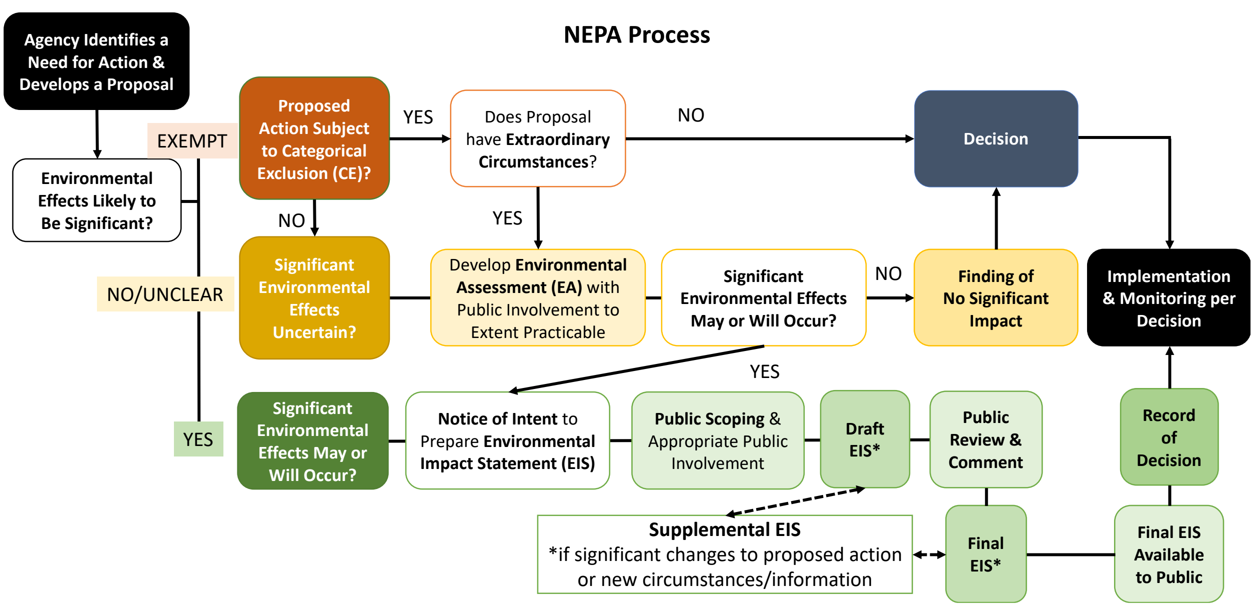
NEPA LEGAL AUTHORITIES

Three primary legal authorities govern environmental review under NEPA: the Act itself, CEQ regulations, and the lead agency’s NEPA regulations. For petrochemical facilities, the lead agency usually will be the Corps.

- **NEPA:** 42 U.S.C. §§ 4321-4370m, https://www.law.cornell.edu/uscode/text/42/chapter-55
- **CEQ regulations:** 40 C.F.R. §§ 1500-1508.1, https://ceq.doe.gov/laws-regulations/regulations.html
- Corps regulations:
  - 33 C.F.R. part 325, https://www.ecfr.gov/current/title-33/chapter-II/part-230?toc=1
  - 33 C.F.R. part 325, appendix B, https://www.ecfr.gov/current/title-33/chapter-II/part-325/appendix-Appendix%20B%20to%20Part%20325
- **Other lead agency regulations:** https://ceq.doe.gov/laws-regulations/agency_implementing_procedures.html

1. What NEPA processes do federal agencies use?

What an agency must do to comply with NEPA depends on whether the environmental impacts of the proposed action may be significant. As the diagram below shows, there are three primary pathways.



First, when a proposed action falls within a **categorical exclusion** and no "**extraordinary circumstances**" necessitate environmental review, no environmental review is required.[383] A categorical exclusion is a category of actions that the lead agency determined does not have a significant impact on the environment.[384] Categorical exclusions are identified in the agency's NEPA regulations, and under June 2023 legislation, agencies may also adopt categorical exclusions created by other agencies.[385] However, "extraordinary circumstances" may render a categorical exclusion inapplicable, such as when actions affect environmentally sensitive resources or areas or when there is scientific controversy over the potential impacts of the proposed action. If there is no categorical exclusion available or when there are extraordinary circumstances, the agency must prepare either an EA or an EIS.[386]

Second, when a proposed action has uncertain environmental impacts or the agency believes that the environmental impacts will not be significant (and no categorical exclusion applies), an agency must prepare an "**environmental assessment**" (EA). An EA is a concise document that evaluates the significance of the environmental effects of the proposed action and its alternatives. If the EA shows no potential significant environmental effects, an agency may issue a "**finding of no significant impact**" (FONSI) and conclude its NEPA inquiry.[387] As explained below, an agency usually can decide how much to involve the public in the EA/FONSI process. In contrast, if the EA shows that the reasonably foreseeable environmental impacts may be significant, the agency must prepare an "environmental impact statement" (EIS).[388] An EIS requires a much more rigorous environmental review and more extensive public involvement. The Corps' NEPA regulations state decisions on permits usually will require an EA rather than an EIS.[389] Advocates can challenge such a conclusion by presenting evidence that a proposed project may have significant environmental consequences.[390]

Third, when a proposed action may have significant environmental impacts, the agency must prepare an EIS. An EIS is a document that analyzes the potential environmental consequences of a proposed action in detail. An EIS may be prepared either after an agency evaluates environmental impacts in an EA or without first preparing an EA, i.e., when the agency believes at the outset that the environmental impacts may be significant. Typically, EISs are prepared for large construction or federal land development projects and programs, or for federal permit decisions involving major impacts.

Both EAs and EISs require significant information about a proposed project and its impacts on the environment. To ensure that it takes a "hard look" at environmental impacts, the Corps may require a permit applicant to provide information about a proposed project, regardless of whether the Corps is

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[383] Extraordinary circumstances are those that may cause an otherwise exempt action to have significant environmental impacts. 40 C.F.R. § 1507.3(e)(2); 33 C.F.R. pt. 230, app'x B.6(b).
[384] Fiscal Responsibility Act, Pub. L. No. 118-5, § 111 (2023) (to be codified at 42 U.S.C. § 43363).
[385] Fiscal Responsibility Act, Pub. L. No. 118-5, §§ 106(a), 109 (2023) (to be codified at 42 U.S.C. §§ 4336, 4336c).
[386] The June 2023 NEPA amendments make no mention of the "extraordinary circumstances" exception. For now, advocates should continue to rely on the exception to challenge the Corps' use of categorical exclusions.
[387] Fiscal Responsibility Act, Pub. L. No. 118-5, § 106(b) (2023) (to be codified at 42 U.S.C. § 4336). This provision of the June 2023 NEPA amendments largely codifies existing practice and regulations.
[388] Fiscal Responsibility Act, Pub. L. No. 118-5, § 106(b) (2023) (to be codified at 42 U.S.C. § 4336). This provision of the June 2023 NEPA amendments codified existing practice and regulations.
[389] 33 C.F.R. §§ 230.7(a), 230.10(c).
[390] *See, e.g.*, Press Release, Ctr. for Biological Diversity, Army Corps Orders Full Environmental Review of Formosa Plastics' Controversial Louisiana Plant (Aug. 18, 2021), https://biologicaldiversity.org/w/news/press-releases/army-corps-orders-full-environmental-review-of-formosa-plastics-controversial-louisiana-plant-2021-08-18/.

the lead agency.[391] If advocates are concerned about information gaps, they should contact the Corps district staff.

2. What is an "environmental assessment"?

An agency prepares an "environmental assessment" (EA) to determine whether the environmental consequences of a proposed action may be significant and to consider alternatives to the proposed action. An EA (1) briefly provides evidence and analysis to determine whether an agency must prepare an EIS; (2) facilitates an agency's compliance with NEPA when no EIS is required; and (3) assists the preparation of an EIS when an EA reveals that the environmental impacts of a proposed action may be significant. An EA is more concise than an EIS, but an EA still must take a "hard look" at the potential environmental consequences.[392] Under the recent NEPA legislation, agencies generally must prepare an EA within one year of when the agency decides to prepare an EA.[393]

Minimum Contents. At minimum, an EA should discuss:

- the purpose and need for the proposed action;
- alternative courses of action when there are unresolved conflicts concerning uses of available resources;
- the environmental impacts of a proposed action and alternatives; and
- a list of agencies and third parties consulted.[394]

The Corps' regulations further restrict when the Corps may forgo an analysis of alternatives in an EA. Under the Corps' regulations, an EA need not consider alternatives when (1) an EA confirms that a proposal will not have significant impacts; (2) there are no unresolved conflicts among alternative uses of available resources, *and* (3) the proposed activity is "water dependent." In all other cases, an EA must discuss alternatives, including whether to issue the permit, issue the permit with modifications, or deny the permit. Whether a project is considered "water dependent" is discussed in **Chapter 4**.

Decisions on EAs. After an EA is completed, the agency either (1) issues a "**finding of no significant impact**" (FONSI), which concludes the NEPA process; or (2) prepares an EIS if the EA reveals potentially significant environmental impacts. A FONSI briefly explains why the agency found that a proposed action will not have significant environmental impacts.[395]

Mitigation measures may be necessary to the agency's finding of "no significant impact." In such cases, the appropriate mitigation measures must be imposed either as enforceable permit conditions or adopted as part of the agency's final decision on the EA/FONSI. In either case, the mitigation measures are enforceable.

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[391] 33 C.F.R. pt. 230, app'x B.3, B.8(c).
[392] *Anderson v. Evans*, 314 F.3d 1006, 1015 (9th Cir. 2002). The Corps' regulations state that EAs normally should not exceed 15 pages, 33 C.F.R. § 230.10(c), and the recent NEPA legislation limits EAs to 75 pages. Fiscal Responsibility Act, Pub. L. No. 118-5, § 107(e) (2023) (to be codified at 42 U.S.C. § 4336a). However, appendices do not count toward these page limits, and agencies may use them to supplement the discussion.
[393] Fiscal Responsibility Act, Pub. L. No. 118-5, § 107(g) (2023) (to be codified at 42 U.S.C. § 4336a).
[394] Fiscal Responsibility Act, Pub. L. No. 118-5, § 107(d) (2023) (to be codified at 42 U.S.C. § 4336a); 40 C.F.R. § 1508.9(b).
[395] 40 C.F.R. § 1508.1(*l*); 33 C.F.R. §§ 230.11.

Public Participation. With an EA, the lead agency generally determines the extent of public involvement—the lead agency must involve other environmental agencies, applicants, and the public to the extent practicable.[396] Sometimes an agency will mirror the public process for an EIS, including inviting public participation in a scoping process, the draft EA, or the draft FONSI. In all cases, the EA and the FONSI must be available for public review.[397]

Advocates may request that the lead agency provide more opportunities for public engagement. To support such a request, advocates should demonstrate the heightened public concern over the proposed action, the potential for significant environmental harm, and the novelty of any issues. Requests can be made to the Corps district staff overseeing the NEPA or water-related permitting processes.

Timing versus Other Corps Decisions. The Corps typically will complete a final EA soon after all relevant information is available, generally after the comment period on the public notice for the permit application has expired.[398] The Corps often streamlines its decision-making process by combining an EA with the FONSI and other required decisions, including those on Clean Water Act Section 404 and Rivers and Harbors Act Section 10 permits.[399] Thus, the comment period on any required Section 404 or Section 10 permits may conclude before the EA is finalized, while the permit decisions and the final EA/FONSI may issue around the same time.

3. What is an "environmental impact statement"?

An agency must prepare an EIS whenever the environmental impacts of a proposed action may be significant.[400] The Corps' regulations state that the EIS process should generally not exceed one year, and under June 2023 legislation agencies generally must complete an EIS within two years.[401] For Corps permits, the clock typically starts when the Corps decides that an EIS is necessary or when the "notice of intent" to prepare an EIS is issued, whichever is earlier.[402] The regulatory requirements governing EISs are much more detailed than the requirements for EAs, and the analysis in an EIS is more rigorous.[403] Each step of the process is summarized below. The next section summarizes the substantive elements of an EIS.

Notice of Intent. The EIS process begins with the publication of the a "**notice of intent**" (NOI) in the Federal Register. The NOI sets the stage for the scoping process. Advocates can use the scoping process to persuade the agency to scrutinize particular environmental impacts and to consider specific alternatives, and it is a particularly important opportunity for doing so. Specifically, the NOI:

- provides basic information about the proposed action, including a brief description and potential alternatives;

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[396] 40 C.F.R. § 1501.4(e)(2).
[397] 40 C.F.R. § 1506.6(b).
[398] 33 C.F.R. pt. 230, app'x B.7(a).
[399] 33 C.F.R. pt. 230, app'x B.7(a).
[400] 40 C.F.R. § 1501.7.
[401] Fiscal Responsibility Act, Pub. L. No. 118-5, § 107(g) (2023) (to be codified at 42 U.S.C. § 4336a); 33 C.F.R. § 230.17(a); *see also* 40 C.F.R. § 1501.10(b)(2).
[402] 33 C.F.R. § 230.17(a); *see also* 40 C.F.R. § 1501.10(b)(2).
[403] The recent NEPA legislation limits most EISs to 150 pages and EISs analyzing actions of "extraordinary complexity" to 300 pages. Fiscal Responsibility Act, Pub. L. No. 118-5, § 107(e) (2023) (to be codified at 42 U.S.C. § 4336a). However, similar to EAs, appendices do not count toward these page limits. Agencies may use appendices to elaborate on the discussion.

- identifies the lead agency's plans for the scoping process, including any meetings and opportunities for public engagement;
- provides an estimated date when the draft EIS will be available to the public;
- identifies an agency contact that can answer questions about the proposed action and the NEPA process; and
- includes a request for public comment on alternatives, impacts, and relevant information, studies, or analyses.[404]

Scoping. The scoping process defines the scope of issues that an EIS will address. The scoping period is a critical time for engagement. Advocates can (1) make recommendations about what environmental impacts and reasonable alternatives the lead agency should study; (2) raise concerns about the proposed action; and (3) provide evidence to the lead and relevant cooperating agencies documenting such concerns. Early engagement often is the best opportunity to persuade the agency, before the environmental analysis begins to gel.

The lead agency also will outline the proposed schedule for the NEPA analysis. The scoping period, thus, is an opportunity for advocates to develop a plan with like-minded groups for challenging the proposed action. Such an advocacy plan might identify additional information to gather, community outreach and education opportunities, expert needs, and how to pool resources. By the end of the scoping process, the lead agency will:

- identify the people and organizations interested in the proposed action;
- identify issues of public concern;
- identify the significant issues and alternatives to be evaluated in the EIS;
- identify and eliminate issues that will not be significant or that have been adequately addressed in a previous environmental review;
- identify studies needed;
- determine the roles of the lead and cooperating agencies;
- identify related EAs or EISs;
- identify gaps in information or data;
- identify other environmental review, authorization, and consultation requirements so the lead and cooperating agencies can prepare such analyses concurrently and integrate them into the EIS; and
- identify the agencies' tentative decision-making schedule.[405]

Draft EIS. The draft EIS is the second opportunity for public engagement. The key elements of an EIS are described in the next section.

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[404] Fiscal Responsibility Act, Pub. L. No. 118-5, § 107(c) (2023) (to be codified at 42 U.S.C. § 4336a); 40 C.F.R. § 1501.9(d); 33 C.F.R. § 230.12; 33 C.F.R. pt. 230, app'x C.4.
[405] 40 C.F.R. § 1501.9(e); 33 C.F.R. § 230.12.

At minimum, the comment period on the draft EIS will be 45 days. To request an extension, advocates should emphasize the breadth and complexity of the proposal and the novelty of any issues.[406] During the comment period, the lead agency also will solicit comments from federal, state, tribal, and local agencies that may have an interest in the action.

The lead agency also may hold a public hearing or conduct informal public meetings during the public comment period.[407] When a public hearing is held for a related permit application, such as a Clean Water Act Section 404 permit, that public hearing will consider the actions evaluated in the draft EIS.[408] The Corps must make the draft EIS available at least 15 days before any such hearing. Thus, advocates may request a public hearing on the draft EIS by requesting a hearing on the underlying water permit.

Advocates can find out about the availability of a draft EIS when a Notice of Availability is published on the Federal Register and on EPA's website, where EPA also publishes its comments on EISs: https://cdxapps.epa.gov/cdx-enepa-II/public/action/eis/search?search=&commonSearch=openComment.

The lead agency might notify the public in other ways too, consistent with its communication plan for the proposed project. Technical information supporting the EIS either will be supplied in an attached appendix or readily available from the lead agency.[409]

Final EIS. The lead agency prepares the final EIS after analyzing comments and conducting further analysis as needed. The final EIS includes responses to comments received from other federal, state, and local agencies and from the public.[410] Either a copy or a summary of comments received will be included.

The final EIS is not the cumulation of the NEPA process. Before making a final decision, the lead agency must wait at least 30 days, at which point it may issue a "record of decision" (ROD). Advocates may comment on the final EIS. In the ROD, the Corps will respond to comments that raise substantive issues not addressed in the EIS.[411]

A Notice of Availability for the final EIS is published in the Federal Register and on EPA's website: https://cdxapps.epa.gov/cdx-enepa-II/public/action/eis/search?search=&commonSearch=openComment.

Supplemental EIS. The lead agency must supplement a draft or final EIS when there are (1) substantial changes to the proposed action that are relevant to environmental concerns; or (2) significant new circumstances or information relevant to the proposed action and environmental concerns.[412] An agency also may prepare a supplemental EIS whenever it would further NEPA's purposes. When prepared before the final EIS issues, the final EIS will address both the draft and

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[406] *See* 33 C.F.R. § 230.19(a).
[407] Public hearings are formal, and the agency will record the hearing or take detailed notes. Public meetings are informal and will have a more varied format.
[408] 33 C.F.R. pt. 230, app'x B.11.
[409] 40 C.F.R. § 1501.18.
[410] 40 C.F.R. § 1501.4.
[411] 33 C.F.R. §§ 230.14, 230.19(d); 33 C.F.R. pt. 230, app'x B.13.
[412] 40 C.F.R. § 1502.9(d).

supplemental EIS. A supplement to a final EIS first will be published as a draft and later as a final supplement.[413]

The process for a supplemental EIS mirrors the process for a draft or final EIS including public comment, except there is no scoping period.

Record of Decision. The "**record of decision**" (ROD) concludes the NEPA decision-making process and is issued at least 30 days after publication of the final EIS.[414] The ROD summarizes what the decision is; alternatives considered including the agency's "preferred alternative"; options for mitigating environmental harm; the mitigation options the agency adopted; and why the agency did not adopt other mitigation options.[415] The ROD is published on the lead agency's website and occasionally in the Federal Register. Advocates also may ask the lead agency for a copy.

A record of decision is enforceable by agencies and advocates, and can be used to compel compliance with mitigation measures.[416]

4. What are the key elements of an "environmental impact statement"?

There are five key substantive EIS elements: (1) purpose and need statement; (2) alternatives; (3) environmental consequences; (4) mitigation; and (5) appendices.

Purpose and Need Statement. The "purpose and need" statement describes the objective of the proposed action and why the action is necessary.[417] Before defining the purpose and need, the Corps (1) encourages an applicant to supply a statement from its perspective (e.g., to build a power plant) and (2) considers the public's perspective (e.g., to satisfy the public's need for electricity).[418] The Corps exercises its independent judgment and accounts for both perspectives.

The purpose and need statement serves as the basis for identifying reasonable alternatives and, thus, is very important. If defined too narrowly, the statement may exclude reasonable alternatives. Advocates should scrutinize the proposed purpose and need statement to ensure that it encompasses the appropriate breadth.

Alternatives. The alternatives analysis is the "heart" of an EIS. An EIS should (1) present the environmental impacts of both the proposed action and reasonable alternatives in detail; (2) compare options based on the affected environment and the environmental consequences; and (3) evaluate the "no action" alternative.[419] For Corps permits, the alternatives analysis should be thorough enough to use for the Corps' public interest review and the 404(b)(1) guidelines. The Corps need not consider all alternatives proposed, even if the proposed alternatives are reasonable. The Corps need only consider a reasonable range, as dictated by the goal of a project.[420]

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[413] 33 C.F.R. § 230.13(b).
[414] 40 C.F.R. § 1506.11; 33 C.F.R. pt. 230, app'x B.18.
[415] 40 C.F.R. § 1505.2.
[416] NEPA Regulations FAQ, 46 Fed. Reg. 18,026 (Mar. 23, 1981), https://www.energy.gov/nepa/downloads/forty-most-asked-questions-concerning-ceqs-national-environmental-policy-act.
[417] Fiscal Responsibility Act, Pub. L. No. 118-5, § 107(d) (2023) (to be codified at 42 U.S.C. § 4336a); 40 C.F.R. § 1502.13.
[418] 33 C.F.R. pt. 230, app'x B.9(4).
[419] 40 C.F.R. § 1502.14.
[420] City of Carmel-by-the-Sea v. U.S. Dep't of Transp., 123 F.3d 1142, 1155 (9th Cir. 1997).

Alternatives available to the Corps reflect the scope of what it may do when presented with a Section 404 or Section 10 permit application—issuing the permit, issuing the permit with modifications or conditions, or denying the permit.[421] The Corps' "no action" alternative is one where no construction occurs that would require the permit's issuance—i.e., (1) the applicant modifies its project to eliminate work under the Corps' jurisdiction or (2) the Corps denies the permit.[422] Reasonable alternatives are those that are feasible, including in light of the purpose and need for the proposed action and in light of their economics.[423] Alternatives may include geographic alternatives, i.e., changes to the project's location and other site-specific variables, and functional alternatives, i.e., project substitutes and design modifications.[424]

The final EIS must identify the agency's "**preferred alternative**."[425] An agency's preferred alternative is the alternative that the agency believes would fulfill its statutory mission and responsibilities, considering, among others, economic, environmental, and technical factors.[426] The preferred alternative is not the same as the environmentally preferred alternative, though the two may align in some cases. An applicant's final proposal is identified as the "**applicant's preferred alternative**."

Environmental Consequences. An EIS's consideration of environmental consequences forms the scientific and analytic basis for comparing alternatives.[427]

In evaluating the environmental consequences, the Corps should discuss:

- any adverse environmental effects that cannot be avoided if the proposal moves forward;
- the relationship between temporary use of the environment versus maintaining and enhancing the environment's long-term productivity;
- possible conflicts between the proposal and the objectives of federal, regional, state, tribal, and local land use plans, policies, and controls for the area;
- energy requirements and conservation potential of various alternatives and mitigation options;
- natural or depletable resource requirements and conservation potential of various alternatives and mitigation options;
- urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation options;
- mitigation options; and
- economic and technical considerations, including the economic benefits of the proposed action.[428]

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[421] 33 C.F.R. pt. 230, app'x B.9(5).
[422] 40 C.F.R. § 1502.14; 33 C.F.R. pt. 230, app'x B.9(5).
[423] Fiscal Responsibility Act, Pub. L. No. 118-5, § 102 (2023) (to be codified at 42 U.S.C. § 4332); 40 C.F.R. § 1502.13.33 C.F.R. pt. 230, app'x B.9(5).
[424] 33 C.F.R. pt. 230, app'x B.9(5).
[425] 40 C.F.R. § 1502.14(e).
[426] NEPA Regulations FAQ, 46 Fed. Reg. 18,026 (Mar. 23, 1981) https://www.energy.gov/nepa/downloads/forty-most-asked-questions-concerning-ceqs-national-environmental-policy-act.
[427] 40 C.F.R. § 1502.16(a).
[428] 40 C.F.R. § 1502.16.

Section C.7 discusses how the Corps evaluates these impacts, including the geographic scope of the impact area under review; the human and natural resources under consideration; and the types of impacts at issue (e.g., direct, indirect, and cumulative impacts).

Mitigation. The EIS must evaluate additional mitigation measures not already included in the proposed action or alternatives.[429] For water-related impacts, the Corps' mitigation analysis reflects its Clean Water Act Section 404 analysis, including the application of the 404(b)(1) Guidelines. As with that analysis, the Corps' mitigation analysis prioritizes: (1) avoidance; (2) minimization; and (3) compensatory mitigation. Because the 404(b)(1) Guidelines require that all appropriate and practical measures be incorporated into Section 404 permits for water-related impacts, any such measures also will be incorporated into the EIS.

For non-water impacts, NEPA requires that agencies consider measures that avoid, minimize, or compensate for impacts caused by the proposed action or the alternatives. However, NEPA does not require that mitigation be adopted.[430]

Appendices. Appendices may be used to reduce the length of the EIS; however, the Corps is not required to include the appendix with the EIS.[431] When used, an appendix must include (1) material prepared in connection with the EIS, (2) material that supports the analysis and the decision, and (3) comments received (or summaries thereof).[432] The Corps must provide the appendix to parties with a "special interest" or expertise in the proposal.[433] Advocates also may request the appendix from the lead agency.

5. What is the "affected environment" subject to environmental review?

NEPA regulations require a federal agency to analyze the "**affected environment**."[434] The affected environment is the area(s) where the government action will occur and where the impacts of the action will be experienced. The affected environment is not necessarily limited to the immediate geographic boundaries of the action under consideration, and the geographic scope may vary for each resource evaluated.[435] Sometimes the affected environment might be much larger than the action under consideration, and sometimes it might include several areas not adjacent to each other. Other times the scope might be limited to the scope of the specific action under consideration, i.e., to the area in which a Clean Water Act Section 404 permit would authorize the discharge of dredged or fill material into "waters of the United States."

In defining the affected environment, agencies consider: (1) the potential direct, indirect, and cumulative resource impacts, as explained below; (2) the characteristics of the resource under consideration; (3) differences among resources and population groups; and (4) the extent of federal involvement.

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429 40 C.F.R. § 1502.14; 33 C.F.R. pt. 230, app'x B.9(5).
430 40 C.F.R. §§ 1502.16, 1508.1(s).
431 33 C.F.R. pt. 230, app'x B.9(10).
432 40 C.F.R. § 1502.19.
433 33 C.F.R. pt. 230, app'x B.9(10).
434 40 C.F.R. § 1502.15.
435 Fed'l Interagency Working Grp. on Env't Justice & NEPA Comm., *Community Guide to Environmental Justice and NEPA Methods* 25 (Mar. 2019), https://www.energy.gov/sites/prod/files/2019/05/f63/NEPA%20Community%20Guide%202019.pdf.

As part of this analysis, an agency must establish the baseline conditions.[436] For example, a proposed petrochemical facility might have different consequences for people of color, low-income residents, tribes, or indigenous populations than the project does for the general public (e.g., based on distinct community practices such as subsistence fishing). When defining the affected environment, the agency must consider such differences.

The geographic scope of the affected environment depends on the extent of federal involvement.[437] When a proposed petrochemical facility is located on the shore and requires a Corps permit for a major portion of the project (e.g., a terminal), the Corps generally should evaluate the environmental impacts both to the portion of the project subject to the federal permit and to the upland portions of the project. In contrast, the geographic scope might be more limited when a proposed petrochemical facility is not located adjacent to any waters of the United States (including jurisdictional wetlands) and when the Corps permit covers a minor portion of the project. In this case, the geographic scope of the affected environment might not be co-extensive with the project area. Instead, the affected environment might encompass a relatively small area.

To preserve all potential issues for litigation, advocates should err on defining the affected environment broadly. In all cases, the scope of the Corps' NEPA review should match the scope that it uses in its benefits analysis for the Section 404 permit.[438] Thus, if the scope of one analysis is broader than the other, advocates should urge the Corps to adopt the broader view for both.

Advocates can help the lead agency properly define the affected environment. Such information often is most helpful during the scoping process—before the agency begins the environmental analysis in earnest. Advocates can provide data on the ecological, aesthetic, historic, cultural, economic, social, or health conditions of the local area and community.[439] Helpful information might include how the community might be exposed to the environmental consequences of the proposed action, the consequences that the community might face, and the distribution of adverse and beneficial impacts across potential affected areas. Mapping tools, such as those suggested in the box below, can be very helpful for understanding baseline conditions and the geographic scope of

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[436] *W. Watersheds Project v. Bureau of Land Mgmt.*, 552 F. Supp. 2d 1113, 1126 (D. Nev. 2008).
[437] The Corps' regulations provide examples of how the scope of federal involvement might influence the definition of the "affected environment," see 33 C.F.R. pt. 230, app'x B.7(b).
[438] 33 C.F.R. pt. 230, app'x B.7(b).
[439] Interagency Working Grp. on Env't Justice & NEPA Comm., *Community Guide to Environmental Justice and NEPA Methods* 25-27 (Mar. 2019), https://www.energy.gov/sites/prod/files/2019/05/f63/NEPA%20Community%20Guide%202019.pdf.

potential impacts. In presenting such information, advocates should consider the direct, indirect, and cumulative impacts of the proposal's potential consequences, as explained below.

DEFINING THE "AFFECTED ENVIRONMENT" – MAPPING TOOLS

There are various mapping tools and data sources that advocates can use to determine what affected environment might be relevant. Some of these resources include:

- **Community-Focused Exposure and Risk Screening Tool (C-FERST):** https://www.epa.gov/healthresearch/update-community-focused-exposure-and-risk-screening-tool-c-ferst
- **EnviroAtlas:** https://www.epa.gov/enviroatlas
- **EJScreen:** https://www.epa.gov/ejscreen
- **NEPAssist:** https://www.epa.gov/nepa/nepassist

6. What human and natural resources are evaluated?

In both EAs and EISs, agencies evaluate impacts to the "human environment." NEPA defines the "human environment" comprehensively to include "the natural and physical environment and the relationship of people with the environment."[440]

Specifically, the Corps generally evaluates impacts to the following resources:[441]

- ecology and soils;
- groundwater resources;
- surface water and coastal processes;
- surface water and sediment quality;
- wetland resources and waters of the U.S.;
- air quality;
- noise;
- terrestrial wildlife and habitat;
- aquatic resources;
- marine mammals;
- threatened, endangered and other special status species;
- socioeconomics;

[440] 40 C.F.R. § 1508.14.

[441] *See, e.g.*, *Planning Community Toolbox*, U.S. Army Corps of Eng'rs (Sept. 2022), https://planning.erdc.dren.mil/toolbox/processes.cfm?Id=231&Option=National%20Environmental%20Policy%20Act%20(NEPA) (Record of Decision template).

- commercial fisheries;
- environmental justice;
- recreation and tourism;
- public lands;
- land use and land cover;
- aesthetic and visual resources;
- public health and safety, including flood risk reduction and shoreline protection;
- navigation;
- land-based transportation;
- hazardous, toxic, and radioactive wastes;
- cultural resources; and
- climate change.

The above list is not exhaustive. When challenging a proposed petrochemical facility, advocates should discuss flaws with the Corps' analysis, identify additional resources the Corps should have considered, and support concerns with evidence.

7. What types of impacts does an agency consider?

An agency must consider the "reasonably foreseeable environmental effects of the proposed agency action," including "reasonably foreseeable adverse environmental effects" that cannot be avoided should the proposed action move forward.[442]

Under the original 1978 and 2022 CEQ regulations, agencies must evaluate three types of impacts: direct, indirect, and cumulative impacts.[443] The summary below reflects the 2022 regulations, which closely align with the 1978 regulations. Diagrams at the end of this section compare the three types of impacts.[444]

Generally, the Corps considers three types of actions when evaluating direct, indirect, and cumulative impacts: connected, cumulative, and similar actions. Connected actions are those that are closely related and cannot proceed without the other. Such actions must be discussed in the same EIS. Cumulative actions are those that may have cumulatively significant impacts on common resources, regardless of who is responsible for the action. Similar actions are those that when viewed

[442] 42 U.S.C. § 4332.
[443] 40 C.F.R. § 1508.1(g) (2022); 40 C.F.R. § 1528.25(c) (1978). The 2020 regulations did not distinguish between direct and indirect impacts and directed agencies to ignore cumulative impacts. Instead, the 2020 regulations required agencies to evaluate impacts that were "reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives." 40 C.F.R. § 1508.1(g) (2020). Under the 2020 regulations, agencies did not need to evaluate effects that were remote in time or geographically or that were the product of a lengthy causal chain. Impacts that an agency had no ability to prevent, e.g., because of its limited statutory authority, or that would occur regardless of the proposed action also were outside the scope. CEQ, *Proposed Rule: National Environmental Policy Act Implementing Regulations Revisions*, 86 Fed. Reg. 55,757 (Oct. 7, 2021), https://www.federalregister.gov/documents/2021/10/07/2021-21867/national-environmental-policy-act-implementing-regulations-revisions.
[444] The diagrams are adapted from the Federal Highway Administration's NEPA Environmental Review Toolkit, https://www.environment.fhwa.dot.gov/nepa/QAimpact.aspx.

with other reasonably foreseeable or proposed actions have similarities, common timing, or geography that provide a basis for evaluating their environmental consequences together.[445]

The duration of direct, indirect, and cumulative impacts may vary. Some impacts might be temporary or short-term, while others might be long-term or permanent. The Corps considers potential impacts regardless of how long they might last.

Direct impacts. Direct impacts are "caused by the action and occur at the same time and place" as the action.[446] For example, a petrochemical facility might be proposed for construction over wetlands, such as the Formosa plastics facility in Louisiana. Construction might include the felling of trees, leveling of the land, and destruction of wetlands where the proposed facility will be built. The direct impacts of construction might include the destruction of terrestrial and aquatic habitat and increased air pollution and noise.

Indirect impacts. Indirect impacts are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."[447] For example, for petrochemical facilities, indirect impacts might include undeveloped lands near the site being used for commercial or residential uses to support workers at the new or expanded petrochemical facility. Other indirect impacts might include economic hardship for commercial and recreational fishing industries if runoff and dredging from the facility's construction destroys fish hatcheries or if toxic discharges from the facility enter waterways.

Cumulative impacts. Cumulative impacts are those that result from "the incremental impact of the action when added to past, present, and reasonably foreseeable future actions" regardless of who takes the other actions. Cumulative impacts may result from "individually minor but collectively significant actions taking place over a period of time."[448] The Corps must evaluate cumulative impacts for each resource.

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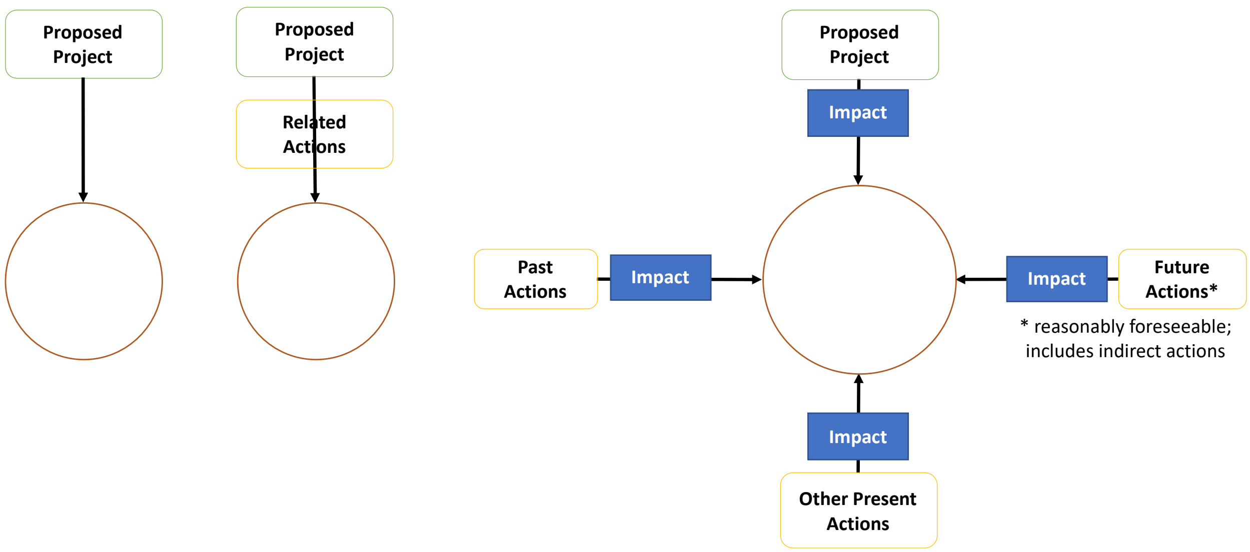
[445] U.S. Army Corps of Eng'rs, *NEPA Procedures & Terminology* 30-31 (2012), https://planning.erdc.dren.mil/toolbox/processes.cfm?Id=231&Option=National%20Environmental%20Policy%20Act%20(NEPA) (header: "NEPA, Learn More About NEPA and NEPA Implementation").
[446] 40 C.F.R. § 1508.1(g).
[447] 40 C.F.R. § 1508.1(g).
[448] 40 C.F.R. § 1508.1(g).

As the diagram below shows, the key difference between cumulative impacts and indirect impacts is that cumulative impacts may arise from unrelated activities, whereas indirect impacts are "induced actions" caused by another action or actions that have an established connection to the proposed project.

Direct, Indirect, and Cumulative Impacts



Direct impacts are caused by project activities. **Indirect impacts** are "induced actions" caused by another action or actions that have an established connection to the project.

Cumulative impacts include direct and indirect impacts. The differences in the "cause and effect" relationship distinguish cumulative impacts from direct and indirect impacts. Cumulative impacts may arise from unrelated activities.

8. When might impacts be considered "significant" thereby requiring an EIS?

An agency must prepare an EIS whenever the environmental impacts of a proposed action may be significant.[449] To determine whether potential environmental impacts are "significant," agencies consider both the "**context**" and "**intensity**" of the impacts.[450] In doing so, the Corps evaluates two questions: (1) what is the significance of the impact?; and (2) what is the significance of the resource being impacted?[451] The answer to the second question can influence the answer to the first. Significant impacts may include those to ecological, aesthetic, historic, cultural, economic, social, or health.[452] However, social and economic impacts may not be considered significant by themselves. Such impacts may only be considered significant when they are related to natural or physical environmental impacts.[453]

The **context** includes the local setting of the action. Both short- and long-term effects are relevant. For example, the Corps may consider whether the impact affects society as a whole, a specific

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[449] 40 C.F.R. § 1501.7.
[450] 40 C.F.R. § 1508.27.
[451] U.S. Army Corps of Eng'rs, *NEPA Procedures & Terminology* 20 (2012), https://planning.erdc.dren.mil/toolbox/processes.cfm?Id=231&Option=National%20Environmental%20Policy%20Act%20(NEPA) (header: "NEPA, Learn More About NEPA and NEPA Implementation").
[452] 40 C.F.R. § 1508.8.
[453] 40 C.F.R. § 1508.14.

region, particular interests, or a specific local area. A small construction project might encompass local interests only, whereas a project with a large geographic scope might encompass regional or national interests.

When evaluating **intensity**, an agency considers various factors including:

- severity of the impact;
- whether the impact is positive or negative;
- impact on public health or safety;
- impact on unique characteristics of an area;
- degree of controversy as to potential environmental impacts;
- uncertain, unknown, or unique impacts or risks;
- precedent-setting for potential future actions;
- impact on historic or cultural resources;
- impact on endangered species; and
- any threatened violation of federal, state, or local environmental law.[454]

In evaluating the significance of environmental impacts, advocates should encourage the Corps to consider how some impacts may be particularly harmful for certain populations given their greater vulnerability. Such factors may include working outdoors, limited access to health care services, generally lower levels of education, or limited English proficiency.[455]

D. Effective Engagement in the NEPA Process

The NEPA process offers formal and informal opportunities to provide information and recommendations to federal agencies. These opportunities differ depending on whether the lead agency issues an EA or EIS. As explained, an EIS provides more formal opportunities for public engagement than an EA.

To ensure that all issues can be raised during litigation, advocates should raise all concerns and attach supporting evidence during comment periods and formal public hearings.[456] To develop strong arguments, advocates can review NEPA documents and comments for similar facilities. Particularly helpful are comments for large industrial facilities located near the proposed facility—the environmental consequences likely will be similar and may reveal potential cumulative impacts.

This section discusses (1) general best practices; (2) EA strategies; (3) EIS strategies; and (4) substantive issues that advocates might address.

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[454] 40 C.F.R. § 1508.27.
[455] Interagency Working Grp. on Env't Justice & NEPA Comm., *Community Guide to Environmental Justice and NEPA Methods* 39 (Mar. 2019), https://www.energy.gov/sites/prod/files/2019/05/f63/NEPA%20Community%20Guide%202019.pdf.
[456] 40 C.F.R. §§ 1500.3(b), 1503.3(a).

1. General best practices

There are several strategies that advocates should consider regardless of whether an agency prepares an EA or EIS. Many of these strategies can be implemented before any official NEPA process begins.

- **Establish a relationship with local Corps staff and other relevant federal and state agencies as early as possible.** Building relationships with agency staff can help alert advocates to the anticipated NEPA timeline; provide information about the project and the agencies' initial thoughts about environmental impacts; offer an avenue to air concerns; show strong public opposition; and persuade the agency to rigorously scrutinize the harm that might arise.
- **Be as specific as possible about concerns and ideas for alternatives when working with agency staff.** Where possible, provide supporting documentation showing that the concerns are valid or that an alternative is reasonable.
- **Gather as much information as possible about a proposed petrochemical facility as soon as possible.** Advocates can obtain such information through news articles, conversations with agency staff, collaborating with like-minded groups and community members, scientific studies documenting the harm petrochemical facilities can cause, mapping tools, agency websites, and working with experts.
- **Submit public records requests with federal and state agencies to gather additional information about a proposed project and the agencies' plans.** Records requests can be particularly helpful when the available information about a proposed project is sparse and agency staff is not forthcoming. Advocates should submit public records requests early—sometimes it can take awhile to get the desired information. Advocates also can ask their agency contacts for information informally, e.g., in an email. Doing so frequently yields the information faster than submitting a formal request.
- **Reach out to like-minded groups and community members to develop a coordinated advocacy strategy.** Such collaboration can show strong opposition to a proposed petrochemical facility, facilitate broad education and outreach, and help advocates share resources to cover as many potential challenges as possible.
- **Submit well-documented written comments.** As the box below recommends, effective written comments should be specific and attach all supporting evidence.

EFFECTIVE WRITTEN COMMENTS

Developing well-supported written comments is essential to effective NEPA advocacy. Effective written comments:

- are **specific**;
- **discuss flaws** with the agency's analysis;
- **propose specific changes**;
- **identify feasible, well-supported alternatives** to the proposed action;
- **supply the detail needed** to show that a concern is important and justified;
- **provide page citations** for each point;
- **are polished and well-organized** to convey credibility; and
- **attach all supporting evidence** and do not rely on URLs for outside evidence.

ALWAYS attach all supporting evidence to comments. URLs could become defunct. If supporting documentation is not attached to comments, the information may not be available to support litigation because the evidentiary support will not be considered part of the record. A lack of record evidence will undermine your case during litigation.

2. Environmental assessments

In the EA process, agencies often have considerable discretion over the extent of public engagement. Agencies must make EAs and FONSIs available for public review, but there is no requirement that they provide formal public comment opportunities.

Developing relationships with agency staff soon after advocates find out about a proposed petrochemical facility and showing strong public opposition to a project can be very helpful. Doing so can help convince the lead agency to provide formal written comment opportunities on the draft EA or FONSI, to host public meetings about the project, and to more rigorously scrutinize the potential environmental and social harm that may arise from the proposed project and reasonable alternatives.

Advocates should document their concerns in writing to the lead agency. When well-supported by evidence, such written advocacy can help put the agency on notice that it is ignoring potentially significant impacts to the environment and the community and, thus, must prepare an EIS.

3. Environmental impact statements

The EIS process provides several opportunities for formal and informal engagement. Advocates often will have the best chance to persuade an agency early in the process, before the agency's analysis for a proposed project begins to gel. Advocates should try to build strong relationships with agency staff soon after finding out about a proposed petrochemical facility and take advantage of all public engagement opportunities.

Generally, there are three or four opportunities for formal public engagement: the scoping process, draft EIS, final EIS, and, occasionally, supplemental EIS. Advocates should submit written comments with supporting evidence during each stage.

Scoping. As explained, the scoping process can be among the best opportunities for persuading an agency to consider particular environmental concerns and proposed alternatives because the agency's analysis has not yet begun to gel. To air concerns, advocates should try to speak with agency staff one-on-one and submit written comments. Advocates can learn about an upcoming scoping process by monitoring the Federal Register for a notice of intent to prepare an EIS and by developing strong relationships with agency staff.

Scoping comments might address several issues:

- **Gaps in information and data.** Advocates should raise concerns about information gaps as early as possible. The lead agency may need to request additional information from the applicant. Potential gaps may include (1) the location of sensitive resources (e.g., aquifers), (2) soil types and susceptibility to erosion, (3) concerns about impacts to visual resources and the need for photographic simulations from different viewpoints, (4) socioeconomic concerns, and (5) assumptions used in any analyses.
- **Recommendations for how to define the "purpose and need" for the project.** Suggestions for how to define the "purpose and need" for a project are provided in the "key EIS elements" section above. As explained, ensuring that the purpose and need is properly defined is essential to a robust EIS.
- **The geographic scope of the "affected environment."** To identify the geographic scope, advocates can use various mapping tools. The "affected environment" section above offers additional suggestions.
- **Environmental concerns that the agency should scrutinize.** Advocates should attach supporting evidence where possible.
- **Reasonable alternatives that the agency should consider**, including support for the importance and feasibility of the proposed alternative. Ideas for the types of alternatives that advocates might propose are provided in a box below in the "substantive issues" section.
- **Factors that the agency should consider when selecting alternatives for consideration.**

Draft EIS (and Supplemental Draft EIS). Advocates should scrutinize the environmental documents, including the supporting documentation. The next section provides suggestions for substantive issues advocates might raise. Advocates can request an extension of the comment period, which generally lasts 45 days. In an extension request, advocates should emphasize the complexity of the project, the novelty or technical nature of the issues, and the broad public concern about the proposed project. Showing strong support for an extension also can be helpful.

Additionally, advocates may request a public hearing. As explained, when a public hearing is held on a Clean Water Act Section 404 permit, the Corps also must consider NEPA issues at the hearing and make the draft EIS available at least 15 days before the hearing.[457]

Final EIS (and Supplemental Final EIS). A final EIS must be available for public review for at least 30 days before the record of decision (ROD) is published. During this period, advocates should submit written comments on the final EIS on any unresolved issues, regardless of whether a formal public comment period is announced. The ROD will address comments that raise new substantive issues.[458]

4. Substantive issues

When drafting comments, advocates should closely review all documents that the agency provides including the appendices. In addition, advocates should obtain as much information as they can about potential impacts including by:

- speak with community members and organizers to identify issues that the agency may have overlooked;
- conduct online research to determine what the applicant has said about a project, including the project's likely scope, and to identify more information about the local area;
- use mapping tools, such as those identified in the box in Section C.5 above, to learn more about the area;
- submit public records requests as soon as possible to provide sufficient time to receive documents; and
- work with an expert to identify flaws in the agency's analysis and to draft comments—this step can help advocates develop a compelling case, as the box below explains.

For complex projects, advocates likely will need to prioritize issues. The best issues to focus on often include the most obvious flaws and the most significant harm to the environment and communities. Some issues also may overlap with advocacy on permits for the project—comments on the permit(s) and the NEPA analysis should raise the overlapping concerns.

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[457] 33 C.F.R. pt. 230, app'x B.11.
[458] 33 C.F.R. §§ 230.14, 230.19(d); 33 C.F.R. pt. 230, app'x B.13.

ENGAGING EXPERTS

Experts can be very helpful in drafting and supporting comments. Given NEPA's overlap with other permits, advocates may be able to use the same expert(s) on their NEPA and permit challenges. As recommended elsewhere, advocates should retain expert help as soon as possible.

- **Economics expert** to review the socioeconomic sections of environmental documents, including impacts on job creation and real property values. Ideally, this expert also could quantify the lost value from replacing wetlands and other natural areas with industry.
- **Air quality expert** with experience in air modeling. Ideally, the expert will have experience modelling the particular type of region. In coastal regions, for example, the ocean often impacts the air flow and currents, which causes pollutants to disperse in a different manner than if the project was located inland.
- **Wetlands delineation expert** that can help identify wetlands on site and impacts to those ecological systems. This expert would also be useful in challenging Corps permits.

If funds permit, also consider:

- **Industrial safety expert** knowledgeable in reliability and safety issues related to petrochemical facilities.

In comments, advocates should consider raising issues that affect the NEPA analysis as whole ("global issues") and issues that affect a particular resource ("resource-specific issues").

Global Issues

Global issues may include: (1) the purpose and need statement; (2) how the affected environment is defined; (3) the alternatives analysis; (4) the evaluation of mitigation measures; (5) the overall sufficiency of the analysis; (6) whether the agency meaningfully engaged the public; and (6) concerns about new or changed circumstances that require supplemental environmental analysis.

Purpose and need statement. The purpose and need statement briefly specifies the underlying purpose and need to which the agency is responding. This statement is central to identifying reasonable alternatives, including the proposed action.[459] The statement should be defined to consider both the applicant's perspective and the public's perspective in light of policy objectives, local needs, and environmental outcomes, as explained above. [460]

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[459] 40 C.F.R. § 1502.13.
[460] 40 C.F.R. § 1502.13; 33 C.F.R. pt. 230, app'x B.9(4); *see also* NEPA Regulatory Revisions, 87 Fed. Reg. 23,453, 23,458 (Apr. 20, 2022).

Advocates should ensure that the Corps has not simply adopted the applicant's stated purpose for the project—the Corps must exercise its independent judgment. Advocates also should ensure that the purpose and need statement is not defined restrictively, which could eliminate reasonable alternatives.

Affected environment. The geographic scope of the NEPA analysis may be heavily contested. As explained, the geographic scope depends, in part, on the extent of federal involvement. For example, when a federal permit covers a significant portion of a proposed petrochemical facility, the geographic scope likely will be coextensive with the petrochemical facility itself and may extend beyond the facility's physical footprint. When the geographic scope of the affected environment is unclear, advocates should err on urging the agency to define the affected environment broadly. Doing so helps preserve all potential issues for litigation.

When evaluating the scope of the affected environment, advocates also should ensure that the agency has evaluated all potential impacts to the "human environment." The "human environment" includes "the natural and physical environment and the relationship of people with the environment."[461] If the agency disregarded certain consequences, advocates should address those omissions in comments.

In addition, advocates should evaluate whether the agency has properly defined baseline conditions. When defining the affected environment, agencies must consider the particular characteristics of the resource or group under consideration. As explained, such characteristics include those that might make a particular resource or group especially sensitive to the environmental consequences of the proposed petrochemical facility.

The "affected environment" section above offers additional suggestions.

Reasonable alternatives. Agencies must compare reasonable alternatives, including the proposed action, in detail so that the public can evaluate their relative merits.[462] What constitutes a reasonable alternative is guided by the purpose and need statement. Reasonable alternatives need not fall within the agency's jurisdiction.

Typically, the Corps uses a multi-step process to identify reasonable alternatives: (1) develop screening criteria to evaluate the effectiveness and practicality of alternatives in satisfying the purpose and need; (2) identify potential alternatives, including geographical, functional, operational/design alternatives, in light of existing studies and scoping comments from the public and agencies; (3) evaluate potential alternatives by applying the screening

PROPOSING REASONABLE ALTERNATIVES

Advocates should consider proposing alternatives that:

- change the project location;
- reduce the size of the project;
- modify the type of project;
- require additional or different mitigation options;
- use alternative construction and operation methods; and
- require using electricity sources that minimize harm.

461 40 C.F.R. § 1508.14.
462 49 C.F.R. § 1508.14.

criteria and issues raised in scoping comments; and (4) formulate and select alternatives for detailed analysis in the draft EIS.[463] The Corps also considers the relevant legal and policy regimes, such as the Clean Water Act, Section 404(b)(1) Guidelines, and local land use master plans.

Advocates should identify specific alternatives that the Corps should consider including alternative locations for the proposed petrochemical facility or expansion. Under the Section 404(b)(1) Guidelines, an alternative site can be considered practical even if the applicant does not currently own the parcel. If advocates identify an alternative in scoping comments that the Corps did not consider, advocates should propose that alternative again, explain that the alternative was raised during the scoping process, and discuss why the alternative is superior to those that the Corps evaluated.

Advocates also should scrutinize the criteria the Corps uses to select alternatives for detailed consideration. If the criteria improperly exclude reasonable alternatives, advocates should address that problem in their comments.

Additionally, advocates should ensure that the "no action" alternative is a true "no action" alternative. Under the Corps regulations, the no action alternative includes either (1) the applicant modifying the project such that the project does not fall within the Corps' jurisdiction; or (2) the Corps' denial of the permit.[464] The Corps may not negate the "no action" alternative by assuming that another company would build a similar petrochemical facility.

Mitigation. An agency must discuss mitigation options in its NEPA documents, including for impacts not considered significant.[465] If such a discussion is absent, advocates should raise that issue. Advocates also should consider whether the Corps failed to consider or require mitigation for some impacts but not others. Advocates may recommend specific mitigation measures for any impact, including those related to water resources, air quality, environmental justice, and climate change. Advocates also may consider how the Corps' mitigation analysis relates to the Corps' analysis for similar industrial facilities. If the Corps' mitigation analysis is more robust for similar projects, advocates should raise that concern in their comments.

For water-related impacts, the Corps' mitigation analysis reflects its Clean Water Act Section 404 analysis, including the application of the 404(b)(1) guidelines. As there, the Corps follows a three-tier prioritization: (1) avoidance; (2) minimization; and (3) compensatory mitigation. NEPA comments on mitigation measures for water-related impacts can mirror Section 404 comments on such issues.

Sufficiency of analysis. Regardless of whether an agency prepares an EA or EIS, it must take a "hard look" at the potential environmental consequences.[466] This standard requires that an agency review

[463] *See, e.g.*, U.S. Army Corps of Eng'rs, *Chapter 2.0 Alternatives Info.*, Proposed Mid-Barataria Sediment Diversion Project in Plaquemines Parish, Louisiana 2-3 to 2-4 (Sept. 23, 2022), https://cdxapps.epa.gov/cdx-enepa-II/public/action/eis/details?eisId=378512; . Army Corps of Eng'rs, *Chapter 2.0 Alternatives Info,*, Environmental Impact Statement for the Proposed Corpus Christi Ship Channel Deepening Project 2-1 to 2-3 (June 2022), https://cdxapps.epa.gov/cdx-enepa-II/public/action/eis/details?eisId=367801/.
[464] 33 C.F.R. pt. 230, app'x B.9(5).
[465] 40 C.F.R. §§ 1502.16, 1508.1(s); NEPA Regulations FAQ, 46 Fed. Reg. 18,026 (Mar. 23, 1981), https://www.energy.gov/nepa/downloads/forty-most-asked-questions-concerning-ceqs-national-environmental-policy-act.
[466] *Anderson v. Evans*, 314 F.3d 1006, 1015 (9th Cir. 2002); *Sierra Club v. FERC*, 867 F.3d 1357, 1367 (D.C. Cir. 2017).

the best available science and scrutinize potential impacts. If the Corps failed to grapple with the environmental impacts and potential alternatives, advocates should identify and explain such flaws.

Meaningful public participation. Agencies must ensure meaningful public participation in the NEPA process. Meaningful public participation includes fully documenting the basis for the agency's analysis and conclusions. If the Corps relies on a report or study not available to the public, advocates should highlight that flaw and request that the agency provide the document.

New and changed circumstances. Circumstances may change or new information may become available that modify the nature or scope of the potential environmental impacts. For example, a company might modify its plans for a proposed petrochemical facility (e.g., changing the location, the size, or nature of the facilities) or new information may become available about the facility's environmental impacts (e.g., a previously undetected species is found in the area). In such circumstances, advocates should request that the agency prepare a supplemental EIS. If the agency has prepared an EA, advocates should contact the agency to point out that the EA is no longer valid and that the agency must prepare either an EIS or, at minimum, a new EA.

<u>**Resource-Specific Issues**</u>

Advocates may comment on any environmental concern, regardless of whether the agency's NEPA documents address it. This section focuses on six impacts—wetland resources and waters of the United States; vegetation and wildlife, including special status species; air quality; environmental justice; climate change; and public health and safety. This section also briefly addresses potential impacts to other resources.

As explained, the scope of the analyses below will depend on how the Corps defines the scope of the geographic footprint of the proposed action. Because a court likely will later rule on that issue, advocates should assume a reasonably broad footprint for the proposed action in their NEPA comments. Doing so will help ensure that all issues are preserved for litigation. If the Corps has defined the affected environment too narrowly, advocates should address that concern, as recommended above.

Wetland resources and waters of the United States. Proposed petrochemical facilities threaten waterways and wetlands. Some petrochemical facilities have been proposed on thousands of acres of undeveloped fields and wetlands adjacent to waterways, such as the Formosa plastics facility in Louisiana. Advocates should evaluate the location of proposed facilities, the natural resources that might be impacted during construction and operation, and the existing and reasonably foreseeable future harms to such resources.

Impacted wetlands serve important ecological and hydrological functions—they provide wildlife habitat and buffers against flooding, land loss, and storm surges. Discharges from petrochemical facilities impair such functions and nearby waters. Frequently, petrochemical facilities discharge high levels of very toxic chemicals, including PFAS, benzene, butadiene, and phthalates, along with plastic pellets, flakes, granules, and powders. These chemicals, in turn, are eaten by migratory birds, fish, and other wildlife, collect in sediments, and contaminate drinking water sources. Additionally, the construction and operation of a facility may discharge sediment and toxics. Such impacts further imperil the quality of wetlands and nearby waters and harm plant and animal species that depend on them. **Chapter Five** (State Water Quality Certifications) provides additional information about potential impacts to wetlands and other water resources.

The Corps must analyze all such impacts. Similar to its review of Section 404 permit applications, the Corps must show (1) how impacts to the aquatic ecosystem have been avoided, minimized, and compensated; and (2) that the permitted activities do not impermissibly impact water quality and endangered species. The Corps also must scrutinize whether a proposed project is "water dependent." As explained in **Chapter 4**, for projects that impact "special aquatic sites" such as wetlands, the applicant must show that the proposed development must be sited in the area to "fulfill its basic purpose."[467] If not, the Corps must presume that alternative, less harmful sites exist. Additionally, regardless of whether the project impacts a "special aquatic site" or whether it is water dependent, the Corps must evaluate alternatives, including non-aquatic sites and other aquatic sites. Recall that, for water-related impacts, Section 404 requires the Corps to select the "least environmentally damaging practicable alternative."[468] Such considerations also must be reflected in the NEPA analysis.

In NEPA comments, advocates should emphasize the significant value that wetlands and waterways provide and the serious threat that a petrochemical facility poses. Comments may address how a proposed petrochemical facility might interfere with state and local plans to preserve and restore wetlands and to protect against storms and floods. Additionally, comments may raise concerns about an applicant's failure to show that its proposed project is "water dependent" or identify alternative locations that would result in less harm to aquatic resources.

Vegetation and wildlife. The Corps must take a hard look at how a proposed project may impact flora and fauna, including endangered, threatened, and other special status species. The Corps also must ensure compliance with related environmental laws, including the Endangered Species Act, Marine Mammal Protection Act, and Migratory Bird Treaty Act.

To ensure the Corps' NEPA analysis is robust, advocates should:

- <u>Closely review all correspondence with wildlife agencies and responses from the applicant about potential impacts to species.</u> Consulting agencies often play a significant role in evaluating impacts to wildlife and habitat and may disagree about the threat a project poses. Such disagreements may reveal that the Corps is ignoring harm to species or that additional mitigation should be considered.
- <u>Identify all species in the area that may be sensitive to the construction and operation of a large industrial facility and, where applicable, any associated boat traffic.</u> Impacts that the Corps must consider may include (1) destruction or alteration of habitat; (2) air, water, and soil pollution; (3) wastewater and stormwater discharges; (4) increased light and noise; (5) vehicle/vessel strikes; and (6) the introduction of invasive species on distributed land, which may outcompete native species. For example, plastic pellets and PVC powder tend to leave the production areas of petrochemical facilities and enter the wastewater and stormwater systems, polluting adjacent

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[467] 40 C.F.R. §§ 230.10(a)(3), 230.41.
[468] Memorandum of Agreement Between U.S. Dep't of Army and EPA, *Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines* 3 (Feb. 6, 1990) [hereinafter 404(b)(1) Memorandum of Agreement], https://www.epa.gov/cwa-404/memorandum-agreement-regarding-mitigation-under-cwa-section-404b1-guidelines-text; *see also* 40 C.F.R. §§ 230.7(b)(1), 230.10(a).

waterways.[469] The Corps must take a hard look at such concerns. To obtain information about potential impacts to local species, advocates can consult residents and local organizations, experts, and websites (e.g., government, natural history, university).

- Review scientific literature including studies not cited by the agencies. Scientific literature can help advocates identify potential harms to species and support advocates' concerns. Advocates should attach supporting studies to their comments. Reviewing NEPA comments on other large industrial facilities, particularly for those in the region, also can help advocates evaluate potential harm.

- Pay close attention to special status flora and fauna, especially those that are listed as endangered or threatened under federal or state law. Under the Endangered Species Act, whenever a proposed action "may affect" federally protected species or their critical habitat, the Corps must consult with federal wildlife agencies.[470] When the proposed action likely will have adverse impacts on protected species or their habitat, the federal wildlife agency must thoroughly evaluate such impacts in a "biological opinion" based on the "best available science."[471] Biological opinions state whether the agency believes a proposed action may jeopardize the continued existence of a protected species or result in the destruction or adverse modification of its critical habitat. Biological opinions also may specify the extent of harm to the species allowed, the reasonable and prudent measures that would minimize impacts from the project, and the terms and conditions with which the project must comply. Advocates should closely review any biological opinion and related NEPA analysis. Such analyses must thoroughly scrutinize potential impacts to protected species and reasonable and prudent mitigation measures for minimizing harm. Advocates should address any shortcomings in comments.

  The Consultation Handbook published by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service provides additional background about the consultation process: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf.

Air quality. Petrochemical facilities are huge sources of air pollution, including toxic air pollution, as **Chapter Three** explains. An agency's NEPA documents must discuss such impacts in detail and support all conclusions, even if the air pollution problems would not violate the Clean Air Act or other environmental law. The Corps also may not curtail its NEPA analysis by simply concluding that more study is needed.

The air quality analysis must evaluate how much air pollution might increase and how such increases might harm ecosystems and people, including sensitive populations (e.g., elderly, sick, or young). The analysis must consider such impacts in light of the existing and likely future air pollution problems in the area (i.e., cumulative impacts) and how the petrochemical facility might cause increases in air pollution from other sources such as increased truck and vehicle traffic (i.e., indirect impacts). Although the Corps will generally defer to the air permitting agency's conclusions, the Corps must reach its own independent determination.

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[469] See San Antonio Bay Estuarine Waterkeeper v. Formosa Plastics Corp., No. 17-0047, 2019 WL 2716544, at *7 (S.D. Tex. June 27, 2019).
[470] 50 C.F.R. §§ 402.02, 402.13, 402.14.
[471] 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(g)(8).

Advocates' NEPA comments may reflect the comments they make on the facility's air permit. For example, advocates might argue that (1) the facility should be required to install and operate air pollution control equipment that is more protective of public health and the environment (i.e., the equipment will better reduce emissions); (2) the air quality analysis underestimates emissions from the facility (e.g., based on the use of flawed emissions factors or calculations); and (3) the proposed emissions monitoring is too lax and the facility should be required to install and operate, for example, continuous emission monitoring on stack sources. **Chapter Three** provides more detail about how such arguments might be framed and the types of air pollution concerns that might arise.

Engaging an expert to assist with air quality issues can be especially worthwhile. The air quality analysis will be based on highly technical models and analyses. An air expert can help identify and explain flaws with the modeling and support arguments that the proposed air pollution control equipment and monitoring should be improved. The same air quality expert likely can assist with both the NEPA and air permit challenges.

Environmental justice. When evaluating environmental justice impacts, the Corps must analyze whether the proposed petrochemical facility would alone or in combination with past, present, and reasonably foreseeable industrial sources impose disproportionate harms on residents nearby, including low-income residents and people of color.[472] Relevant considerations include the number and type of industrial facilities in the area and other threats to the environment and health, such as an elevated cancer risk in the area.

The Corps must take a hard look at such concerns. The Corps may not ignore threats by concluding that the facility would comply with relevant environmental standards, such as those for air pollution. Instead, the Corps must consider the likelihood that the people living closest to a project will be affected more than those living in other parts of the same county.[473] The Corps also may not disregard impacts to low-income residents or people of color simply because the population density is low.[474]

Advocates also should consider whether the environmental justice analysis violates federal policy aimed at protecting overburdened and vulnerable communities. Such policy statements include those set forth in executive orders. For example:

- Executive Order 12,898 directs federal agencies to evaluate discriminatory *impact* when conducing environmental justice analyses of proposed projects.[475] The Corps may not simply consider discriminatory intent in its environmental justice analysis.

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[472] *See Standing Rock Sioux Tribe v. U.S. Army Corps of Eng'rs*, 255 F. Supp. 3d 101, 140 (D.D.C. 2017) ("The purpose of an environmental justice analysis is to determine whether a project will have a disproportionately adverse effect on minority and low income populations.").
[473] *See California v. Bernhardt*, 472 F. Supp. 3d 573, 620 (N.D. Cal. 2020) (An agency "must not only disclose . . . that certain communities and localities are at greater risk, but must also fully assess these risks.").
[474] *See Standing Rock Sioux Tribe v. U.S. Army Corps of Eng'rs*, 255 F. Supp. 3d 101, 137-40 (D.D.C. 2017); U.S. Env't Prot. Agency, Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses 25 (1998) ("Low population density may lead the NEPA analyst to underestimate the actual environmental harm to the affected population when conducting a risk assessment").
[475] *See* Exec. Order No. 12,898, § 1-101 (Feb. 11, 1994), 59 Fed. Reg. 7629 (Feb. 16, 1994) ("To the greatest extent practicable and permitted by law . . . each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations[.]").

- Executive Orders 14,008 and 31,990 direct federal agencies to develop programs, policies, and activities to address the disproportionate health, environmental, economic, and climate impacts on disadvantaged communities.[476] These federal policies seek to mitigate and eliminate the numerous environmental and public health harms suffered by overburdened communities. The Corps' analysis must reflect these policy goals.

Climate change. The Corps must evaluate the direct, indirect, and cumulative climate change impacts and estimate the greenhouse gas emissions arising from a proposed petrochemical facility.[477] Petrochemical facilities emit huge quantities of greenhouse gases and thus pose a significant climate threat. To quantify such harms, agencies may use the "social cost of carbon," which assigns a dollar value to the harm caused based on the amount of greenhouse gases emitted.[478] However, the Corps' climate change analysis must do more than simply quantify the harm caused by the greenhouse gas emissions—the Corps must take a "hard look" at the resulting harm.

Agencies—including the Corps—often employ three tactics to improperly discount the harm caused by greenhouse gas emissions. First, the Corps might try to avoid a complete NEPA analysis by accounting only for operating emissions from the facility itself.[479] Such a narrow approach violates NEPA because it does not account for climate change impacts during construction, nor does it account for indirect or cumulative impacts.

Second, the Corps might attempt to minimize the significance of climate change impacts by claiming that an individual project's climate change impacts are negligible compared to the global scope of the problem. Based on this comparison, the Corps might conclude that the proposal's climate change impacts are "insignificant."[480] Such a conclusion does not satisfy NEPA's hard look requirement. A statement that a project's emissions are negligible compared to the magnitude of the problem simply summarizes the nature of the climate challenge—individual sources make a relatively small contribution to climate but, collectively, have a very large impact. To satisfy NEPA, the Corps must evaluate the climate change impacts of a particular project in light of their magnitude and significance in the context of the global climate crisis. The Corps may not limit its analysis to "a percentage of sector, nationwide, or global emissions."[481]

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[476] *See* Exec. Order No. 14,008, § 219, 86 Fed. Reg. 7619, 7629 (Jan. 27, 2021); Exec. Order No. 13,990 (Jan. 20, 2021), 86 Fed. Reg. 7037 (Jan. 25, 2021).

[477] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 & n.34 (1980) (agencies must take a "hard look" at *all* potential environmental consequences); *see also* 40 C.F.R. § 1508.1(g).

[478] *See, e.g.*, John Mizerak, *D.C. Circuit Requires Further Consideration of Social Cost of Carbon in NEPA Analysis*, Covington (Aug. 17, 2021), https://www.insideenergyandenvironment.com/2021/08/d-c-circuit-requires-further-consideration-of-social-cost-of-carbon-in-nepa-analysis/; *see also* Interagency Working Grp. on Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990 (Feb. 2021), https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf?source=email.

[479] *See, e.g.*, Letter from Letitia James et al., New York Attorney General, to Colonel Stephen Murphy, U.S. Army Corps of Eng'rs (May 24, 2021) (Appendix 8).

[480] *See, e.g.*, Letter from Letitia James et al., New York Attorney General, to Colonel Stephen Murphy, U.S. Army Corps of Eng'rs (May 24, 2021) (Appendix 8).

[481] CEQ, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews 11 (Aug. 1, 2016), https://ceq.doe.gov/docs/ceq-regulations-and-guidance/nepa_final_ghg_guidance.pdf. Although CEQ withdrew the 2016 guidance, CEQ announced that it is reviewing and revising NEPA guidance and regulations. In the interim, CEQ has directed agencies to "consider all available tools and resources in assessing GHG emissions and climate change effects of their proposed actions, including, as appropriate and relevant, the 2016 GHG Guidance." NEPA Guidance on Consideration of Greenhouse Gas Emissions, 86 Fed.

Third, the Corps might attempt to minimize the climate harm by claiming that national security and energy independence goals outweigh it.[482] Frequently, agencies fail to support such statements. Moreover, petrochemical facilities cause a massive amount of greenhouse gas emissions, which amplifies risks to national security and the economy from global climate change. Such risks include more frequent and intense floods, hurricanes, and drought, among other costly problems. Advocates should address such issues in comments.

Public health and safety. Petrochemical facilities have poor safety track records, and disasters at the facilities are not uncommon.[483] Safety risks include malfunctions, spills, fires, and explosions. The consequences of such disasters can be catastrophic, resulting in death and hospitalizations, particularly for already-overburdened communities.[484] Facilities located near coastal areas or waterways also may be a risk of flooding and storm damage—both of which exacerbate safety-related risks.[485] Climate change will make such risks much worse.[486] The Corps' NEPA documents must analyze safety risks in detail. To support concerns, advocates can highlight safety, oversight, and emergency response problems at similar industrial facilities, such as those cited in footnotes here.

Other resource impacts. The following table summarizes other issues that advocates might raise.

RESOURCE	POTENTIAL ISSUES
Geology and soils	Geology and soil concerns may include how close a proposed petrochemical facility is to the coast, including the risk that hurricanes and storm surges pose to the project. For such impacts, advocates should consider citing hurricane and storm damage to other industrial facilities in the area. Storm damage can include chemical spills. If the water table is relatively shallow, spills could harm the aquifer. Such comments also may apply to safety and reliability concerns. Soils also could be affected during the construction process, and some soils may be particularly susceptible to erosion. Without proper stabilization, runoff can increase, potentially impeding the ability of the area to withstand storms and hold nutrients. Such impacts may be particularly concerning in coastal and near-coastal areas.
Recreation and tourism	Recreation and tourism resources include both official sites (e.g., parks, beaches, and trails) and unofficial sites (e.g., waterways for boating, bike paths, fishing holes, and overlooks). Infrequent use does not render a use unimportant. Advocates can learn about

Reg. 10,252, 10,252 (Feb. 19, 2021). For updates, see *Guidance on Consideration of Greenhouse Gases*, https://ceq.doe.gov/guidance/ceq_guidance_nepa-ghg.html (last visited Oct. 16, 2022).

[482] *See, e.g.*, Letter from Letitia James et al., New York Attorney General, to Colonel Stephen Murphy, U.S. Army Corps of Eng'rs (May 24, 2021) (Appendix 8).

[483] *See, e.g.*, Tristan Baurick, *Louisiana Plant's 'Egregious' Record Highlighted in National Push for New Chemical Safety Rules*, The Advocate, Sept. 20, 2022, https://www.nola.com/news/environment/article_32d3ce7e-3911-11ed-9104-8b4781e88370.html; *Houston Suffers a Petrochemical Disaster Every 6 Weeks*, Earthworks (Apr. 22, 2019), https://earthworks.org/blog/houston-suffers-a-petrochemical-disaster-every-6-weeks/.

[484] Cmty. In-Power & Dev. Ass'n, et al., Comment Letter on Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act (July 29, 2021), https://earthjustice.org/sites/default/files/files/rmp_chem_disaster_prevention_comments_07-29-2021.pdf; Paul DeBenedetto & Katie Watkins, *2 Dead, 30 Hospitalized After 'Mass Casualty' Incident At LyondellBasell Chemical Plant Near La Porte*, Houston Pub. Media, July 27, 2021, https://www.houstonpublicmedia.org/articles/news/energy-environment/2021/07/27/404355/at-least-2-dead-after-leak-at-lyondellbasell-chemical-plant-in-la-porte/.

[485] *See, e.g.*, Sarah Zhang, *A Chemical Plant Catches Fire After Harvey Flooding*, The Atlantic, Aug. 31, 2017, https://www.theatlantic.com/science/archive/2017/08/harvey-flooding-explosion-petrochemicals/538560/.

[486] *See, e.g.*, U.S. Gov't Accountability Off., GAO-22-104494, *Chemical Accident Prevention: EPA Should Ensure Regulated Facilities Consider Risks from Climate Change* (2022), https://www.gao.gov/assets/gao-22-104494.pdf.

	how the nearby area is used by speaking with residents, reviewing local tourism guides, exploring online maps and websites, finding out about local festivals, and visiting the area. Harm to recreation and tourism resources could arise in several ways: destruction of the site, removal from public access, increased air or water pollution, increased noise, impairment of views, and harm to the ecosystem. Harm may occur during the petrochemical facility's construction or operation.
Aesthetic and visual resources	Visual resource impacts include impacts from various vantage points, including people's homes and recreation areas. Impacts can arise from the facility itself, construction damage to topography and vegetative cover, and increased traffic (vehicle and vessel), among others. Nighttime visual impacts also can be significant as a result of the facility's lighting or if bright lights are used during construction. Such harms might decrease property values and cause tourism to suffer. Visualizations prepared by the applicant can help advocates understand the potential scope of such harms. Advocates should request visualizations during the scoping process.
Socioeconomics	For socioeconomic impacts, the Corps must evaluate the impacts of constructing and operating a proposed petrochemical chemical facility on nearby towns and counties. Such impacts may include whether there is enough housing in the area to support the facility and whether current residents might be displaced. This section also should compare the expected incremental local government expenditures (e.g., school operating costs, road repair, healthcare services, public safety, and utility costs) to the expected incremental local government revenues. Expert opinions can help refute the Corps' socioeconomics analysis.
Land use and land cover	Relevant land use considerations may include the use of coastal resources or the use of undistributed sites. Advocates can collaborate with local groups to evaluate whether other land use concerns might arise. Coastal resource concerns may arise for petrochemical facilities that include a terminal or are otherwise located in a coastal zone. For such facilities, the Corps must ensure that the project is consistent with the state's Coastal Zone Management Plan. This requires the state to issue a "coast consistency statement." "Greenfield" projects—those located on sites that have never been industrialized—often have more significant impacts to land use and the environment than projects located on "brownfields." An ecological economist can help quantify the change in value from the pristine site to the newly industrialized site. The Corps should incorporate the decrease in value into the cost-benefit analysis.
Land-based transportation	The operation and construction of a petrochemical facility will cause vehicle traffic to increase. An increase in traffic will increase pollution, accidents, noise, and wildlife deaths. Such impacts may be experienced on highways and neighborhood streets and at all times of day, including at night. The presence of unpaved roads can be especially problematic given the resulting increase in particulate matter pollution. More large trucks will increase fine particulate matter pollution (as a result of diesel exhaust), a hazard that is especially harmful to health. Increased traffic also will increase the transportation of hazardous materials, which poses an additional threat to the environment, public health, and safety. Transportation-related impacts also include an increase in the number of heavy vehicles on local roads. An increase in heavy vehicles will increase roadway wear and tear, leading to more accidents and damage to residential vehicles. Other considerations include increases in railroad and air traffic. Increased air and railroad traffic will further impair air quality and exacerbate noise and other problems. Stacks on a petrochemical facility and the facility's emissions can impair visibility and may pose hazards to air traffic particularly if an airport is nearby. Roads to access a new petrochemical facility also may facilitate public access to previously undeveloped areas, which may attract off-road vehicle users. Off-road vehicles can destroy ecosystems, cause erosion, and increase air pollution.

Hazardous, toxic, and radioactive wastes	Petrochemical facilities often discharge high levels of toxic chemicals, including PFAS, benzene, butadiene, and phthalates, along with plastic pellets, flakes, granules, and powders. These chemicals, in turn, can be eaten by migratory birds, fish, and other wildlife, collect in sediments, and contaminate drinking water sources. Additionally, construction and operation of the facility may discharge toxics into wetlands and nearby waters, imperiling their quality and causing harm to the species that depend on them.
Cultural resources	The Corps must evaluate impacts to cultural and historic resources, such as the likely burial grounds of enslaved African Americans. Advocates can learn about such concerns by speaking with residents, inquiring with local historical societies, reviewing newspaper articles, and searching agency and university websites. The proposed Formosa plastics facility, for example, was formerly home to two 19th century sugar plantations and the permit area contains the remains of enslaved people.[487]

[487] Letter from Letitia James et al., New York Attorney General, to Colonel Stephen Murphy, U.S. Army Corps of Eng'rs (May 24, 2021) (Appendix 8).

Chapter 7

COASTAL USE PERMITS

CHAPTER SEVEN: COASTAL USE PERMITS

A. Overview

1. What are Coastal Use Permits and what approvals are required?

Coastal use permits are generally pre-construction approvals needed to build new projects within coastal areas in some coastal states. At the federal level, Congress has enacted the Coastal Zone Management Act (CZMA), which is designed to encourage coastal states to develop Coastal Management Plans (CMPs). Unlike the other federal statutes covered by this guide, states are not required to participate in the CZMA. That said, of the 35 coastal states (including those on the Great Lakes), 34 have opted to enact plans under the Act—Alaska is the only coastal state that does not currently participate, having withdrawn from the program in 2011. Note, however, that merely participating in the CZMA does not mean that a state has developed a broad coastal use permit program—more on this later.

The Act is managed at the federal level by the National Oceanic and Atmospheric Administration (NOAA), and NOAA provides financial incentives pursuant to the Act to encourage states to participate. Although participation is optional, participating states must develop programs that meet NOAA's criteria, and NOAA must formally approve these programs. However, states usually include additional coverage beyond the minimum federal requirements; for instance, Louisiana's permit program covers many types of projects that would not strictly need to be regulated under the federal requirements of the CZMA.

Functionally, coastal states that participate in the Coastal Zone Management Program develop coastal management plans that govern how coastal lands and waters within the zone shall be managed, and then exercise the authority to decide what kinds of development is consistent with the plan. In participating states, new projects within the zone that may impact coastal waters usually need to apply for a pre-construction permit; if the state finds that the new facility is consistent with its plan, it will issue the permit; denial of the permit effectively bars construction, thus challenging the issuance of a permit can be an effective tool for advocates hoping to stop new petrochemical infrastructure.

Another unique aspect of coastal use permitting is that the management plans usually incorporate federal, state, and local requirements. Thus, the plan often includes rules and guidance issued locally by counties, parishes, and municipalities, in addition to state and federal regulations.

The areas covered by states' coastal management plans can be quite extensive; in Louisiana, for instance, the zone extends nearly to Baton Rouge, and therefore covers a large portion of land that is attractive to the petrochemical industry. Texas' zone is similar in breadth and covers most of prime petrochemical hot spots like Port Arthur, Baytown, and a significant portion of the Houston area.[488]

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[488] A map can be accessed at: https://www.glo.texas.gov/coast/coastal-management/forms/files/CoastalBoundaryMap.pdf.

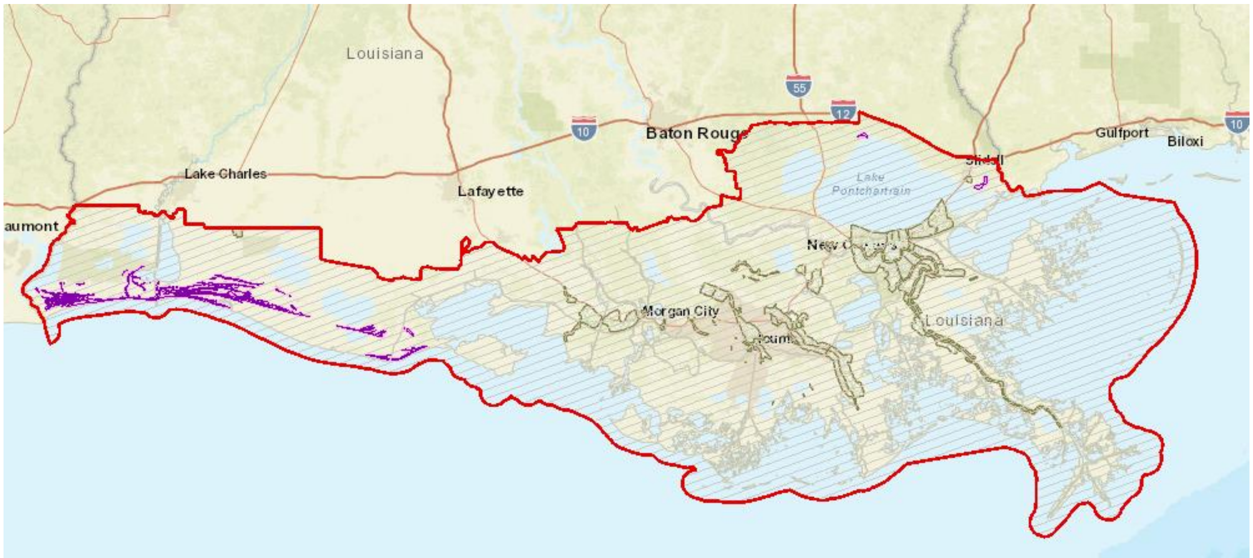

Figure 3: Coastal Management Plan zone for Louisiana (red outline), courtesy of the Louisiana Department of Natural Resources

2. Who Implements Coastal Use Permits and Consistency Determinations?

Although the CZMA is operated at a national level by NOAA, most advocates will interact with the program at a state level (but NOAA may become involved if a state finds a project is not consistent with the CMP, as covered at the end of this chapter). As discussed above, states that choose to participate in the CZMA must determine whether new development within the coastal area is consistent with the state's CMP. To do so, states have two avenues available; they can either designate one central agency to establish a permit program, or they can take a "networked" approach. In states that take a networked approach, such as Texas, each state agency that interacts with development within the coastal zone independently acts to ensure "its proposed actions that may adversely affect [coastal areas] are consistent with CMP goals and policies."[489] In practice, these networked agencies do not generally make individual consistency determinations, and there is comparatively little that advocates can do in these states to leverage the CZMA.

This chapter instead focuses on Louisiana, which has implemented a permit program operated by the Louisiana Department of Natural Resources (LDNR), where advocates can directly participate in the permit program. This is covered in more depth below, and will be generally similar in other states that have implemented Coastal Use Permit programs.

Finally, although Texas operates a networked program rather than a permit program, the general implementation is overseen by the Texas General Land Office, and the following links provide more information:

- The General Land Office's (GLO) permitting website, which describes Texas's coastal management program and links to applicant forms (https://www.glo.texas.gov/coast/coastal-management/permitting/index.html).

[489] Texas GLO, Texas Coastal Management Program Biennial Report 2019-2020, at 19 (Dec. 2020), https://www.glo.texas.gov/coast/coastal-management/forms/files/2019-2020-cmp-biennial-report.pdf.

- The GLO's 2019-2020 biennial report (https://www.glo.texas.gov/coast/coastal-management/forms/files/2019-2020-cmp-biennial-report.pdf).[490]
- For more information on other states, one starting place is NOAA's summary of the thirty-five active coastal management plans: https://coast.noaa.gov/czm/mystate/.

3. Louisiana Coastal Use Permits

The process for ensuring that a project is consistent with the CZMA will vary from state to state. Louisiana's process involves obtaining a coastal use permit and is highlighted here to demonstrate some issues advocates may need to consider.

- What agency governs?
- The Louisiana Department of Natural Resources (LDNR) manages the state's compliance with the federal CZMA through its Office of Coastal Management (OCM). It establishes the state's Coastal Management Plan, which must be approved by NOAA, and decides whether to issue Coastal Use Permits (CUPs) for activities that take place on state lands that lie within Louisiana's designated "coastal zone."[491]

Although parishes can establish a local CMP to process permits that are not of state interest,[492] certain petrochemical projects may be excluded from local control. Specifically, Louisiana excludes from local control oil, gas, and mineral exploration and production, which may include gas processing plants; also excluded are oil and gas pipelines, energy facilities and projects using state-owned lands or water bottoms.[493]

- What basic laws and principles must the LNDR apply?

The Louisiana State and Local Coastal Resources Management Act of 1978 (SLCRMA) is the governing state law. Section 701H of the statute states that a project may be permitted if "after a systematic consideration of all pertinent information regarding the use, the site and the impacts of the use…and a balancing of their relative significance," the LDNR finds it meets all three of the following tests:

1. The benefits resulting from the use "would clearly outweigh the adverse impacts that would result from compliance with the modified standard;"
2. No "feasible and practical alternative locations, methods, or practices" for the use exist that comply with the standard, and

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490 Texas has a history of finding every federal license and permit consistent with its CMP, including in 2019 and 2020. Texas Coastal Management Program, *Texas Coastal Management Program Biennial Report 2019 – 2020,* (Dec. 2020), at 19, https://www.glo.texas.gov/coast/coastal-management/forms/files/2019-2020-cmp-biennial-report.pdf. This isn't an anomaly; other years also have had no federal projects deemed inconsistent. *E.g.*, Texas Coastal Management Program, *Texas Coastal Management Program Biennial Report 2013 – 2014,* (Dec. 2014), at 13, https://www.glo.texas.gov/coast/coastal-management/forms/files/CMP-Biennial-Report-2014.pdf.

491 Federal lands are excluded from the Louisiana coastal zone, although any activity that takes place on those lands that may affect land or water use or the natural resources of Louisiana's coastal zone are subject to the CZMA's consistency provisions. Coastal Zone Management Act § 304(a).

492 The 12 parishes that have done so are Calcasieu, Cameron, Jefferson, Lafourche, Orleans, Plaquemines, St. Barnard, St. James, St. Charles, St. John the Baptist, St. Tammany and Terrebonne; *see* LNDR, *Local Coastal Management Programs,* http://www.dnr.louisiana.gov/index.cfm/page/111 (visited Aug. 14, 2023).

493 La. R.S.49:214.25(a)(1)(b), (f), (g) and (h).

3. The use meets one of the following three criteria:

- "Significant public benefits" will result from the use, or
- The use would "serve important regional, state, or national interests," including "the national interest in resources and the siting of facilities in the coastal zone identified in the coastal resources program," or
- The use is coastal water dependent.[494]

First test. Louisiana's regulations declare that the LDNR's permit decision "shall represent an appropriate balancing of social, environmental and economic factors,"[495] but the LDNR clarifies in its Coastal User's Guide that the first test is not strictly a cost-benefit analysis "because environmental harms generally cannot be quantified in monetary terms," and is "more in the nature of a subjective test," weighing "the value of the natural resources and the value to the public from the proposed use."[496] The LDNR further declares that "public benefits must go to the public as a whole, not to just a few individuals in the locality, and must be measurably substantial."[497] The regulations require the LDNR to consider the "extent of long term benefits or adverse impacts."[498]

The regulations state that a project is of "overriding public interest" if "the public interest benefits of a given activity clearly outweigh the public interest benefits of compensating for wetland values lost as a result of the activity."[499] It suggests, as examples of such projects, "certain mineral extraction, production, and transportation activities," or flood control measures for existing infrastructure.[500] The LDNR Coastal User's Guide, similarly, states, "Louisiana's oil and natural gas industries are important to the state's economy, providing taxes and jobs. Proven reserves of both resources are ranked among the nation's largest."[501] A critique of a petrochemical project, however, could challenge the actual need for the particular project and the question the extent to which the public would actually benefit, in light of the economic decline of the gas industry and the uncertainties of export.

Second test. The LDNR states that consideration of the second test "should be similar to the process provided for under Section 102 of the National Environmental Policy Act."[502] It requires the LNDR to evaluate the "economic need for use and extent of impacts of use on economy of locality" and the "extent of resulting public and private benefits."[503] This second test provides further strong support for the relevance of challenges to the actual need for the petrochemical project and the extent to which the public would benefit.

The LDNR also opens the door to concerns about the financial resources of the applicant. It emphasizes that the decision maker "is not held to the options economically available to the

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[494] La. Admin. Code, Title 43, Part 1, Ch. 7, § 701(H)(1).
[495] La. Admin. Code, Title 43, Part 1, Ch. 7, § 723(C)(8).
[496] LDNR, *A Coastal User's Guide to the Louisiana Coastal Resources Program* (Rev. Jan. 2015) (hereafter, "Coastal User's Guide"), at IV-2, https://data.dnr.la.gov/LCP/LCPHANDBOOK/FinalUsersGuide.pdf.
[497] *Id.*
[498] La. Admin. Code, Title 43, Part 1, Ch. 7, § 701(F)(19).
[499] La. Admin. Code, Title 43, Part 1, Ch. 7, § 700.
[500] *Id.*
[501] Coastal User's Guide, II-1.
[502] Coastal User's Guide, IV-2.
[503] La. Admin. Code, Title 43, Part 1, Ch. 7, § 701F(7) and (8).

applicant," but rather includes the alternatives that "would be available to a reasonable person in a normal situation." It explains, "An undercapitalized applicant should not be permitted to damage or destroy important public resources when a well-financed one is prevented from doing so."[504]

Third test. With the third test, only one of the following criteria must be met: 1) significant public benefits" will result from the use; 2) the use would "serve important regional, state, or national interests;" or 3) the use is coastal water dependent.

LDNR has not provided much guidance to these three provisions, stating only that with the "public benefits" provision shall focus on benefits to the public as a whole rather than "just a few individuals."[505] The second provision, meanwhile, examines "interests of greater than local concern," in order to assure that "those projects which are important to the region, to the state, or to the nation, are assured full consideration."[506]

The third part of the third test, water dependency, is mostly similar to the water-dependency analysis utilized by the Army Corps in the Clean Water Act § 404 permitting context. One critical distinction, however, is that applicants must also demonstrate that a project is not only water-dependent, but specifically coastal water-dependent.[507] For instance, advocates argued that even if Formosa's proposed St. James Parish complex was water-dependent (which they also disputed), Formosa had failed to demonstrate why the only option for the project was within the sensitive coastal zone rather further inland.[508]

- Other rules to be aware of.

The State of Louisiana seeks to ensure that its coastal management regulations are not interpreted in such a way that landowners are denied all use of their property. The regulations state that the Coastal Use Guidelines "are not intended to nor shall they be interpreted so as to result in an involuntary acquisition or taking of property."[509] This shouldn't stop a state from finding that a petrochemical project is inconsistent with its coastal plan, because that would be a narrow finding that would not prohibit other uses for the site.

Some legal language that could be worked into comments come from the guidelines on coastal use for all projects.[510] Advocates are encouraged to read these regulations before formulating comments.

As an additional note, Louisiana's regulations do clarify that coastal use guidelines can be stronger than water and air quality laws and regulations. Compliance with air and water laws "shall be deemed

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[504] Coastal User's Guide, IV-2.
[505] Coastal User's Guide, IV-2
[506] *Id.*
[507] Letter from Scott Eustis, Gulf Restoration Network, to Brad Hester, Louisiana Department of Natural Resources, at 9, (June 26, 2018).
[508] *Id.*
[509] La. Admin. Code, Title 43, Part 1, Ch. 7, § 701(D).
[510] La. Admin. Code tit. 43 § I-701. A free source copy of the Louisiana Code on coastal use management can be found here: https://casetext.com/regulation/louisiana-administrative-code/title-43-natural-resources/part-i-office-of-the-secretary/subpart-1-general/chapter-7-coastal-management.

in conformance" with the coastal management program "except to the extent that these guidelines would impose additional requirements."[511]

Louisiana's regulations also extend its jurisdiction more broadly over wetlands than does the federal clean water laws. Louisiana's coastal use guidelines define "wetlands" as: "open water areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions."[512] The definition for wetlands regulated under Section 404 of the Clean Water Act is based instead on specific criteria regarding vegetation, soils and hydrology. The LDNR notes, for example, that a bottomland hardwood site that occurs below the five-feet elevation but does not meet the hydric soils parameter for federal Clean Water Act § 404 regulatory jurisdiction would be considered jurisdictional under the Louisiana Office of Coastal Management but not by the Army Corps.[513]

- Which parishes are coastal under the statute?
- Certain parishes lie completely within Louisiana's coastal zone. These include: **Orleans, Jefferson, St. Bernard, Plaquemines, St. John the Baptist, St. James** and **St. Charles**. Other parishes having some portion included in Louisiana's coastal zone are (from the Texas Border to the Mississippi state line): Calcasieu, Cameron, Vermillion, Iberia, St. Mary, St. Martin, Assumption, Terrebonne Laforche, Ascension, Livingston, Tangipahoa, and St. Tammany.[514] A map of the coastal zone can be accessed online at: http://www.dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=928.
- Application Process
- For coastal projects that also must undergo Clean Water Act § 404 permitting, LDNR directs applicants to file a joint permit application for a coastal use permit with its application for Corps permits.[515] More information about the application is also available on the LDNR's webpage here: http://www.dnr.louisiana.gov/index.cfm/page/93.
- Deadlines during the permitting process

The LDNR must make its coastal permit decision quickly. The statute states that the decision "shall be made" within 30 days after public notice or within 15 days after a public hearing, whichever is later.[516] This short timeframe, it should be noted, is not required by federal law. The CZMA allows the state agency six months to concur with or object to an applicant's proposed certification.[517]

Public notice must be provided within 10 days of receipt of the coastal use permit application,[518] but neither the statute nor the regulations specify a public comment period. Practically speaking, any

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[511] La. Admin. Code, Title 43, Part 1, Ch. 7, § 701B.
[512] La. Admin. Code, Title 43, Part 1, Ch. 7, § 700 (Definitions).
[513] LNDR Office of Coastal Management, *Frequently Asked Questions (FAQ*,. http://www.dnr.louisiana.gov/index.cfm/page/1387 (visited Aug. 14, 2023).
[514] Coastal User's Guide, III-1.
[515] LDNR, *Joint Permit Application,* http://www.dnr.louisiana.gov/assets/OCM/permits/JPA2010Fillable.pdf (visited Aug. 14, 2023).
[516] La. R.S.49:214.30(C)(3).
[517] 16 U.S.C. § 1456(c)(3)(A). If no objection or concurrence is made within six months, the state's concurrence is "presumed."
[518] La. R.S.49:214.30(C)(2)(a).

comment would have to get to the LDNR extremely quickly to have any meaningful impact on the agency's decision if that decision is to be issued just 30 days after public notice.

The coastal use permit fast track can be slowed to a somewhat more reasonable pace in two ways—the holding of a ***public hearing*** or a ***request for more information***.

The statute grants the LDNR discretion as to whether to hold a ***public hearing***.[519] Public notice must be provided at least 30 days in advance of any public hearings, and the hearing file must remain open for 10 days after the close of the hearing.[520] But, notwithstanding any other law to the contrary, the decision to approve or deny the permit must be made within 60 days of the date on which the LDNR notified the applicant that the application was complete.[521] An advocate would likely want to make an effective case for a public hearing swiftly after receiving public notice. The regulations state:

> *"Public hearing(s) are appropriate when there is significant public opposition to a proposed use, or there have been requests from legislators or from local governments or other local authorities, or in controversial cases involving significant economic, social or environmental issues."*[522]

The LDNR may ***request more information*** of the applicant if it deems that it has not received all the "necessary data and information" required.[523] The applicant must respond within 60 days. If the applicant does not timely respond, the LDNR may deny the application without prejudice (meaning the applicant can simply refile), withdraw it, or place it on inactive status.[524] Thus, an advocate would likely want to identify any important missing information in the application swiftly and urge that the LDNR should request and obtain it.

- <u>Asking for reconsideration of or appealing the decision on a coastal use permit.</u>

Once the LDNR has made a decision on a coastal use permit, any person can file a petition to the LDNR secretary for reconsideration of the decision within ten days after public notice or receipt of the final decision. The secretary must rule within 15 days of receipt of the petition and has discretion to stay the permit or notice of determination in the interim. The grounds for reconsideration are:

1. The decision is "clearly contrary to the law or the evidence before the secretary";
2. The petitioner has discovered important evidence that the petitioner could not, with due diligence, have presented to the secretary prior to the decision;
3. Issues not previously considered, through no fault of the petitioner, should be examined to properly dispose of the matter; or
4. Other grounds exist to examine issues and evidence further in the public interest.[525]

Any "aggrieved person" or affected local, state or federal agency, or "any other person adversely affected by a coastal use permit decision" may bring an appeal an adverse decision by the secretary

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[519] A public hearing "may" be held. La. R.S.49:214.30(C)(2)(a).
[520] La. Admin. Code, Title 43, Part 1, Ch. 7, § 727(B)(1) and (6).
[521] La. R.S.49:214.30(C)(2)(b).
[522] La. Admin. Code, Title 43, Part 1, Ch. 7, § 723(C)(6)(c).
[523] 15 C.F.R. § 930.60(a). The required data and information is described in 15 C.F.R. § 930.58(a).
[524] La. R.S.49:214.30(C)(7).
[525] La. R.S.49:214.35(B).

in accordance with La. R.S. 49:214.35.[526] The appeal may be brought directly to the state district court—whether or not a petition to the secretary for reconsideration has been filed.[527] The appeal must be filed within 30 days after the LDNR mails notice of the final decision (not after the individual receives that notice), or, if a petition for reconsideration was filed with the LDNR secretary, then within 30 days after the secretary's decision on the petition.[528]

- Deadlines for construction

A project must start construction within two years of the date of permit issuance and be completed within five years of the date of issuance.[529] The term may be extended, on a case-by-case basis, by up to two years to start construction and up to 3 years to complete it. A 30-day extension may be granted without public notice, but longer extensions are subject to public notice and comment. Also, extension requests involving project modifications that would result in greater environmental impacts will be treated as new applications.[530] An approval of a permit extension may be appealed on the sole ground that the proposed activity should be treated as a new application.[531]

- Issues that can be raised in Louisiana's coastal review process

In addition to specific air and water quality concerns, Louisiana's regulations allow consideration of several specific issues that can be raised in a coastal review process. A non-exhaustive list of issues is provided in the following table:

Selected Issues Relevant in Louisiana's Coastal Review Permit Process

Cumulative impacts	The regulations require consideration of "Cumulative Impacts," defined as "impacts increasing in significance due to the collective effects of a number of activities."[532] Significant "adverse effects of cumulative impacts" are defined as adverse impacts to "avoid to the maximum extent practicable."[533] Consider raising any cumulative impacts that might be relevant, such as wetlands health, coastal erosion, and diminished flood protection capacity.
Emergency risks and preparedness	The regulations for "oil, gas and other mineral activities," state: "Effective environmental protection and emergency or contingency plans shall be developed and complied with for all mineral operations."[534] Consider raising issues related to safety for nearby communities and the ecosystem.
Land-based traffic issues	The LDNR must consider the "existence of necessary infrastructure to support the use and public costs resulting from use."[535] The regulations declare a policy to "avoid to the maximum extent practicable" certain "adverse impacts," including "adverse economic impacts on the locality" and "adverse disruption of existing social patterns."[536] Consider impacts in the short-term (e.g., during construction) and long-term (e.g., at full permitted capacity).

[526] La. R.S.49:214.30(D).
[527] La. R.S.49:214.35(D).
[528] La. R.S.49:214.35(E). Trial de novo shall be held upon request of any party. La. R.S.49:214.35(F).
[529] La. Admin. Code, Title 43, Part 1, Ch. 7, § 723(C)(9)(d).
[530] La. Admin. Code, Title 43, Part 1, Ch. 7, § 723(D)(5).
[531] L a. Admin. Code, Title 43, Part 1, Ch. 7, § 723(D)(5)(d).
[532] La. Admin. Code, Title 43, Part 1, Ch. 7, § 700 (Definitions).
[533] La. Admin. Code, Title 43, Part 1, Ch. 7, § 701(G)(10).
[534] La. Admin. Code, Title 43, Part 1, Ch. 7, § 719(K).
[535] La. Admin. Code, Title 43, Part 1, Ch. 7, § 701(F)(10).
[536] La. Admin. Code, Title 43, Part 1, Ch. 7, § 701(G)(2) and (6).

Local development plans, navigation, and recreation plans; existing and traditional uses	The regulations state that public and private works projects such as "ports" and "public utilities" are "necessary to protect and support needed development and shall be encouraged,"[537] but that they "shall, to the maximum extent practicable, take place only when . . . consistent with all relevant adopted state, local, and regional plans."[538] Consider raising how new petrochemical infrastructure conflicts with Louisiana's Coastal Master Plan, for example.[539] In addition, the LDNR must consider the "extent of impacts on existing and traditional uses of the area and on future uses for which the area is suited."[540] Also, "[u]ses shall to the maximum extent practicable be designed and carried out to permit multiple concurrent uses which are appropriate for the location and to avoid unnecessary conflicts with other uses of the vicinity."[541] Local advocates can provide invaluable input into existing and historic uses.
Bad actor issues	The law says the LDNR "shall take into consideration the permit applicant's history of compliance with the provisions of the Louisiana Coastal Resources Program" in making its decision.[542] Consider whether the applicant has connections to other projects in the state.

Finally, do not forget that LDNR's issuance of a Coastal Use Permit must comply with Louisiana's Public Trust Doctrine, which is covered in the following chapter.

4. NOAA Oversight

If the state denies a coastal consistency statement pursuant to the CZMA (as opposed to state-only grounds for denial), then an applicant may appeal the state's action to NOAA, which has been delegated the authority to act on behalf of the Secretary of the U.S. Department of Commerce.[543] NOAA may override the state's objection upon a finding that the activity is either consistent with the objectives or purposes of the CZMA or is otherwise necessary in the interest of national security.[544] If NOAA does not overrule the state, the project is stopped and the developer's only recourse is to appeal the NOAA ruling to federal court. Note that the Secretary of the U.S. Department of Commerce has delegated to the Under-Secretary of Commerce for Oceans and Atmosphere in NOAA the duty to hear and rule on appeals of state denials of consistency determinations.

NOAA has rarely been asked to review a state's consistency determination—only a handful of cases in the last decade. One such appeal was for an Liquified Natural Gas project; in 2021 NOAA agreed with Oregon that the Jordan Cove LNG project was not consistent with Oregon's CMP.[545]

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[537] La. Admin. Code, Title 43, Part 1, Ch. 7, § 711(B).
[538] La. Admin. Code, Title 43, Part 1, Ch. 7, § 711(B)(3).
[539] Coastal Protection and Restoration Authority, *Our Plan: Louisiana's Coastal Master Plan,* https://coastal.la.gov/our-plan/ (visited Aug. 14, 2023).
[540] La. Admin. Code, Title 43, Part 1, Ch. 7, § 701(F)(11).
[541] La. Admin. Code, Title 43, Part 1, Ch. 7, § 701(I).
[542] La. R.S.49:214.30(C)(9).
[543] NOAA is delegated the authority to perform functions prescribed in the CZMA, including administering and deciding consistency appeals. Secretary of Commerce, Departmental Organizational Order 10-15 § 3.01(u) (Dec. 12, 2011), https://www.osec.doc.gov/opog/dmp/doos/doo10_15.html.
[544] *Id. Also see* 15 C.F.R. § 930.120. This review is *de novo*, meaning that NOAA does not give deference to the state's determination, but rather makes the decision based on its own expertise, with deference to the views of interested federal agencies regarding their areas of expertise. 15 C.F.R. § 930.127(e)(1).
[545] Brooklyn Hildebrandt, Increase in Consistency Appeals Pursuant to the Coastal Zone Management Act: Are States Taking a More Active Role in Protecting Their Coastal and Marine Resources?, ABA (Apr. 29, 2021), https://www.americanbar.org/groups/environment_energy_resources/publications/mr/20210429-increase-in-consistency-appeals/.

5. Final Thoughts on Coastal Use Permits

Unless states are sympathetic to environmental concerns or if a state has incorporated strong public-participation and environmentally friendly local ordinances into its Coastal Management Plan, using the CZMA to challenge a project can be difficult. Without consulting with an attorney experienced with your state's CMP, it can be difficult to determine what, if any, local and state rules have been incorporated into the CMP. Some such rules might be floodplain management regulations: under the National Flood Insurance Act states and local governments must establish and implement such regulations that either meet or exceed the Federal Emergency Management Agency (FEMA) requirements, known as the federal Criteria for Land Management and Use.[546] As with much of this guide, advocates are encouraged to seek the input of an experienced environmental lawyer if they wish to challenge a Coastal Use Permit.

[546] 44 C.F.R. § 60.

Chapter 8

THE PUBLIC TRUST DOCTRINE IN LOUISIANA

CHAPTER EIGHT: THE PUBLIC TRUST DOCTRINE IN LOUISIANA

A. Overview

1. What is the Public Trust Doctrine and How Can it Help Advocates?

The public trust doctrine in the United States traces its origin to ancient Roman laws, and holds that the sovereign—in the U.S., typically state governments—shall hold and manage certain natural resources for the benefit of the public. The most common example of the public trust doctrine in action relates to ownership of land under navigable waters and shorelines (the public trust doctrine is why most beaches are public rather than private property, for example), but the doctrine in some states has been expanded to include a much broader range of natural resources, such the atmosphere, water quality, land, and wildlife. This chapter focuses on ways that the public trust doctrine might be a useful tool for advocates seeking to challenge the issuance of environmental permits to new petrochemical plants.

The public trust doctrine, at least in theory, is present in all 50 states,[547] but its implementation—and usefulness for advocates in challenging environmental permits—varies widely. The doctrine is most effective where it has been enshrined into a states' constitution or statutes and where state courts have ruled that the doctrine imposes substantive requirements for state agency decision makers. Unfortunately, at present, only a few states have strong public trust doctrines, but Louisiana is one such state.

In states that do have a strong public trust doctrine, it can act as a sort of safety net, requiring state agency decision makers to look beyond the plain text of the statues they're administering (like the Clean Air Act and Clean Water Act) to minimize harm to natural resources like water and air. For example, the Clean Air Act would typically allow a facility to emit up 20,000 pounds of toxic benzene per year without any sort of evaluation of the impacts of those benzene emissions or any obligation to minimize them;[548] the public trust doctrine, however, would require the state permitting agency to consider the harms of those benzene emissions in a manner roughly similar to the requirements of the National Environmental Policy Act (NEPA, discussed in Chapter 5), and also empower—or even require—the agency to limit emissions or deny the permit all together.

For advocates approaching the petrochemical sector, the landscape of public trust leverage is a mixed bag. On the upside, Louisiana is probably the state with the strongest public trust doctrine protections in the nation; in one prominent and recent example, a state court struck down the requisite air permit for Formosa's St. James Parish petrochemical complex in part on the grounds that the state agency failed to meet their public trust obligations (discussed in depth below). Other states with some degree of effective public trust doctrine power include Hawaii,[549] Montana,[550] and

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[547] The public trust doctrine is essentially a creation of common law (i.e., judge-made law), transferred to the US from English common law. Each state assumed the public trust at the time statehood was granted.
[548] This is because the major source threshold for any individual hazardous air pollutant is 10 tons—20,000 pounds—per year. Unless the facility is subject to an area-source Maximum Achievable Control Technology standard, it would typically not trigger any specific control requirement. Many states—including Louisiana—do operate state-only air toxics programs that would evaluate the impacts to some degree, but those programs are not required under the Clean Air Act.
[549] *Matter of Conservation Dist. Use Application HA-3568*, 143 Haw. 379, 400, 431 P.3d 752, 773 (2018), *as amended* (Nov. 5, 2018), *as amended* (Nov. 30, 2018).
[550] Montana Env't Info. Ctr. v. Dep't of Env't Quality, 296 Mont. 207 (Mont. 1999).

Pennsylvania.[551] In most other states, however, including Texas, advocates are at present unlikely to find success challenging an environmental permit on public trust grounds.

This chapter therefore focuses on the public trust doctrine in Louisiana, but the general principles and lessons of this chapter may apply in other states, especially if advocates continue to push for implementation of stronger public trust requirements beyond Louisiana.

2. Who Implements the Public Trust Doctrine and Who Does it Apply To?

Unlike the other environmental laws covered by this guide, the public trust doctrine is not assigned to any particular agency. Rather, in states like Louisiana with a strong public trust doctrine, courts have interpreted the doctrine as requiring state actors to evaluate impacts to certain natural resources and, generally, to minimize harm to those resources. Thus, the Louisiana Department of Environmental Quality (LDEQ) and other Louisiana agencies are subject to the public trust doctrine when they take actions, like issuing major environmental permits, that will cause or allow impacts to covered public trust resources (more on this below).

Notably, not all permits issued by Louisiana agencies are currently subject to stringent public trust doctrine requirements. For instance, only major New Source Review air permits, rather than minor New Source Review air permits, need to explicitly demonstrate that they do not violate the public trust doctrine.

Additionally, while the public trust doctrine applies specifically to state agencies, in Louisiana, the burden of demonstrating that a project complies with the public trust doctrine initially falls to a permit applicant. The applicant will submit a written analysis in the form of an Environmental Assessment Statement setting forth why it believes its project will not violate the public trust. The agency will then review and issue a written determination. Details on the procedural requirements are discussed below in Section 5.

Finally, the public trust doctrine is not applicable to federal actors like the Army Corps or the federal government more broadly, at least not at present. In recent years, several groups have pushed for recognition of a federal public trust doctrine that would require the federal government to better address climate change, but to date courts have rejected the argument that a federal public trust doctrine exists.[552]

3. Development of the Public Trust Doctrine in Louisiana as it Relates to Permitting.

This section provides a brief overview of the history of the public trust doctrine in Louisiana and the development of the current legal authorities that implement the public trust doctrine. Understanding this history may be helpful not only to Louisiana advocates, but also to those in other states looking to expand public trust doctrine protections in their states. Advocates looking for a summary of current public trust requirements in Louisiana can skip to Section 4.

In Louisiana, as in all 50 states, the public trust doctrine originated at the time of statehood as a common-law doctrine inherent in its sovereignty.[553] When Louisiana adopted its 1921 Constitution, it

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[551] Pennsylvania Env't Def. Found. v. Commonwealth, 640 Pa. 55, 161 A.3d 911 (2017).
[552] See, e.g., Alec L. ex rel. Loorz v. McCarthy, 561 F. App'x 7, 8 (D.C. Cir. 2014).
[553] James G. Wilkins & Michael Wascom, *The Public Trust Doctrine in Louisiana*, 52 La. Law Review 4, at 863 (Mar. 1992), https://digitalcommons.law.lsu.edu/cgi/viewcontent.cgi?article=5400&context=lalrev.

incorporated the public trust doctrine explicitly for the first time, proclaiming that "[t]he natural resources of the state shall be protected, conserved and replenished."[554] Louisiana's current Constitution, adopted in 1974, was even more explicit:

> The natural resources of the state, including air and water, and the healthful, scenic, historic, and esthetic quality of the environment shall be protected, conserved, and replenished insofar as possible and consistent with the health, safety, and welfare of the people. The legislature shall enact laws to implement this policy.[555]

Although Louisiana did enact new legislation per the 1974 Constitution's mandate,[556] creating a new Commission within the Department of Natural Resources, the most significant development in implementing the public trust doctrine in Louisiana came 10 years later. Specifically, the Louisiana Supreme Court held that the forgoing constitutional provision imposes significant substantive and procedural requirements on state agencies when they make actions that impact natural resources. That case is *Save Ourselves, Inc. v. Louisiana Env't Control Comm'n*, 452 So. 2d 1152 (La. 1984) (*hereafter, "Save Ourselves"*), also known as the "IT decision" after the IT Corporation, the company at issue in the case.

Save Ourselves (1984), the "IT Decision."

In 1980, the IT Corporation sought to construct and operate a facility to treat, process, and store hazardous waste, to be located on the Mississippi River. The facility would include, amongst other infrastructure, "a landfill pit for the disposal of treated industrial hazardous waste over three aquifers near the Mississippi River."[557] The IT Corporation therefore applied for the requisite hazardous waste permit pursuant to the states' Hazardous Waste Management Plan (HWMP), subsequently issued by the Department of Natural Resources.

Citizens and the group Save Ourselves, Inc. were opposed to the facility, fearing it would harm the water supply for downriver communities, including New Orleans. They therefore challenged the permit in state court, arguing that IT Corporation's application ran afoul of the requirements of the HWMP (in particular, advocates argued the application was incomplete as it failed to consider certain requisite information concerning groundwater wells and financial guarantees). Interestingly, it does not appear that the advocates raised the public trust or constitutional claims in their core arguments, but relied solely on the technical requirements of the HWMP. The case ultimately reached the Louisiana Supreme Court in 1984, after lower courts had rejected the advocates' arguments based on the HWMP.

During the litigation, IT Corporation argued that it had met all of the regulatory requirements of the HWMP. The Supreme Court more or less agreed, ruling at least that the advocates had not persuaded the Court otherwise. In other words, the Supreme Court believed that the permit issued

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[554] La. Const. Art. VI § 1 (1921).
[555] La. Const. Art. IX § 1 (1974).
[556] *Save Ourselves, Inc. v. Louisiana Env't Control Comm'n*, 452 So. 2d 1152, 1154–55 (La. 1984) ("In implementation of the public trust mandate, the legislature enacted the Louisiana Environmental Affairs Act. The stated purpose of the act is to maintain, protect and enhance a healthful and safe environment through regulation of water control, air quality, solid and hazardous waste, scenic rivers and streams, and radiation.").
[557] *Save Ourselves,* 452 So. 2d at 1160.

by the Department of Natural Resources likely complied with the technical requirements of the HWMP.

Critically, however, the Supreme Court ruled that mere compliance with the HWMP by the Department of Natural Resources when issuing the permit was not sufficient given the public trust doctrine provision of the 1974 Constitution and implementing statutes. The Court held that Constitutional provision "imposes a duty of environmental protection on all state agencies and officials [and] establishes a standard of environmental protection."[558] This duty, meanwhile, establishes a "rule of reasonableness" that "requires a balancing process in which environmental costs and benefits must be given full and careful consideration along with economic, social and other factors."[559]

As to the IT Corporation permit issued by the Department of Natural Resources, the Court found that merely complying with the HWMP regulations was insufficient to satisfy the Constitutional public trust requirements, explaining:

> From the present record we cannot tell whether the agency performed its duty to see that the environment would be protected to the fullest extent possible consistent with the health, safety and welfare of the people. The record is silent on whether the agency considered alternate projects, alternate sites or mitigation measures, or whether it made any attempt to quantify environmental costs and weigh them against social and economic benefits of the project. From our review it appears that **the agency may have erred by assuming that its duty was to adhere only to its own regulations rather than to the constitutional and statutory mandates.**[560]

The Court therefore sent the permit back to the agency in order to determine whether issuing the permit would comply with these Constitutional requirements, and the requirements set forth in this paragraph of the Court's Order would come to be known as the "IT" questions that underpin today's public trust requirements in Louisiana.

While *Save Ourselves* remains the binding authority in Louisiana on public trust requirements, two subsequent, lower court cases restated the "IT" questions somewhat, as summarized in the Section 5.[561]

4. What Does the Public Trust Doctrine Require in Louisiana? The "IT" Questions.

The core public trust requirements in Louisiana were primarily set out by the state's Supreme Court in a 1984 ruling, discussed above, known as the *Save Ourselves* decision.[562] This ruling is also knows as the "IT" decisions because the company at issue in the case was the IT Corporation, and the key substantive requirements have come to be known as the "IT" questions.

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[558] *Save Ourselves,* 452 So. 2d at 1156.
[559] *Save Ourselves,* 452 So. 2d at 1157.
[560] *Save Ourselves,* 452 So. 2d at 1160 (emphasis added).
[561] Those cases are Blackett v. Louisiana Department of Environmental *Quality*, 506 So. 2d 749 (La. App. 1 Cir. 1987) and *In re: Rubicon*, 95-0108 (La. App. 1 Cir. 2/14/96), 670 So. 2d 475.
[562] Save Ourselves, Inc. v. Louisiana Env't Control Comm'n, 452 So. 2d 1152 (La. 1984).

The "IT" questions are the issues that an agency such as LDEQ must address when issuing major environmental permits, and the analysis must be in writing. For a list of permits that qualify as "major," see Section 6 below. The five "IT" questions (sometimes combined to three[563]) are as follows:

1. Whether the potential and real adverse environmental effects of the proposed facility have been avoided to the maximum extent possible;
2. Whether a cost benefit analysis of the environmental impact costs balanced against the social and economic benefits of the proposed facility demonstrate that the latter outweighs the former;
3. Whether there are alternative projects which would offer more protection to the environment than the proposed facility without unduly curtailing non-environmental benefits;
4. Whether there are alternative sites which would offer more protection to the environment than the proposed facility site without unduly curtailing non-environmental benefits; and
5. Whether there are mitigating measures which would offer more protection to the environment than the facility as proposed without unduly curtailing non-environmental benefits.

This analysis is broadly modeled after the requirements of the National Environmental Policy Act (NEPA), discussed in Chapter Five. The key difference between NEPA and the public trust doctrine in Louisiana, however, is that the public trust doctrine is more than just an analysis. Where NEPA does not dictate any particular outcome, if a Louisiana agency determines that a project does not satisfy one or more of the "IT" questions, it should deny or modify the permit accordingly.

Due to the parallels with NEPA, many of the strategies for challenging Environmental Impact Statements under NEPA, as discussed in Chapter 5, are also relevant strategies for challenging permits under the public trust doctrine in Louisiana. For instance, many of the same informational requirements under NEPA are likely also required for a complete public trust analysis.

Some additional issues not covered by Chapter 5's NEPA discussion are also relevant to the public trust analysis and petrochemical facilities. Specifically, a recent court found that environmental justice considerations must play a central role in the public trust analysis, as well as climate change and climate-driven disasters.[564] For more, advocates should refer to the ruling in *Rise St. James v. LDEQ*, attached as Appendix 12, wherein advocates successfully challenged an air permit for Formosa's Sunshine petrochemical complex on public trust duty grounds (although the court's order has been appealed by Formosa).

Finally, advocates should remember that the public trust doctrine requires more than merely an informational assessment. The *Rise St. James* order focused prominently on the first "IT" question, i.e., that "potential and real adverse environmental effects of the proposed facility have been avoided

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[563] The last three questions are often consolidated to a single third question of whether "there are alternative projects, alternative sites, or mitigating measures which would offer more protection to the environment without unduly curtailing non-environmental benefits." The substantive questions and requirements are the same regardless of the listing.
[564] *Rise St. James v. LDEQ* (La. Dist. Ct. 9/8/22), Appendix 12.

to the maximum extent possible."[565] Specifically, Formosa's own air quality modeling showed exceedances of air quality standards (the National Ambient Air Quality Standards, or NAAQS), yet LDEQ had dismissed these exceedances as not being significant (see Chapter 3, Section C.2 for more). The court found that even if these exceedances were legitimately dismissed under the Clean Air Act's rules, the exceedances meant that the facility had not avoided the "potential and adverse environmental effects" to the "maximum extent possible."[566]

5. How Does an Agency Satisfy the Save Ourselves Procedural Requirements? The Basis for Decision.

Save Ourselves went further than setting out the substantive requirements of the public trust doctrine, discussed above. The Court also explained that an agency must make a written decision concerning how the permit issuance or denial is consistent with the public trust doctrine. For LDEQ, this document is typically called a "Basis for Decision," which is issued along with the final permit.

The key requirements for the agency's written decision are as follows:

- The permitting agency "is required to make basic findings supported by evidence and ultimate findings which flow rationally from the basic findings;"[567]
- The agency "must also articulate a rational connection between the facts found and the order issued."[568]

Subsequent courts have further refined the requirements to include that the written decision contain, at minimum, the following:[569]

1. A general recitation of the facts as presented by all sides;
2. A basic finding of facts as supported by the record;
3. A response to all reasonable public comments;
4. A conclusion or conclusions on all issues raised which rationally support the order issued; and
5. Any and all other matters which rationally support the LDEQ's decision.

Although LDEQ (or another permitting agency) is ultimately responsible for issuing the written decision, the agency isn't usually starting from scratch. Pursuant to the Louisiana Environmental Quality Act, qualifying major sources (discussed in Section 6) must prepare an Environmental Assessment Statement (EAS) that addresses the "IT" questions.[570] The EAS must usually be submitted jointly with the environmental permit application; for instance, a new facility applying for a major New Source Review air permit would also prepare and submit an EAS accompanying the air permit application.

[565] *In re: Rubicon*, 95-0108 (La. App. 1 Cir. 2/14/96), 670 So. 2d 475.
[566] *Rise St. James v. LDEQ*, at 13-16 (La. Dist. Ct. 9/8/22), Appendix 12.
[567] *Save Ourselves*, 452 So. 2d at 1159.
[568] *Id.*
[569] *In re Rubicon, Inc.*, 95–0108, p. 10-11 (La. App. 1st Cir. 2/14/96), 670 So. 2d 475, 483.
[570] La. Stat. Ann. § 30:2018(B).

Additionally, LDEQ must also allow for public comment and hold a public hearing on the EAS.[571] Here, stakeholders and advocates can raise additional issues that may be absent from the applicant's EAS, and LDEQ must consider these issues and respond as part of the agency's written decision.[572]

6. What Facilities are Subject to Public Trust Doctrine Requirements in Louisiana?

The public trust doctrine, as made explicit in Louisiana's Constitution, is applicable to all permitting actions that impact the natural resources of the state, including water and air resources, no matter how minor they are.[573] Yet Louisiana's implementing statues impose procedural public trust doctrine requirements on only certain kinds of facilities.

Specifically, the Louisiana Environmental Quality Act only explicitly requires an Environmental Assessment Statement and written decision when issuing: "[a] new permit or a major modification of an existing permit as defined in rules and regulations that would authorize" one of the following:

- The treatment, storage, or disposal of hazardous wastes;
- The disposal of solid wastes, or,
- The discharge of water pollutants or air emissions in sufficient quantity or concentration to constitute a major source under the rules of the department."[574]

In the context of pre-construction petrochemical permitting, the most likely permits to trigger the public trust analysis are the major New Source Review air permit (minor sources are exempt[575]) issued by LDEQ and potentially the Coastal Use Permit issued by LDEQ's Office of Coastal Management.[576]

7. Public Notice and Comments and Public Hearings

Advocates have several opportunities to weigh in on public trust duty obligations for major environmental permits in Louisiana. First, under the Louisiana Environmental Quality Act, LDEQ is required to hold a public hearing on an applicant's EAS if a member of the public requests such a hearing, and it may also decide to hold a hear at its own discretion.[577] Note that LDEQ is allowed to combine this hearing with the public hearing for the underlying environmental permit.[578] Chapter 3, Section ___, provides some helpful information on the value (and risks) of requesting a public hearing.

Additionally, advocates will usually be able to submit written comments on both the EAS and the agency's written decision (usually called a "Basis for Decision") in conjunction with the underlying environmental permit. For instance, if the permit at issue is a major New Source Review permit,

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[571] La. Stat. Ann. § 30:2018(C).
[572] *In re Rubicon, Inc.*, 95–0108, p. 10-11 (La. App. 1st Cir. 2/14/96), 670 So. 2d 475, 483.
[573] For example, although the Louisiana Environmental Quality Act only requires a substantive public trust doctrine review of certain major sources, the Act is clear that the Louisiana Constitution and the *Save Oursevles* requirements are applicable to far broader range of actions and facilities. *See* La. Stat. Ann. § 30:2018(H).
[574] La. Stat. Ann. § 30:2018(A).
[575] La. Stat. Ann. § 30:2018(E)(2).
[576] When Formosa prepared its EAS documents for the St. James Parish complex, Formosa stated that the Louisiana Environmental Quality Act "applies to LDEQ and not to OCM," but prepared an EAS regardless, stating that "the public trust principles of the Louisiana Constitution of 1974 may arguably apply to OCM in connection with its evaluation of the [CUP application]." *See* Public Trust Doctrine Analysis for the Sunshine Project, submitted to the Louisiana DNR, Office of Coastal Management, at 2 (Sep. 2018)
[577] La. Stat. Ann. § 30:2018(C).
[578] *Id.*

LDEQ's Basis for Decision incorporating its public trust analysis will be available for public notice and comment along with the draft air permit for at least 30 days.

Chapter 9

LAND USE APPROVALS

CHAPTER NINE: LAND USE APPROVALS

A. Overview

1. What Are Land Use Approvals and How Might They Apply to Petrochemical Plants?

Land use law is the realm of zoning and other rules and ordinances that local municipalities (towns, cities, counties, parishes, etc.) often use to control the kinds of development that occurs within their bounds. For example, if a new petrochemical facility wishes to construct on a certain tract of land within a county that has implemented zoning, the new facility must conform with the zoning requirements that apply to their property, or, alternatively, must seek a variance, zoning amendment, or some similar site-specific approval. These site-specific approvals are the focus of this chapter, as they often provide advocates with a potentially powerful opportunity to oppose and perhaps even halt a new petrochemical facility.

> "Zoning is a political game with the various players consisting of landowners, developers, and government agencies."[579]
>
> -Donald Stack, experienced land use attorney in Georgia.

In fact, in some instances, engaging in the land use approval process for a new petrochemical facility might be an even more powerful weapon for advocates than the environmental permits discussed in this Guide so far. That's because land use authorities often have the ability and discretion to deny the perquisite approvals outright, halting a project partially or completely. This is in contrast with many environmental approvals, where permitting authorities often take the position that they must issue, for instance, an air permit, if the applicant has checked all the right boxes.

On the other hand, in many, or perhaps most, instances, land use law may not be an effective tool for advocates seeking to stop the construction of a new petrochemical plant. For example, many petrochemical plants choose to build in areas that are already zoned for the most intensive industrial uses (or may not be zoned at all), meaning that no site-specific land use approvals are needed. Further, as discussed in the section covering Louisiana and Texas land use law, we note that much of Texas in particular has large areas that are essentially unzoned.

Most of this chapter focuses on zoning requirements, but similar land-use laws may come into play as well. Additionally, land use law also generally encompasses the use of eminent domain, which is the process whereby the government can take private property for public uses—and unfortunately, these public uses have sometimes included private industrial development, in particular pipelines. Several excellent resources are available for landowners facing eminent domain, and as such this chapter does not address eminent domain in depth.[580]

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[579] Stack & Associates, P.C., *The Interplay of Environmental Land Use and Zoning Laws for the Protection of Georgia's Coastal Resources*, https://www.stackenvirolaw.com/publications/the-interplay-of-environmental-land-use-and-zoning-laws-for-the-protection-of-georgia-coastal-resources/ (visited Aug. 14, 2023).

[580] *See, e.g.* Nossaman LLP's "A Property Owner's Guide to Eminent Domain," https://www.nossaman.com/assets/htmldocuments/Property-Owners-Survival-Guide-to-Eminent-Domain-2023.pdf (visited Aug. 14, 2023) and the Pipeline Safety Trust's "Landowner's Guide to Pipelines," https://pstrust.org/pipelines-for-landowners/ (visited Aug. 14, 2023).

2. Who Implements Land Use Decisions?

As discussed below, ultimate authority for zoning and land use laws rests with the state, but in practice land use decisions are usually hyper-local, i.e. at the town, city, or county level. It's important to note that the specific bodies involved in zoning and land use decisions can vary widely from one jurisdiction to another, but below are examples of the most common entities involved in zoning and land use:

Local Government Planning Departments: Local governments, such as city or county authorities, often have planning departments responsible for creating and enforcing zoning regulations within their jurisdiction. These departments develop comprehensive land use plans and zoning ordinances that outline the permitted uses and development standards for different areas within the community.

Zoning Boards or Commissions: Zoning boards or commissions are appointed bodies (usually appointed by city councils or county boards) that review and make decisions on various zoning matters. They may be responsible for granting variances (exceptions to zoning rules), issuing special use permits, or making determinations on specific zoning cases. Zoning boards typically consist of appointed citizens with expertise in urban planning, architecture, law, or other relevant fields.

City Councils or County Boards: In many places, the final authority to approve zoning changes rests with the local legislative body, such as the city council or county board of supervisors. They vote on proposed amendments to zoning maps, changes to zoning regulations, or updates to the comprehensive plan.

Regional Planning Commissions: In some cases, regional planning commissions or authorities may play a role in zoning matters. These bodies oversee planning and development at a broader regional level and may coordinate zoning decisions that affect multiple jurisdictions or have regional implications.

3. How Do Local Governments Have Authority to Control Uses of Private Property? A Very Brief History of the Constitutionality of Land Use Laws.

No discussion of land use law, and zoning in particular, would be complete without a reference to the U.S. Supreme Court decision *City of Euclid, Ohio v. Amber Realty Company*, 272 U.S. 365, 47 S.Ct. 114 (1926). Advocates in a hurry may skip this section, but it may also be helpful to understand how the authority to develop land use laws originated and evolved into today's regimes.

Although many local governments had enacted various forms of zoning prior to the 1926 *Euclid* decision, landowners frequently challenged restrictions on the use of private land as unconstitutional government overreach, and often succeeded. In *Ambler*, however, the Court held that zoning was constitutional so long as it flowed from a state's police powers—the inherent authority of states to make laws to protect the public's health, safety, and general welfare. In short, *Ambler* authorized the wide-spread use of zoning and land use regulations now common in the U.S.

Critically, however, *Ambler* held that zoning power was rooted in the *states* inherent police power. Consequently, local governments, i.e. cities and counties, generally may only exercise authority over land uses when a state has delegated that authority. This typically occurs either by acts of the state legislature or through the state's constitution (or often both).

The history of Georgia's land use and zoning scheme is illustrative of the key role state authority plays in zoning and land use law. After *Ambler*, Georgia's Constitution only authorized cities or counties with a population exceeding 1,000 people and with explicit approval from the state legislature to implement land use plans and zoning, and even municipalities with approval still had to strictly adhere to restrictions implemented by the state legislature.[581] In a major shift in power, Georgia's Constitution was amended in 1983 to give broad zoning authority to all counties and municipalities, and at the same time limited the state legislature's role to overseeing mostly procedural issues.[582]

Thus, although zoning and land use decisions occur at the local and even hyper-local level, all authority for these decisions ultimately rests with the state itself. As a result, the particular authority each municipality holds over land use laws will vary from state to state, and potentially locality to locality within a state, based on how the state had delegated its inherent police powers authority.

4. How Can I Learn About Zoning Changes for Petrochemical Facilities?

Generally speaking, local governments will provide public notice of significant land use decisions and zoning changes, and provide opportunities for public involvement. In fact, in some instances, these may be the first public notices related to a new project, as it's often easier to obtain environmental permits after a site has been selected and any land use approvals obtained (some states even require submittals of zoning consistency determinations prior to issuing, say, an air permit).

Most public notices will be published in local newspapers and, often, on signs at the physical location. Additionally, many municipalities now post these public notices online, along with additional information in most instances.

Advocates need not and should not wait for an official public notice, however. Instead, if advocates suspect a new petrochemical facility will be locating in their community, they should reach out to the land use authorities (and note there may be several entities with overlapping authority) and enquire about whether the proposed facility has submitted any applications for zoning changes. Advocates can then request these documents, likely through a public records request, to learn more about the project.

5. What Legal Standards Apply to Land Use Approvals and Zoning Changes and How Can I Leverage Them?

In many instances, land use approvals and zoning changes are made by voting members of local committees or boards, and these votes may be more discretionary than other approvals discussed in this guide. Regardless, these decisions must still adhere to the following legal standards, which can be effective arguing points for advocates.

Public Interest and Health: Zoning changes should promote the public interest, health, safety, and welfare of the community, i.e. the overall well-being of residents, the community, and the environment. Advocates should demonstrate the negative impacts a petrochemical facility will bring

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[581] Bowen, Brandon L., *An Overview of Local Government Land Use Regulation* https://www.jbwpc.com/Articles/Zoning-and-Land-Use-The-Basics/AN-OVERVIEW-OF-LOCAL-GOVERNMENT-LAND-USE-REGULATION.shtml (visited August 14, 2023).
[582] *Id.*

to their community, including pollution, noise, truck traffic, and risks of fires, explosions, and accidental releases.

Equal Protection: Zoning changes should not discriminate unfairly or unequally against specific individuals or groups. This is especially the case in environmental justice communities, and advocates in low-income, high minority populations, and/or overburdened communities may argue that constructing a new polluting facility in their community is unjust.

Reasonableness: Zoning changes must be reasonable and based on substantial evidence. Authorities must have a valid reason for the change and be able to justify it with relevant data and studies. Similar to above, advocates can point out that the harms of the facility far outweigh the benefits, and that approving the project is therefore unreasonable.

Consistency with Zoning Code and Comprehensive Plan: Zoning changes should conform to the existing zoning code or ordinance of the jurisdiction. Any amendments must be compatible with the overall zoning framework. Additionally, many jurisdictions also have comprehensive plans or master plans that guide long-term land use and development. Zoning changes are expected to be consistent with these plans and the broader goals of the community. Advocates may benefit from contacting a land use attorney to assist in determining whether the project is consistent with the zoning code and comprehensive plan.

Due Process: Property owners and impacted members of the community have a right to due process, meaning that zoning decisions must be made in a fair and transparent manner. This typically involves, at minimum, providing notice to affected parties and an opportunity for public input.

Environmental Review: In some jurisdictions, significant zoning changes or land use approvals will require environmental impact assessments. Although these requirements vary, in general this guide's discussion of NEPA's environmental impact assessments, above in Chapter Six, will be helpful.

As with all of this guide, advocates considering challenging a land use approval are encouraged to contact experienced attorneys if possible.

6. How Can I Fight Zoning Changes and Land Use Approvals for New Petrochemical Facilities?

As discussed above, compared to most environmental permitting, land use approvals are often more political and discretionary, meaning that publicity and organizing play can play a larger role. In short, the less popular a project seems, the less likely it is to be approved. With that in mind, here are some steps community advocates should consider:

- **Community Organizing:** Form community groups or coalitions comprising concerned residents, local businesses, and environmental advocates. Strength in numbers can amplify the community's voice and create a united front against the proposed zoning changes.
- **Public Awareness Campaigns:** Launch public awareness campaigns to educate community members about the potential impacts of the zoning changes. Utilize flyers, posters, social media, and local media outlets to disseminate information about the proposed changes and how they could affect the community.

- **Petitions and Letter Writing:** Organize petition drives to collect signatures from community members who oppose the zoning changes, especially those closest to the proposed facility. Additionally, encourage residents to write letters or emails to local officials expressing their opposition and outlining the reasons for their concerns. Individualized comments and letters are much more effective than duplicative messages.
- **Media Coverage:** Engage with local journalists and media outlets to draw attention to the zoning changes and the community's concerns. Positive media coverage can help garner public support and influence public opinion.

All of the foregoing efforts dovetail well with advocacy around the other environmental approvals covered by this guide. For instance, air permit hearings can provide a great organizing tool and an opportunity to obtain media coverage.

Finally, there are **Legal Challenges**. If impacted community members and neighbors have formally argued against a new facility but it's approved regardless, they should be able to appeal that decision with a legal challenge. Legal challenges may be based on procedural issues, inconsistencies with existing regulations, or other legal grounds, but generally those grounds should have been raised in the public record (i.e., during public comment periods or public hearings). If advocates expect they may need to appeal an unfavorable land use approval, they are strongly encouraged to consult with a land use attorney as early as possible.

7. Land Use Law in Louisiana and Texas.

Land use law in Louisiana is generally consistent with the concepts set forth in this guide and land use laws in other states. In particular, both local municipalities and parishes are empowered to implement zoning codes (but not required to do so, and indeed some areas of Louisiana are not zoned).[583] If a municipality or parish does implement zoning, however, it is required to adopt a comprehensive plan to guide growth and development, although the requirements for specific details of that plan are not well defined.[584] Advocates looking to learn more about zoning and land use laws in Louisiana should consult the Foundation for Louisiana's Citizen's Guide to Land Use, available at: https://www.hammond.org/wp-content/uploads/2012/12/Citizens-Guide-to-Land-Use.pdf.

Texas, meanwhile, is unique in that only municipalities have general zoning and land use authorities; most counties in Texas have no zoning authority and only limited other land use oversight.[585] Texas is also somewhat unique in that the state has not passed comprehensive state-wide zoning laws, leaving municipalities (but again, not counties) a high level of flexibility in crafting their zoning and land use ordinances or in choosing not to do so. Many smaller municipalities, and even larger ones (notably Houston, although the city has other land use requirements), have no zoning or comparable little zoning requirements compared to other states. As such, it is difficult to summarize the zoning requirements that may or may not apply to new petrochemical facilities.

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[583] Lafourche Parish Coastal Hazards Workshop, *Brief History of Planning and Zoning in Louisiana*, https://www.laseagrant.org/wp-content/uploads/Lafourch-Brief-History-Planning-Zoning-La.pdf (visited August 14. 2023).
[584] *Id.*
[585] Capital Area Council of Governments, *County Land Use Authority in Texas* (Oct. 2009), https://www.capcog.org/wp-content/uploads/2009/11/2009-10-14-County-Land-Use-Report-final.pdf.

Chapter 10

UNDERGROUND INJECTION CONTROL PERMITTING

CHAPTER TEN: UNDERGROUND INJECTION CONTROL PERMITTING

A. Overview

1. What is the Underground Injection Control Program and what approvals are required for petrochemical projects?

The federal Underground Injection Control (UIC) program regulates the injection of fluids into the ground via a well, with the exception of certain types of injections related to the oil and gas industry.[586] The program is part of the federal Safe Drinking Water Act, which is administered by the U.S. Environmental Protection Agency (EPA). The UIC program's purpose is to prevent contamination of ground water that is or could reasonably be expected to supply drinking water.[587] If ground water becomes contaminated, it is very difficult to clean up. Thus, under most circumstances, anyone who wishes to inject fluids underground must comply with UIC requirements designed to guard against ground water contamination.

A petrochemical facility is only subject to UIC requirements if it injects fluids underground. The most likely fluids that a proposed petrochemical facility would inject underground are (1) hazardous waste that cannot be treated to levels that would make it safe to discharge on the surface, and (2) carbon dioxide (CO_2) that would otherwise be emitted into the air and that the facility wishes to sequester underground either because it is regulatorily required to do so or because of the availability of valuable tax credits under Section 45Q of the U.S. Internal Revenue Code.[588]

The minimum federal requirements for UIC permit programs are at 40 C.F.R. part 144. Technical criteria and standards applicable to UIC permitting are at 40 C.F.R. part 146. Procedural requirements governing UIC permit issuance, including public participation requirements, are at 40 C.F.R. part 124.

There are six "classes" of UIC permits. The class of permit required depends on what is being injected underground. At least four of these classes are potentially relevant to the construction of a new petrochemical facility.

a. UIC permits for Carbon Capture, Use, and Sequestration ("CCUS").

As the petrochemical industry comes under increasing pressure to mitigate its climate change impacts, it is likely that a company planning to construct or expand a petrochemical manufacturing plant will consider utilizing CCUS technology to reduce CO_2 emissions to the atmosphere. CCUS involves capturing CO_2 from a facility before it is released, compressing the CO_2 into a liquid-like state, transporting the compressed CO_2 by pipeline, ship, rail or road tanker to a storage site, and

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[586] Safe Drinking Water Act (SDWA) § 1421(d)(1), 42 U.S.C. § 300h(d)(1). Exceptions are the underground injection of natural gas for storage and the underground injection of certain fluids used in hydraulic fracturing operations related to oil, gas, or geothermal production activities. *Id.* The SDWA UIC program also does not cover "(A) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations, or (B) any underground injection for the secondary or tertiary recovery of oil or natural gas, unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection." *Id.*, § 1421(b)(1); 42 U.S.C. § 300h(b)(1).

[587] *Id.*, §§ 1421(b)(1), (d)(2); 42 U.S.C. § 300h(b)(1), (d)(2).

[588] 26 U.S.C. § 45Q(a)(2) and (a)(4).

then injecting the CO2 deep underground for permanent (or at least long-term) storage.[589] If a new or expanded petrochemical facility includes CCUS as part of its design, the facility will need underground storage for the captured CO2. Three different classes of UIC permits are relevant to underground CO2 storage.

> **Class VI:** Promulgated in 2010, EPA's Class VI regulations are specifically designed to ensure that geologic sequestration of CO2 will not impair underground sources of drinking water.[590] Class VI well construction and operation requirements are substantially more stringent than the requirements governing other well classes due to, among other things, the anticipated large volume of CO2 anticipated to be injected into Class VI wells and associated heightened injection pressure, which can cause new geologic fractures and expand existing fractures;[591] CO2's buoyancy, which increases the risk that injected CO2 will leak to the surface through existing wells and fractures; and CO2's corrosivity, which may cause leaching and mobilization of naturally-occurring metals and other elements that can contaminate drinking water.[592] Class VI permit applications are extremely complex; EPA's website provides 15 guidance documents to assist Class VI well owners/operators and government regulators in implementing the Class VI rules[593] as well as a permit application checklist and a "Compendium of Computational Tools."[594] To date, EPA has issued only a small number of Class VI permits and the application process for each has taken several years.[595] It is anticipated that Class VI permits issued by states with Class VI primacy will be issued more quickly.[596]
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> **Class II:** Though sequestration of CO2 underground for the purpose of mitigating climate change is relatively new, the oil and gas industry has been injecting CO2 into Class II wells for decades.[597] Class II wells are used for the injection of fluids associated with oil and gas production, and one of the most common uses of a Class II well is for "enhanced recovery" (ER) of oil and gas, which involves injecting of CO2 or another fluid to produce otherwise

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[589] While EPA's website describes "geologic sequestration" as the process of storing CO_2 underground "permanently," https://19january2017snapshot.epa.gov/climatechange/carbon-dioxide-capture-and-sequestration-overview_.html#:~:text=Safety%20and%20Security-,What%20is%20carbon%20dioxide%20capture%20and%20sequestration%3F,plants%20and%20large%20industrial%20sources (visited Apr. 10, 2023), the 2010 Class VI rules notably avoid that word, instead defining geological sequestration as "the process of injecting CO_2 into deep subsurface rock formations for *long-term* storage." 75 Fed. Reg. 77,291, 77,233 (Dec. 10, 2010) (emphasis added). This is because nothing in the UIC rules prohibits a well owner or operator from taking the CO_2 back out of a Class VI (or Class II) well. In fact, "EPA acknowledges that some owners or operators of Class VI wells may plan to eventually produce the carbon dioxide from the injection zone or might be interested in preserving this option (e.g., to sell that carbon dioxide for EOR/EGR)." EPA, "Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Class VI Well Plugging, Post-Injection Site Care, and Site Closure Guidance," Dec. 2016, at 32, https://www.epa.gov/sites/default/files/2016-12/documents/wp-pisc-sc_guidance_final_december_clean.pdf.

[590] 75 Fed. Reg. 77,291 (Dec. 10, 2010).

[591] 75 Fed. Reg. 77,234, 77,256.

[592] 75 Fed. Reg. at 77,234-77,235.

[593] EPA, Final Class VI Guidance Documents, https://www.epa.gov/uic/final-class-vi-guidance-documents (visited June 13, 2023).

[594] EPA, Class VI (Geologic Sequestration) Permit Application and Permitting Tools, https://www.epa.gov/uic/class-vi-geologic-sequestration-permit-application-and-permitting-tools (visited June 13, 2023).

[595] James Beaird & Steve Hendrickson, "Navigating the Class VI Injection Permit Process for Carbon Sequestration," https://opportune.com/insights/news/navigating-the-class-vi-injection-permit-process-for-carbon-sequestration/ (visited Aug. 17, 2023).

[596] For example, North Dakota obtained Class VI primacy in 2018 and issued five Class VI permits over the past few years. https://www.dmr.nd.gov/dmr/oilgas/ClassVI (visited Aug. 17, 2023).

[597] About 180,000 Class II wells are in operation in the United States, with the majority being located in Texas, California, Oklahoma, and Kansas. U.S. EPA website, "Class II Oil and Gas Related Injection Wells," https://www.epa.gov/uic/class-ii-oil-and-gas-related-injection-wells (visited Aug. 17, 2023).

inaccessible oil and gas from depleted wells. Most of the CO2 injected for ER is pumped back up to the surface and captured for additional ER use, but some CO2 remains underground.[598] When EPA promulgated the Class VI UIC regulations in 2010, it wanted to avoid impacting the oil and gas industry practice of injecting CO2 into Class II wells for the purpose of ER. Thus, EPA's 2010 rulemaking expressly authorizes long-term CO2 storage in Class II wells. In fact, the federal UIC rules say nothing to prohibit Class II well operators from increasing the amount of CO2 stored underground following ER operations, or from using a Class II well primarily or solely for the purpose of CO2 storage. Rather, even if a Class II well is used for the primary purpose of CO2 storage, the more protective Class VI rules do not apply unless the CO2 injection and storage poses "an increased risk" to underground sources of drinking water "compared to Class II operations."[599] Because tens of thousands of Class II wells have already been permitted across the country, it is likely that most near-term CO2 storage projects will utilize Class II wells.[600] Longer term, CCUS likely would involve more use of Class VI wells, which would be much larger than Class II wells and therefore have a much greater capacity for CO2 storage.

In contrast to the lengthy and complex process required to obtain a Class VI UIC permit, Class II permit application requirements are quite simple. If a Class II well is already authorized for CO2 injection for purposes of ER, then it is unlikely that any additional approval will be needed before the well can be used to store CO2 obtained via industrial carbon capture. In any event, a Class II permit typically can be obtained within a few months.[601] For example, in Texas, a well operator merely submits two one-page forms to the state regulators and may not even need to speak with regulators prior to getting a Class II permit.[602]

State-Issued Exploratory Permits and Test Permits Issued Under Other UIC Classes: Prior to EPA's promulgation of the Class VI rules in 2010, experimental CO2 sequestration wells were typically authorized under the Class V UIC program,[603] which governs wells used for underground injection of non-hazardous fluids that are not already classified as Classes I-IV or VI wells.[604] After promulgation of the Class VI wells, wells used for CO2 storage could no longer be authorized by a Class V permit. However, it is not uncommon for a company that eventually plans to apply for a Class VI permit to start the process by applying for a stratigraphic test well permit. The purpose of the test well is to obtain information about the geology of an area that must be included in a Class VI well application. EPA's Class VI geologic sequestration well requirements do not address how test wells are to be permitted, so the exact procedures that apply (and even the class of permit required) generally is

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598 75 Fed. Reg. at 77,244.
599 40 CFR § 144.19(a) (emphasis added).
600 BTU Analytics, "How to Store CO_2 via Class II Wells," Dec. 15, 2022, https://insight.factset.com/how-to-store-co2-via-class-ii-wells.
601 James Beaird & Steve Hendrickson, "Navigating the Class VI Injection Permit Process for Carbon Sequestration," https://opportune.com/insights/news/navigating-the-class-vi-injection-permit-process-for-carbon-sequestration/ (visited June 13, 2023).
602 *Id.*
603 EPA, "Using Class V Experimental Technology Well Classification for Pilot Geologic Sequestration Projects – UIC Program Guidance," Memorandum from Cynthia C. Dougherty, Director, EPA Office of Ground Water and Drinking Water, to Water Management Division Directors, EPA Regions I-X, March 2007, https://www.epa.gov/sites/default/files/2015-07/documents/guide_uic_carbonsequestration_final-03-07.pdf.
604 EPA, "What is a Class V well?," https://www.epa.gov/uic/basic-information-about-class-v-injection-wells (visited Aug. 17, 2023).

determined by state regulators.[605] In Louisiana, a test well is permitted under Class V[606], whereas in Texas a test well is authorized as a "Class VI Strat Test Well."[607] If the well developer designs its test well in a manner that satisfies Class VI requirements, it is possible that the test well will ultimately become a Class VI geologic sequestration well.[608] Alternatively, the test well may be used as a monitoring well once Class VI storage is underway at another well, or may be plugged and closed after tests are completed. Note that nothing in the federal UIC rules specifically requires that a prospective Class VI well applicant first drill a stratigraphic test well. If an applicant concludes that available information about a particular site is already sufficient for purposes of the Class VI well application, the applicant may proceed directly to filing a Class VI well application.[609]

It is possible that the petrochemical company itself would seek authorization to administer an injection well for long-term CO2 storage. Alternatively, the petrochemical facility owner or operator may contract with another company to assume responsibility for transporting and storing the captured CO2. While it is possible that the facility will contract with a well operator that already holds the requisite UIC permit(s), advocates should be on the lookout for UIC permit application for CO2 storage associated with a new or expanded petrochemical facilities with plans to utilize CCUS technology.

b. UIC permits for disposal of hazardous waste

Another reason why a petrochemical facility may need a UIC permit is to authorize their underground disposal of hazardous waste generated onsite. Petrochemical facilities typically generate large quantities of hazardous waste as part of their manufacturing process, including chemicals, acids, solvents, and other by-products that are not suitable for disposal in regular landfills or wastewater treatment plants. In general, pursuant to the Resource Conservation and Recovery Act (RCRA), EPA prohibits the underground injection of hazardous waste.[610] However, hazardous waste can be injected into a UIC **Class I well (Class I wells are used for the disposal of waste)** if the well operator obtains an exemption from EPA.[611] Whether a waste qualifies as hazardous depends on whether it has a hazardous characteristic such as ignitability, corrosivity, reactivity, or toxicity, or if it is listed by EPA as a hazardous waste.[612]

To obtain the requisite exemption for underground injection of hazardous waste, a well operator must demonstrate that the injected fluids will not migrate from the injection zone for as long as the

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[605] Email from Brandon Maples, EPA Region 6, to Keri Powell, Powell Environmental Law, dated Feb. 3, 2023 (explaining that the classification of stratigraphic test wells is "state-dependent" assuming that a state has authority to administer most UIC classes).
[606] Corey Shircliff and Laura Sorey, Louisiana Dept. of Natural Resources, "Carbon Sequestration at the Louisiana Office of Conservation," Presentation at the Pipeline Safety Conference on July 21, 2022, at 15, https://www.dnr.louisiana.gov/assets/OC/im_div/uic_sec/2022SonristoSunset/ClassVIatPipelineSafetyConference7-10-22.pdf.
[607] *See, e.g.,* Texas Railroad Commission, "Geologic Storage of Anthropogenic CO2: UIC Class VI," https://www.rrc.texas.gov/oil-and-gas/applications-and-permits/injection-storage-permits/co2-storage/ (visited Aug. 17, 2023) (describing process for converting a stratigraphic well to an approved Class VI well).
[608] *Id.*
[609] Email from Brandon Maples, EPA Region 6, to Keri Powell, Powell Environmental Law, dated Feb. 3, 2023.
[610] 40 CFR Part 148.
[611] *Id.*
[612] EPA, Class I Underground Injection Control Program: Study of the Risks Associated with Class I Underground Injection Wells, Office of Water (Mar. 2001), https://www.epa.gov/sites/default/files/2015-07/documents/study_uic-class1_study_risks_class1.pdf.

waste remains hazardous, defined as 10,000 years.[613] This **"No Migration Petition" (sometimes called a "Land Ban Petition")** must include detailed information about the geology and hydrology of the area, the chemical characteristics of the fluids to be injected, and information about injection rates and injection pressures.[614] In approving a petition, EPA may require ongoing monitoring and reporting to ensure that the well is operated safely and does not pose a threat to human health or the environment.[615] Once a well operator obtains an exemption from EPA to accept hazardous waste, it may petition EPA to modify the exemption to add other hazardous wastes.[616] EPA can grant such a petition if the well operator demonstrates that the waste will behave similarly to the previously approved wastes and will not interfere with containment of the injected wastes in the injection zone.[617]

Only about 17 percent of the approximately 800 operational Class I wells in the United States are used to dispose of hazardous waste.[618] These hazardous waste wells are typically located near the industrial facilities that generate the waste being disposed of.[619] Whether it is feasible to utilize a Class I well to dispose of hazardous waste depends in part on an area's geology. At present, Class I hazardous waste wells are located in 10 states. Texas has the highest number of EPA-approved No Migration Petitions (23), and Louisiana has the second highest (7).[620]

Note that the process for obtaining a Class I permit is separate from the No Migration Petition process. Thus, a company planning to dispose of its hazardous waste in a Class I UIC well must obtain the Class I well from the appropriate permitting authority (discussed below) and separately apply for the no migration waiver from EPA.

2. Who implements Underground Injection Control permitting requirements?

UIC permitting is managed by U.S. EPA regional offices unless EPA has granted "primacy" to a state, territory, or tribe ("state") to administer UIC permitting requirements.[621] Unless EPA has granted primacy to a state to administer a particular class of UIC permits, permit applicants must satisfy the federal regulations applicable to that class, and the relevant EPA regional office is responsible for reviewing applications, issuing permits, and ensuring compliance with permit requirements. Once a state obtains primacy over a UIC class, permits in that class are governed by state laws and regulations and the state agency has responsibility for issuing permits.

State primacy is granted by class, so a state may have primacy over some UIC classes but not over others.[622] For all UIC permit classes other than Class II, to obtain primacy, a state must demonstrate that the state's laws and regulations meet or exceed minimum standards set forth in the federal UIC

[613] 40 C.F.R. § 148.20(a)(1).
[614] *Id.*, § 148.20.
[615] *Id.*, § 148.20(d)(2).
[616] *Id.*, § 148.20(f).
[617] *Id.*
[618] EPA, "Class I Industrial and Municipal Waste Disposal Wells," https://www.epa.gov/uic/class-i-industrial-and-municipal-waste-disposal-wells (visited Aug. 6, 2023).
[619] *Id.*
[620] EPA, "The Impact of RCRA Land Disposal Restrictions on Class I Hazardous Waste Injection," https://www.epa.gov/uic/impact-rcra-land-disposal-restrictions-class-i-hazardous-waste-injection (visited Apr. 24, 2023).
[621] EPA, "Primary Enforcement Authority for the Underground Injection Control Program," https://www.epa.gov/uic/primary-enforcement-authority-underground-injection-control-program-0 (visited Apr. 24, 2023).
[622] *Id.*

regulations.[623] Regarding UIC Class II permits, a state is not required to meet EPA's minimum requirements but can instead simply demonstrate that the state's standards are effective in preventing endangerment of underground sources of drinking water.[624] The public must be given an opportunity to comment on a state's primacy application, including an opportunity to provide comments to the state before it submits its primacy application to EPA, and an opportunity to provide comments to EPA before primacy is granted.[625]

While EPA periodically evaluates state-administered UIC programs to ensure that they are implemented in accordance with federal requirements[626] and retains authority to bring enforcement actions against UIC violators,[627] EPA is not directly involved in individual permitting decisions made by a state that has obtained primacy.

Most states have jurisdiction over at least some UIC well classes. EPA's website shows which entity has primacy over each well class in a given state, territory, or tribal area.[628] At least 40 states have primacy over Class II wells, while only two states, North Dakota and Wyoming, currently have primacy over Class VI wells.[629] Even if a state has primacy over Class I permitting, however, EPA retains responsibility for approving a No Migration Petition authorizing the disposal of hazardous waste in a Class I well. More information about that process is provided below.

B. Opportunities to Participate in UIC Permitting.

1. An advocate interested in participating in UIC permitting for a particular project must first identify what class of UIC permit is required and whether the state has primacy over that UIC class.

As explained above, EPA regional offices are responsible for issuing UIC permits unless a state has obtained primacy over the class of UIC permits in question. Therefore, the first step for any advocate interested in getting involved in UIC permitting for a particular project is to determine what class of UIC permit is required and whether the state has primacy over that class. Note that with respect to CCUS permitting, even if a proposed well owner/operator needs to obtain a federally issued Class VI permit, the well owner/operator *may* (if necessary) first apply for a "test" permit, and it is likely that such permit would be issued by the state.[630]

Under federal regulations a State UIC program must satisfy minimum requirements for providing opportunities for public participation in permit proceedings.[631] While state provisions do not need to be identical to the federal regulations, the state provisions must be at least as stringent as the federal requirements.[632]

The explanation of UIC public participation opportunities provided below focuses primarily on the minimum federal requirements set forth in federal regulations. If a state has primacy over a particular

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[623] *Id. See also* Safe Drinking Water Act section 1422, 42 U.S.C. § 300h-1, 40 C.F.R. Part 145.
[624] Safe Drinking Water Act section 1425, 42 U.S.C. § 300h-4.
[625] 40 C.F.R. § 145.31.
[626] EPA, "Comprehensive UIC Program Evaluations," https://www.epa.gov/uic/comprehensive-uic-program-evaluations (visited Apr. 24, 2023).
[627] Safe Drinking Water Act § 1423(a), 42 U.S.C. § 300h-2(a).
[628] EPA, "Primary Enforcement Authority for the Underground Injection Control Program," https://www.epa.gov/uic/primary-enforcement-authority-underground-injection-control-program-0 (visited Apr. 24, 2023).
[629] *Id.*
[630] *Supra* at 590.
[631] 40 C.F.R. § 145.11 (incorporating by reference portions of the general federal permitting requirements at 40 C.F.R. part 124).
[632] 40 C.F.R. § 145.11(b).

UIC class, the approved state public participation procedures apply instead of the federal procedures. State rules will likely be at least slightly different from federal rules, and it is possible that they are more stringent than federal rules in some respects.[633] An advocate wishing to participate in a UIC program administered by a state should review the state regulatory requirements carefully. In addition, advocates are advised to speak with a state UIC program official to confirm their understanding of when and how public participation opportunities will arise.

2. Overview of federal UIC program public participation procedures

a. Does the public have an opportunity to comment on a draft UIC permit before it is issued?

Yes, the public must be provided with an opportunity to provide comment on a draft UIC permit for at least 30 days.[634] In addition, the public must be provided with at least 30 days to comment on any proposed denial of a UIC permit application.[635] The permitting authority has discretion to extend the comment period, which can happen in response to a request from a member of the public. Such a request should be made to the permitting authority in writing, and as early as possible. In fact, California advocates requested that EPA Region 9 allow at least 90 days for public comment on any Class VI permit proposed for a California well, and EPA Region 9 agreed.[636]

Be aware that while a well owner/operator may not inject fluids into a UIC well for storage until receiving a final UIC permit, a final UIC permit is not issued until after the well is constructed and testing is completed. Of course, once a UIC permit applicant has completed well construction, it is difficult for advocates to stop the project from getting a final permit. Advocates opposing a well's construction should look for opportunities to get involved earlier. For example, local or state regulations may require separate approvals prior to construction, or, for a Class VI permit, a UIC permit applicant might first need to apply for and obtain a stratigraphic test well permit to obtain the information needed for the Class VI permit application. Advocates also should consider opportunities to work with local landowners whose permission is required for stratigraphic test wells and other well infrastructure.

b. Will there be a public hearing on a draft UIC permit?

Possibly. Sometimes, if the permitting authority is aware of significant public interest in a permit before it publishes notice of the availability of the draft permit for public comment, the permitting authority will go ahead and schedule a public hearing and publish notice of that hearing in the same notice announcing the start of the public comment period.[637] If a public hearing has not already been scheduled, any person my request a public hearing during the public comment period.[638] Such request "shall be in writing and shall state the nature of the issues proposed to be raised in the hearing."[639] The UIC program director "may" hold a hearing if "such a hearing might clarify one or more issues involved in the permit decision" and "shall" hold a hearing "whenever he or she finds, on the basis of requests, a significant degree of public interest in a draft permit(s)."[640] This standard leaves open the possibility that a UIC program director might deny a request for a public hearing.

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[633] 40 CFR 145.1(g) (nothing prohibits state from adopting more stringent rules).
[634] 40 C.F.R. §124.10(b).
[635] 40 C.F.R. §§ 124.10(a)(i), 124.6(b).
[636] Personal communication with Victoria Bogdan Tejada, staff attorney with Center for Biological Diversity, on Aug. 14, 2023.
[637] 40 C.F.R. §124.11.
[638] *Id.*
[639] *Id.*
[640] 40 C.F.R. §124.12.

However, if a significant number of individuals or organizations request a hearing, a director's denial of the request could be found by a court/administrative review panel to be unlawful.[641] If the director decides to hold a public hearing after publication of the notice of the start of the public comment period, the director must publish a notice of the public hearing at least 30 days before the hearing.[642]

An advocate who requests a public hearing should seek to ensure that a significant number of other advocates are willing to attend and present comments. If hardly anyone shows up at a public hearing, or worse, if the hearing is dominated by project proponents, the permitting authority likely will conclude that there isn't much public opposition to its issuance of the requested permit.

California advocates obtained EPA Region 9's agreement to hold a public hearing on every proposed Class VI permit for a California well.[643] Advocates in other states could consider making such a request to the EPA regional office or state agency responsible for Class VI permitting in their state if they intend to engage with Class VI permitting on an ongoing basis.

c. How do I receive notice of a public comment period on a draft UIC permit?

Notice of the comment period must be mailed to any person who requests to be on the mailing list for such notices.[644] In developing the mailing list, the permitting authority must solicit individuals who have participated in past permit proceedings in the same area and must generally notify the public via newsletters, law journals, and environmental bulletins of the opportunity to join the mailing list.[645]

Be aware that states can vary significantly in how they provide public notice, and the notice requirements also can be different for different classes of UIC permits. For example, in Louisiana, in addition to standard notice via a mailing list, for Class I permits only, the state also publishes a notice in a daily or weekly newspaper within the area affected by the facility or activity.[646]

Especially for Class VI permits, permitting authorities may maintain a website listing permit applications received and where they are in the review process. For example, EPA posts this information at https://www.epa.gov/uic/class-vi-wells-permitted-epa. Likewise, North Dakota posts at least some of this information at https://www.dmr.nd.gov/dmr/oilgas/ClassVI. When such websites are available, advocates can make use of them to obtain early notice of pending permit applications. Advocates should keep in mind that federal law does not require the permitting authority to post information online regarding pending permit applications, so even if a permitting authority maintains such a website, the information posted may be incomplete or out of date.

d. What information must the permitting authority provide the public during the public comment period?

The permitting authority must prepare a "fact sheet" for each draft UIC permit released for public comment.[647] This fact sheet must describe "the principal facts and the significant factual, legal,

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[641] *See, e.g., In re Sierra Pacific Industries*, 16 EAD 1 (EAB 2013), at 33-36, available on EPA's Environmental Appeals Board website at https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Slip%20Opinions%20and%20Published%20and%20Unpublished%20Decisions/1432397D2DE2B8F885257BAC005D9283/$File/Sierra%20Pacific%20Industries%20Decision%20Vol%2016.pdf.
[642] 40 C.F.R. §124.10(b)(2).
[643] Personal communication with Victoria Bogdan Tejada, staff attorney with Center for Biological Diversity, on Aug. 14, 2023.
[644] 40 C.F.R. §124.10(c)(1)(ix).
[645] 40 C.F.R. § 124.10(c)(1)ix)
[646] La. Admin. Code tit. 42, § XVII-111(E)(3)(b).
[647] 40 C.F.R. § 124.8(a).

methodological and policy questions considered in preparing the draft permit."[648] Among other things, the fact sheet must provide "[a] brief summary of the basis for the draft permit conditions including references to the applicable statutory or regulatory provisions and appropriate supporting reverences to the administrative record," and "[r]easons why any requested variances or alternatives to required standards do or do not appear justified."[649] Other categories of information that must be included in a fact sheet is listed in the federal regulations.[650] The permitting authority must provide this fact sheet to any person who requests it.[651]

e. What type of comments might I make on a draft UIC permit?

UIC permitting actions are quite technical. Thus, to mount a serious challenge to a UIC permit, most advocates will benefit from a technical expert to identify weaknesses in the permit applicant's explanations for why its injection or storage of waste or CO2 will not endanger underground sources of drinking water, or otherwise pose hazards that are prohibited by the UIC program or other applicable requirements.

At a minimum, a public commenter can review the draft UIC permit to ensure that includes the conditions required pursuant to federal regulations (or pursuant to state regulations if the state has obtained primacy). These include, among other things:

- General conditions listed at 40 C.F.R. § 144.51;
- Conditions under at 40 C.F.R. § 144.52;
- Construction requirements as set forth in 40 C.F.R. part 146;
- Operational requirements as set forth in 40 C.F.R. part 146, including maximum injection volumes and pressures as needed to prevent fractures and migration of injected fluids into an underground source of drinking water;
- Monitoring and reporting requirements as described at 40 C.F.R. § 144.54; and
- An appropriate limit on permit duration consistent with 40 C.F.R. § 144.36.

Another issue that advocates might consider raising is **how a proposed project would increase environmental burdens on already overburdened communities**. At least with respect to Class VI permits for geologic sequestration of CO_2, EPA has stated that it "will be reviewing Class VI projects through a holistic approach and will conduct additional analyses, on a case-by-case basis, to consider cumulative impacts into our permitting decisions, as authorized by the Safe Drinking Water Act and UIC regulations."[652]

The methodology EPA will follow in addressing environmental justice in Class VI permitting is set forth in the agency's August 2023 "Environmental Justice Guidance for UIC Class VI Permitting and

[648] *Id.*
[649] *Id.*, § 124.8(b).
[650] *Id.*
[651] 40 C.F.R. § 124.8(a).
[652] Letter from Martha Guzman, EPA Region 9 Administrator, to 81 organizations, regarding "EPA Region 9 Review and Consideration of Class VI Carbon Storage Permits," dated Sept. 18, 2022 (Appendix 13).

Primacy."[653] EPA explains that while this guidance specifically addresses environmental justice considerations in Class VI permitting, "many of the expectations presented here are more broadly applicable, and EPA Regions should apply them to the other five injection well classes wherever possible."[654] Notably, in addition to identifying communities with potential environmental justice concerns, enhancing public involvement opportunities in those communities, and conducting appropriate environmental justice assessments, the guidance advises EPA staff to "[m]inimize adverse effects to [underground sources of drinking water] and the communities they serve."[655] More specifically, the guidance advises EPA staff as encourage well owners/operators "to consider additional mitigation measures *to address concerns raised by the local community*."[656] Accordingly, advocates' identification of environmental justice concerns and potential mitigation measures could result in additional obligations being placed on well owners/operators.

While EPA's August 2023 Class VI guidance does not apply directly to state UIC permitting agencies, the guidance "strongly encourage[s] states, tribes, and territories to implement their Class VI programs in a similar fashion."[657] Likewise, "EPA Regions are encouraged to work collaboratively and proactively with state, tribal, and local partners to facilitate their consideration and application of this guidance in their UIC permitting actions."[658] Thus, where a UIC permit is being issued by a state agency and the state is resistant to applying EPA's guidance, advocates should insist that EPA regional staff get involved and offer assistance to the state as needed, e.g., by performing the environmental justice assessment or identifying mitigation options.

Especially with the aid of an expert, other arguments an advocate might raise include:

- **Insufficient characterization of the "Area of Review:"** The Area of Review (AoR) refers to the area surrounding an underground injection well where the injected fluids might migrate. The purpose of defining the Area of Review is to ensure that the fluids being injected do not endanger underground sources of drinking water. Correct identification of this area is critical because it governs where the applicant must look for existing wells, geologic fault lines, or other features that impact whether the injected fluid could migrate into drinking water or even to the surface.
- **Failure to identify all wells and faults located in the Area of Review:** Especially in the Gulf states where UIC wells are most likely to be utilized, there are huge numbers of existing orphaned, abandoned, and operating wells. Each of these wells pose a risk that injected fluids could migrate well beyond the injection zone and contaminate drinking water. Likewise, identifying all of the geologic faults (cracks) can be a significant undertaking and some applicants may cut corners. An

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[653] U.S, EPA, "Environmental Justice Guidance for UIC Class VI Permitting and Primacy (August 2023), https://www.epa.gov/system/files/documents/2023-08/Memo%20and%20EJ%20Guidance%20for%20UIC%20Class%20VI_August%202023.pdf. ("August 2023 Class VI EJ Guidance").
[654] Memorandum from Radhika Fox, Assistant Administrator for U.S. EPA's Office of Water, to Regional Water Division Directors, Regions I-X, dated Aug. 17, 2023, at 2 ("EJ Guidance Cover Memo"), https://www.epa.gov/system/files/documents/2023-08/Memo%20and%20EJ%20Guidance%20for%20UIC%20Class%20VI_August%202023.pdf.
[655] August 2023 Class VI EJ Guidance, note 653, at 4.
[656] *Id.*
[657] *Id.* at 1.
[658] EJ Guidance Cover Memo, note 654, at 1.

expert could identify likely places where unidentified wells and faults might exist. Advocates could then pressure regulators to investigate these areas.

- **Potential for seismic activity in the vicinity of the injection well.** Injection of fluids underground can increase pressure in rocks, potentially causing earthquakes. This "induced seismicity" can create new faults that would allow injected fluids to migrate into underground sources of drinking water. Seismicity can also damage the well casing, leading to leaks. Sometimes earthquakes caused by injection of fluids underground can be significant enough to cause damage to roads and buildings.

EPA's website contains numerous guidance documents on the UIC program that may be helpful in developing comments on proposed UIC permits.[659]

Advocates should be aware that anything that they hope to rely on in a legal challenge to the final permit must appear in comments filed during the public comment period or oral testimony at a public hearing. Insofar as advocates cite or rely on any reports or studies in their comments, they should do their best to submit those reports or studies to the permitting authority and avoid relying solely on website links. Finally, it is not enough to simply submit a report and expect the permitting authority to review it and apply its findings. Rather, the advocate must submit a comment that explains why the report is relevant to the proceeding, citing specifically to where the permitting authority can find the relevant information in the report.

f. Will I receive a response to comments that I make on a draft UIC permit?

Yes. Federal regulations require that a UIC permitting authority issue a response to comments when a final permit is issued. Such response must identify any changes to the permit and the reasons for the change, and "[b]riefly describe and respond to all significant comments on the draft permit" made during the public comment period or during any hearing.[660] Be sure to check with the UIC permitting authority to determine how you will know when a final permit determination is made and how you will obtain the response to comments. Especially if you anticipate possibly challenging the final decision, you don't want to lose valuable time by not knowing immediately when the agency takes final action.

g. Can I appeal a UIC permitting decision?

Yes. The appeal procedures vary depending on whether EPA or the state is the permitting authority.

i. Appeal of an EPA-issued UIC permit

If EPA is the permitting authority, EPA's final action on a UIC permit application can be challenged before EPA's Environmental Appeals Board (EAB).[661] Anyone who submitted comments on the draft permit or participated in the public hearing may petition for review to the EAB.[662] Individuals who did not submit comments on the draft permit can nonetheless appeal any permit condition that was changed from the proposed draft permit.[663] A petition for EAB review must be filed within 30 days of EPA's notice of issuance of the final UIC permit decision.[664]

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[659] EPA, UIC Program Guidance, https://www.epa.gov/uic/uic-program-guidance (visited Aug. 9, 2023).
[660] 40 C.F.R. §124.17(a).
[661] 40 C.F.R. §124.19(a)(1).
[662] *Id.*, §124.19(a)(2).
[663] *Id.*
[664] *Id.*, §124.19(a)(3).

An EAB appeal is based on the administrative record created before the agency during the permitting process. Thus, an appeal to the EAB can only be based on issues that were raised during the public comment period, unless the petitioner demonstrates why such issues were not required to be raised (e.g., they arose after the close of the comment period).[665] Also, any information that an advocate wishes to rely on in a subsequent permit challenge must be placed in the administrative record during the public comment period.[666] Supporting materials "shall be included [in the administrative record] in full and may not be incorporated by reference, unless they are already part of the administrative record in the same proceeding, or consist of State or Federal statutes and regulations, EPA documents of general applicability, or other generally available reference materials."[667] Additional details about how to appeal an EPA-issued UIC permit are found in 40 C.F.R. § 124.19 and on the EAB's website at https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/.

The EAB does not agree to review every UIC permitting decision for which a petition for review is filed. Rather, as EPA explained when promulgating the EAB regulations, the EAB's authority to review EPA's permitting decisions "should be only sparingly exercised."[668] To justify EAB review, a petitioner must demonstrate that EPA's permit decision was based on "a finding of fact or conclusion of law which is clearly erroneous" or rests on "an exercise of discretion or an important policy consideration which the [EAB] should, in its discretion, review."[669] It is especially difficult to obtain EAB review of technical decisions because "the Board typically defers to a permit issuer's technical expertise and experience, as long as the permit issuer adequately explains its rationale and supports its reasoning in the administrative record."[670]

Any final EAB action declining to hear a petition for review or denying the petition on the merits is reviewable in the U.S. Court of Appeals circuit "in which the petitioner resides or transacts business which is directly affected by the action."[671] As with the EAB's review, review of EPA's UIC permitting decision is based on the administrative record and a petitioner generally can only raise those issues identified during the public comment period.[672]

ii. Appeal of a state-issued UIC permit

Once a state obtains primacy over a particular class of UIC permits, any challenge to such UIC permits must be pursued in state forums. While a state seeking primacy over a UIC program must provide EPA with a "program description" that describes "any State administrative or judicial review procedures,"[673] federal regulations do not specify the permit appeal procedures that a state must provide.

C. Opportunities to Participate in EPA's Response to a "No Migration Petition" Seeking Authorization to Inject Hazardous Waste into a Class I UIC Well.

As noted above, anyone who wishes to operate a hazardous waste disposal well must obtain (1) a Class I UIC permit and (2) EPA's approval of a No Migration Petition pursuant to RCRA. Since most

[665] *Id.*, §124.19(a)(4)(ii).
[666] 40 C.F.R. §124.13.
[667] *Id.*
[668] 45 Fed. Reg. 33,290, 33,412 (May 19, 1980).
[669] 40 C.F.R. §124.19(a)(4)(ii).
[670] 40 C.F.R. § 124.19(a)(1)-(2), *In re Jordan Dev. Co., L.L.C.*, 18 E.A.D. 1, 5 (EAB 2019).
[671] 42 U.S.C. § 300j-7(a)(2).
[672] *LeBlanc v. EPA*, 310 Fed. App'x 770, 774 (6th Cir. 2009).
[673] 40 C.F.R. § 145.23(c).

states have primacy over Class I permitting, the Class I permit will usually be obtained from the state in accordance with the UIC permitting procedures described above. EPA cannot delegate its authority over No Migration Petitions, so these are always processed by EPA (generally by a regional EPA office). Regulations establishing the criteria that an applicant must meet for EPA to approve a No Migration Petition are at 40 C.F.R. Part 148. The required procedures for public input on No Migration Petitions are set forth in federal regulations at 40 C.F.R. § 124.10 and § 124.12.

1. What are the required components of a No Migration Petition?

To be approved by EPA, a No Migration Petition application must demonstrate with a reasonable degree of certainty that hazardous constituents of the injected waste will not migrate away from the injection zone so long as it remains hazardous,[674] which EPA regulations define to be a period of 10,000 years.[675] Among other things, the petition must include:

- An analysis of the chemical and physical characteristics of the waste,
- Description of the injection well, including location, design, depth, and testing demonstrating the mechanical integrity of the well,
- Identification of the area of review,
- A description of the geology of the area where the well is located, including hydrology, seismicity, and potential conduits for injected waste to migrate out of the injection area, (guidance)
- Predictive modeling demonstrating that there will be no migration of the hazardous constituents of the waste for 10,000 years,
- A corrective action plan to address any wells in the area of review that are not constructed or plugged sufficiently to satisfy the no migration standard, and
- Certification that the information in the petition is accurate.

A comprehensive explanation of the information that an applicant must include in a No Migration Petition is set forth in the "EPA Region 6 UIC Land Ban Petition Application Guideline" available on EPA's website.[676]

2. Can EPA require a well owner/operator to take additional protective measures as a condition of EPA's approval of a No Migration Petition?

Yes, EPA can require a well owner/operator to comply with specified conditions as part of its approval of the No Migration Petition. In a 1991 guidance, EPA provided examples of appropriate special conditions.[677] The guidance further recommended that any special conditions be incorporated into an applicant's Class I UIC permit (via required public-notice-and-comment

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[674] 40 C.F.R. § 148.20.
[675] 40 C.F.R. § 148.20(a)(1)(i).
[676] EPA, "EPA Region 6 UIC Land Ban Petition Application Guideline," Revised Feb. 2007, https://www.epa.gov/sites/default/files/2015-07/documents/feb_2007_petition_outline.pdf.
[677] Memorandum from Michael B. Cook, Director of EPA's Office of Drinking Water, to Regional Water Division Directors, "Incorporation of UIC 'No Migration' Petition Conditions into Class I Hazardous Waste Injection Well Permits; Underground Injection Control Program Guidance # 73," Jan. 30, 1991, https://archive.epa.gov/r5water/uic/land_ban_files/web/pdf/guide-memo_guidance-73_incorp_no_mig_conditions_1991.pdf ("EPA Guidance on No Migration Special Conditions").

procedures), and that the permit writer document in the administrative record why and when the additional conditions were added to the UIC permit.[678]

Noncompliance by the applicant with any condition imposed by EPA as part of No Migration Petition approval constitutes grounds for EPA to terminate its approval.[679] Furthermore, both EPA and the public can bring an enforcement action to address petition violations.[680] However, according to EPA guidance, EPA prefers for petition conditions to be incorporated into the applicant's UIC permit so that they can be enforced using UIC enforcement mechanisms, which EPA contends are better suited for efficiently bringing a permittee back into compliance.[681]

EPA does not post special conditions applicable to No Migration Petitions online. Advocates are likely to need to file a Freedom of Information Request to obtain documentation of any special conditions.

3. Will I have a formal opportunity to provide comment to EPA on a pending No Migration Petition?

Yes, EPA must provide public notice and a minimum 45-day public comment period for all proposed No Migration Petition decisions.[682] Be aware that EPA is not required to publish notice of a proposed action on a No Migration Petition in the *Federal Register* and typically does not do so. Rather, for public notice of a proposed action (which triggers the start of the formal public comment period), EPA follows the public notice procedures in 40 CFR Part 124.[683] Specifically, among others listed in the regulations, EPA must provide notice to "[p]ersons on a mailing list."[684] EPA is required to compile the list based on (a) people who ask in writing to be on the list, (b) solicitation of people for "area lists" who have participated in prior permit proceedings in that area, and (c) periodic publication of notices inviting people to join the mailing list. EPA also publishes notice of the comment period in a local newspaper and places hard copies of petition documents at a local library.[685] Finally, the relevant regional EPA office likely will publish a notice of the comment period on the regional website.[686]

To ensure prompt public notice of any comment period for a proposed EPA action on a No Migration Petition, an advocate should contact the relevant EPA Regional Office, confirm how to be placed on the mailing list for the source or area in question, and submit a written request for inclusion on the list in accordance with the regional office's instructions.[687]

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[678] *Id.*
[679] 40 C.F.R. § 148.24.
[680] 42 U.S.C. § 6972(a)(1) (citizen suits); 42 U.S.C. § 6928 (EPA enforcement).
[681] EPA Guidance on No Migration Special Conditions, *supra* note 672.
[682] 40 C.F.R. § 148.22(b) (notice requirement), § 124.10(b)(1) (public comment requirement).
[683] 40 C.F.R. § 148.22(b) ("The Director shall provide public notice and an opportunity for public comment in accordance with the procedures in § 124.10 of the intent to approve or deny a petition. The final decision on a petition will be published in the Federal Register.").
[684] 40 C.F.R. § 124.10(c)(1)(ix).
[685] Email Communication with Richard Hall, EPA Region 4, GW, UIC and GIS Section, on Aug. 9, 2023. There is some ambiguity regarding which of the public notice requirements in 40 C.F.R. part 124 apply to No Migration Petitions. According to 40 C.F.R. § 124.10(c)(2)(ii), "all RCRA permits" are subject to the requirement that EPA publish notice "in a daily or weekly major local newspaper of general circulation and broadcast over local radio stations." However, a No Migration Petition may not be considered a "permit" for purposes of this requirement.
[686] For example, public notices for EPA Region 6 are at https://www.epa.gov/publicnotices/public-notices-meetings-and-events-epas-south-central-region. Be aware that the regulations do not specifically require that notice of EPA's proposed action on a No Migration Petition be published on EPA's website.
[687] For EPA Region 6 (covering Arizona, Texas, Louisiana, New Mexico, Oklahoma, and 66 Tribes) contact the "Ground Water/UIC Section," and specifically, the contact for "Class I Well Permitting/Land Ban Exemptions."

4. Is there an opportunity for a public hearing on a No Migration Petition?

EPA is not required to hold a hearing on a No Migration Petition but has discretion to do so if there is public interest in a hearing. If EPA decides to hold a public hearing, EPA must provide the public with at least 30 days' notice.[688] If EPA knows in advance that there is public interest in a particular petition, EPA may announce a public hearing in the notice announcing the start of the public comment period.

5. Is it possible to review a No Migration Petition prior to the public comment period?

Yes, as required by the federal Freedom of Information Act (FOIA), EPA must provide the public with any record that has been submitted to EPA, with certain exceptions, such as records that disclose Confidential Business Information.[689] Providing input on the petition prior to EPA's proposed action may be more effective at influencing EPA's decision. However, it is difficult for an advocate to know that a petition has been submitted unless the advocate sees reference to such application someplace else (such as in a Class I UIC application) or unless the advocate periodically files a FOIA request with EPA asking for a copy of any No Migration Petition filed by the anticipated applicant (or by anyone). If an advocate does obtain a pre-notice copy of a No Migration Petition, it can't hurt to provide informal input to EPA. Note that EPA is not obligated to respond to comments filed before or after the formal comment period. If comments filed early remain relevant after EPA publishes notice of the start of the public comment period, the advocate must refile the comments during the public comment period for EPA to be required to consider and respond to them.

6. How do I obtain information about a pending No Migration Petition?

When EPA publishes notice of proposed approval of a No Migration Petition, it posts a proposed decision fact sheet and letter on EPA's website. A sample fact sheet is provided in Appendix 14.

Unfortunately, at present, neither the application nor any supporting material submitted by the applicant or generated by EPA pertaining to the application is made available online. Instead, the notice provides the public with the name, email address, and phone number of the EPA staffer who can provide this information. According to an EPA Region 6 representative, the supporting information is voluminous and could perhaps consist of "12 banker boxes."[690] Thus, at present, an advocate (or expert hired by an advocate) who wishes to review this supplemental information will likely need to visit the relevant EPA regional office. It is possible that EPA could in the future require this information to be submitted electronically, which perhaps would enable it to be made available to the public electronically. An applicant may be able to claim that some of the supporting information qualifies as confidential business information that can be withheld from public disclosure.[691]

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https://www.epa.gov/uic/underground-injection-control-epa-region-6-ar-la-nm-ok-and-tx#permits. For EPA Region 4 (covering Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee), contact information for UIC/land ban applications is at https://www.epa.gov/uic/underground-injection-control-epa-region-4-al-fl-ga-ky-ms-nc-sc-and-tn. Similar webpages should be available for other EPA regions.

[688] 40 C.F.R. § 124.10(b)(2).

[689] EPA, Freedom of Information Act (FOIA), https://www.epa.gov/foia (visited Aug. 7, 2023).

[690] Phone interview with David Gillespie, Office of Regional Counsel, EPA Region 6, on Oct. 27, 2022.

[691] 40 C.F.R. Part 2, Subpart B (EPA Freedom of Information Act regulations, Confidentiality of Business Information).

7. What issues might I raise in comments on a No Migration Petition?
Like the UIC permits themselves, No Migration Petitions are very technical. Thus, for an advocate to develop effective comments on EPA's proposed approval of a No Migration Petition, it likely will be necessary to obtain the assistance of a technical expert.

In general, the concerns that arise with a No Migration Petition are like those described above with respect to UIC permits. However, the rules governing No Migration Petitions are stricter than the general Class I rules, so a well that qualifies for a Class I permit may not be approvable for hazardous waste injection.

EPA's website provides a "cross-walk" for No Migration Petitions as well as various other guidance documents that are designed for applicants but can be used by advocates to determine whether an application is complete and sufficient.[692] Though dated, EPA's 1989 memorandum addressing "UIC Land Ban Petitions; Common Deficiencies" is worth reviewing.[693] Among other problems, this memorandum explains that some applicants fail to model the entire injection history of a well and this is problematic because "[]injection zones have a memory. . . . pressure increases are additive."[694] Likewise, EPA explains that failing to consider "the effects of ground-water withdrawals" is a mistake because such withdrawals "affect the shape and growth of the waste plume in both the horizontal and vertical direction."[695] It is possible that advocates with knowledge of an area's geography and history could identify these types of concerns.

As with UIC permits themselves, one of the most likely problems to arise with a No Migration Petition is that the applicant has failed to identify drinking water wells or geologic faults in the area of review.[696] Another issue that sometimes arises is that the applicant's mechanical integrity testing (to show that the well won't leak) is defective.[697] Notably, a report by *ProPublica* indicates that problems with the mechanical integrity of disposal wells often lead to significant leaks.[698]

8. Will I receive notice of EPA's final action on a No Migration Petition?
EPA will notify each person who submits written comments on a proposed No Migration Petition of its final decision. EPA must publish its final decision on a No Migration Petition in the Federal Register,[699] which is available online.[700] Unfortunately, EPA does not make the decision documents (which include EPA's specification of additional conditions with which the applicant must comply) available online. Instead, notice of the final EPA action instructs interested members of the public to

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[692] EPA, Underground Injection Control (UIC): Guidelines for Completing Class I Injection Well No Migration Petitions, https://www.epa.gov/uic/guidelines-completing-class-i-injection-well-no-migration-petitions (visited Aug. 9, 2023).
[693] Memorandum from Michael B. Cook, Director, EPA Office of Drinking Water, to EPA Regional Water Supply Branch Chiefs, dated April 27, 1989, UIC Land Ban Petitions; Common Deficiencies, https://www.epa.gov/sites/default/files/2020-02/documents/uic_land_ban_petitions_common_deficiencies_-_27april1989.pdf.
[694] *Id.* at 5.
[695] *Id.*
[696] Phone interview with David Gillespie, Office of Regional Counsel, EPA Region 6, on Oct. 27, 2022.
[697] *Id.*
[698] Lustarten, Abrahm, ProPublica, "Injection Wells: The Poison Beneath Us" (June 21, 2012), https://www.propublica.org/article/injection-wells-the-poison-beneath-us.
[699] 40 C.F.R. § 148.22(b).
[700] https://www.federalregister.gov/.

contact EPA to obtain these documents.[701] EPA likely would require a requester to submit a Freedom of Information Act (FOIA) request to obtain this information.

9. Can I appeal EPA's decision to approve a No Migration Petition?

There is no opportunity for *administrative* appeal of a No Migration Petition determination, e.g., an appeal to EPA's Environmental Appeals Board. Rather, any appeal must be brought in federal district court pursuant to the judicial review provisions of the federal Administrative Procedure Act.[702]

10. Can a well owner/operator apply to add new hazardous pollutants to its approved No Migration Petition?

EPA's grant of a petition only authorizes injection "of the specific restricted waste or wastes identified in the petition."[703] If an applicant wishes to inject other hazardous waste into its Class I well, the applicant must apply for modification or reissuance of the petition. EPA may grant the petition modification request if the Administrator "determines, to a reasonable degree of certainty, that the additional waste or wastes will behave hydraulically and chemically in a manner similar to previously included wastes and that it will not interfere with the containment capability of the injection zone."[704]

Conclusion

As noted at the beginning of this chapter, not all proposed petrochemical facilities will require a UIC permit. Moreover, a facility that does need a UIC permit will not get a final UIC permit until after its UIC well is operating, which may be after the petrochemical facility itself is approved and operating. And, further complicating advocacy, it is possible that a facility will utilize a well that is already permitted. Thus, depending upon the particular facility proposal, UIC permitting may not be an effective tool for stopping construction of a new petrochemical facility. However, there likely will be some circumstances in which underground injection of either hazardous waste or carbon dioxide is critical to a facility's business plan or its ability to comply with environmental requirements. Where those circumstances are present, effective advocacy potentially could create enough uncertainty about the facility's ability to obtain UIC approval that the construction application would be withdrawn. In any event, the underground injection of both hazardous waste and carbon dioxide raises substantial environmental concerns worthy of advocates' attention.

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[701] *See, e.g.,* EPA, "Underground Injection Control Program; Hazardous Waste Injection Restrictions; Petition for Exemption Reissuance-Class I Hazardous Waste Injection; Dow Beaumont Aniline Plant, Texas," Final Action, 88 Fed. Reg 35,871 (June 1, 2023), https://www.federalregister.gov/documents/2023/06/01/2023-11587/underground-injection-control-program-hazardous-waste-injection-restrictions-petition-for-exemption.

[702] *See, e.g.*, EPA, "Underground Injection Control Program; Hazardous Waste Injection Restrictions; Petition for Exemption—Class I Hazardous Waste Injection; Innophos, Inc. Geismar, Louisiana," 83 Fed. Reg. at 39,745, 39,746 (Aug. 10, 2018) (explaining that EPA's decision approving a No Migration Petition constitutes "final agency action" that "may be reviewed/appeals in compliance with the Administrative Procedure Act.").

[703] 40 C.F.R. § 148.22(c).

[704] 40 C.F.R. § 148.20(f).