

# Environmental Permitting Timelines in the US Evidence from Projects on the Federal Infrastructure Permitting Dashboard

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## **Abstract**

The regulatory regimes that govern the permitting and authorization processes that are required prior to initiation of major infrastructure projects in the United States are quite complex. It can take significant time and effort to obtain the necessary permits and authorizations. In this article, we look at time to complete some of the most common permitting actions for major projects using data available from the Federal Infrastructure Permitting Dashboard.

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DRAFT

# 1 Introduction

Every major infrastructure project in the United States is subject to a complex set of environmental rules and regulations at the Federal, State and/or local level. These rules and regulations require the project developers to obtain necessary permits prior to initiation of project construction or operational activities. The time required to obtain the permits vary substantially depending on the project's sector, scope, size, location and other factors. In this article, we provide an estimate of the time required for obtaining some of the key permits and authorizations for large and complex infrastructure projects.

The analysis is based on data from the Federal Infrastructure Permitting Dashboard (the *Dashboard*) described as “an online tool for Federal Agencies, project developers, and interested members of the public to track the Federal government’s environmental review and authorization processes for large or complex infrastructure projects” [1].

The Dashboard contains data for the following types of projects:

- FAST-41 Projects: These are covered projects under Title 41 of the Fixing America’s Surface Transportation (FAST) Act [2].
- Department of Transportation (DOT) projects: subject to Titles I, IX, and XI of the FAST Act.
- Major infrastructure projects as defined in Section 3(e) of Executive Order 13807 [3].
- Other Projects as defined in Section 2 of Executive Order 13766 [4].

The Dashboard provides the data for infrastructure projects on its data portal [5]. The author downloaded the full dataset [6] in October 2020. The data file is in *csv* format that can easily be processed by standard statistical software.

Data is available for over 750 projects covering a number of sectors as shown in Figure 1. The largest number of projects are in the surface transportation and aviation sectors, and the other sectors cover a modest number of projects.

Note that the analysis presented in this article cannot be considered an exhaustive analysis of all the permitting actions required for infrastructure projects. Firstly, the analysis focuses mostly on Federal permitting actions. Secondly, the analysis focuses on large and complex infrastructure projects that are covered under the FAST Act or Executive Orders. Finally, the analysis excludes some of the actions where we do not have enough data as described below.

We also want to specify that the timelines indicated in our analysis reflect only the time to complete an action. It does not include the time required to prepare the documents needed to apply for the specific permits. For some actions, this preparation time may be greater than the permitting action time frame.

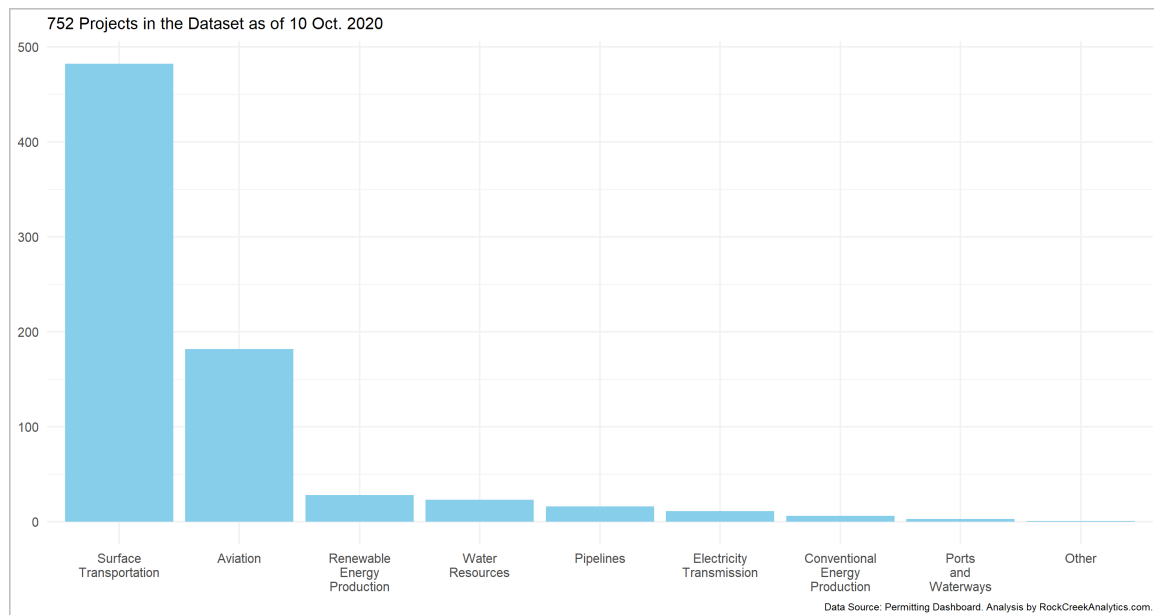


Figure 1: Number of Project in the Dataset.

## 2 Approach

The data from the Dashboard is organized as follows:

- For each individual project, there are a number of *actions* that reflect the permitting action types (such as the Environmental Impact Statement or an Endangered Species Act Consultation). The dataset reflects over 40 different action types.
- For each action, there are a number of *milestones*. These milestones reflect the specific activities for the specific action such as the initiation of the action, the acceptance of the action, etc.
- Each milestone as a number of date elements associated with it such as the target completion date, actual completion date, etc. For the purposes of our analysis, we use the actual completion date.
- For each action, the *status* for the action is indicated in the dataset (the status values include: canceled, completed, in progress, paused, planned or no longer required to be tracked.)

The methodology adopted for the analysis includes the following steps and assumptions.

- We only consider the actions that are complete.

- To estimate the time taken for each completed action, we take the difference of the latest and earliest actual completion date for the milestones associated with that action. This gives us the time to complete for the action.
- There are a few actions which start and finish on the same day indicating a time to complete of 0 days. This may or may not be correct for some actions. For this analysis, we exclude the data for such actions.
- There is data for over 40 different action types in the dataset. However, for a large majority of these action types, there are very few individual actions that are complete. We, therefore, exclude action types with less than 4 actions so that the average time-frame calculated for each action is meaningful. We do recognize that for some action types, once the data is broken down into sectors there are situations with less than 4 actions for the sector.
- In a very limited number of cases, there are multiple actions for the same action type and the same project. These are treated as separate actions in this analysis.
- The time to complete is converted from days to months assuming a year of 365 days and 12 months per year.
- The timelines are shown using boxplots. The standard boxplot is used that shows the 25th percentile, the median and the 75th percentile in the middle of the plot. The ends of whiskers on either side of “interquartile range” (IQR - the 75th minus the 25th percentile) are based on  $Q \pm 1.5 \times IQR$ . The dots on the figures show individual actions - they are *jittered* for clarity.

### 3 Time to Complete Specific Actions

In the following sub-sections, we provide the estimates for the time to complete the major action types. For sake of clarity, we have combined some related action types in the same sub-section.

#### 3.1 EIS and EA

The preparation of the Environmental Impact Statement (EIS) or the Environmental Assessment (EA) is the most common action required of almost all major infrastructure projects. An EIS is a document required by the National Environmental Policy Act (NEPA) to assess actions “*significantly affecting the quality of the human environment.*” However, not all Federal actions require a full EIS; if the action may or may not cause a significant impact, the agency can first prepare a smaller, shorter document called an Environmental Assessment.

The time to complete the EISs and the EAs are shown in Figures 2 and 3 respectively. This time-frame, in general, reflects time between the issuance of a notice of

intent to prepare the EIS/EA document and the issuance of record of decision. The tables below each figure provide additional timing details for each sector.

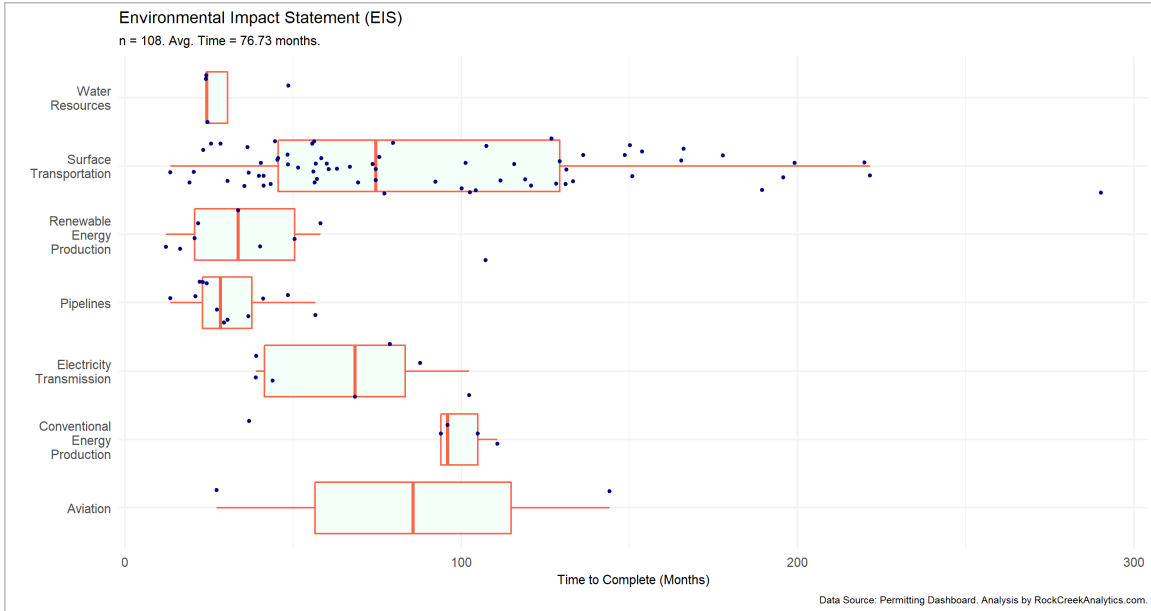


Figure 2: Time to Complete - Environmental Impact Statement

Sector	Cases	Minimum	Average	Maximum
Aviation	2	27.32	85.69	144.07
Conventional Energy Production	5	36.99	88.51	110.73
Electricity Transmission	7	38.99	65.66	102.38
Pipelines	12	13.58	31.27	56.71
Renewable Energy Production	9	12.2	40.15	107.34
Surface Transportation	69	13.55	92.1	290.27
Water Resources	4	24.13	30.39	48.66
All	108	12.2	76.73	290.27

Table 1: Minimum, Average and Maximum Times (Months) for Environmental Impact Statements

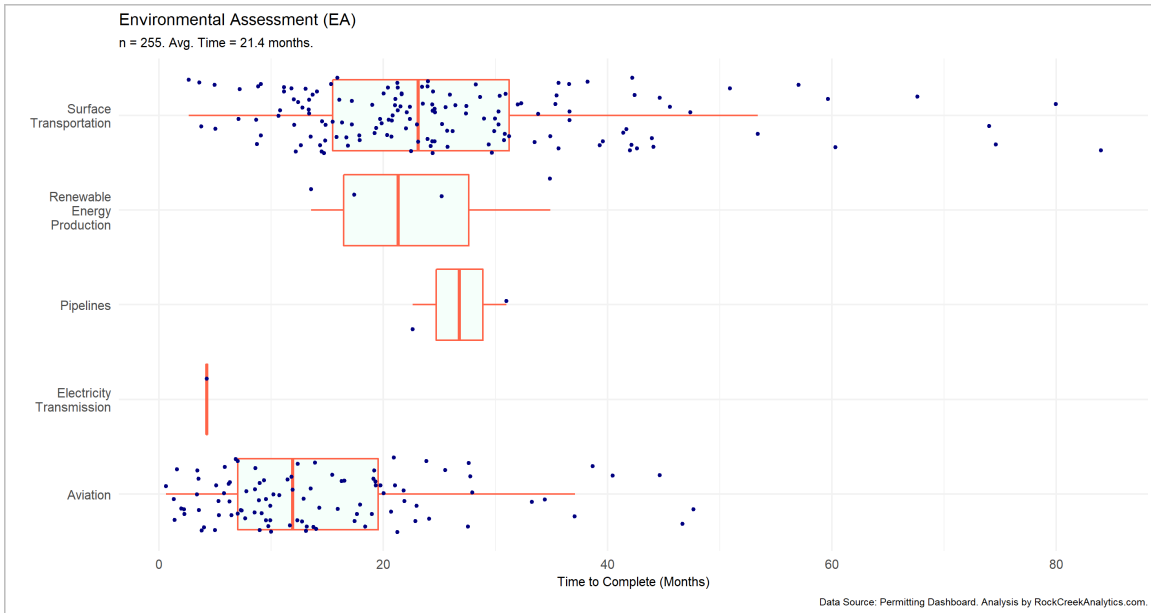


Figure 3: Time to Complete - Environmental Assessment

Sector	Cases	Minimum	Average	Maximum
Aviation	99	0.62	14.53	47.64
Electricity Transmission	1	4.27	4.27	4.27
Pipelines	2	22.62	26.79	30.97
Renewable Energy Production	4	13.58	22.78	34.88
Surface Transportation	149	2.66	25.97	84
All	255	0.62	21.4	84

Table 2: Minimum, Average and Maximum Times (Months) for Environmental Assessments

### 3.2 Endangered Species Act Consultations

One of the key objectives of the Endangered Species Act (ESA) is to “provide a means to conserve the ecosystems upon which endangered and threatened species depend and provide a program for the conservation of such species” [7]. The various provisions of the ESA require consultations with either the US Fish and Wildlife Service [8] or NOAA National Marine Fisheries Service [9] to ensure that any project’s actions are “not likely to jeopardize the continued existence of listed species, or destroy or adversely modify their critical habitat.” The time to complete the ESA consultations are provided in Figure 4.

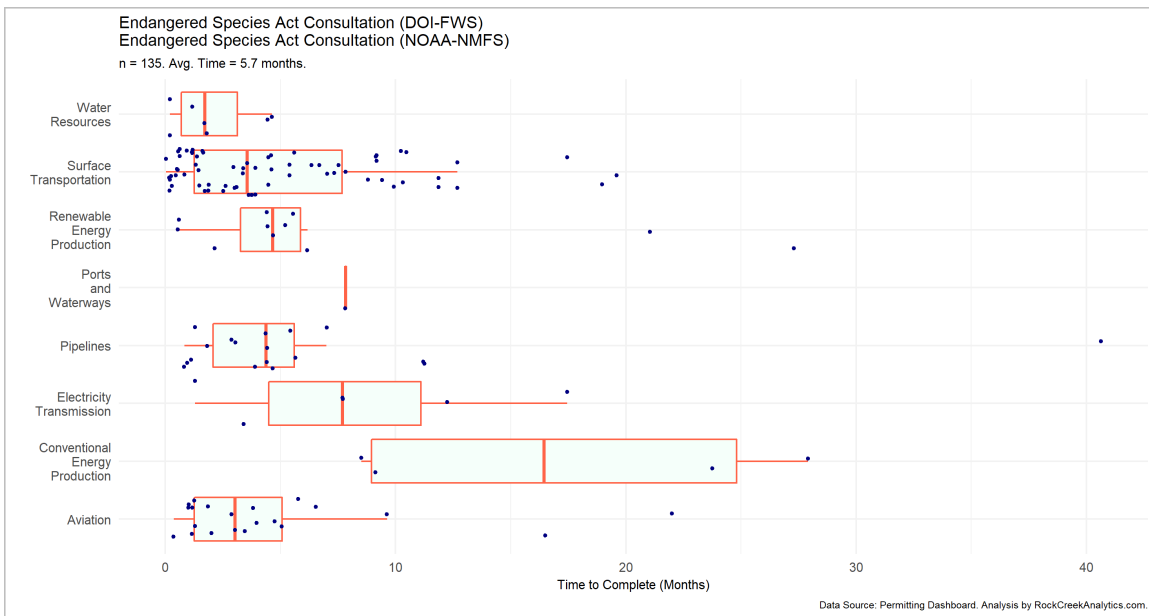


Figure 4: Time to Complete - Endangered Species Act Consultation

Sector	Cases	Minimum	Average	Maximum
Aviation	21	0.36	4.69	21.99
Conventional Energy Production	4	8.52	17.33	27.91
Electricity Transmission	6	1.28	8.3	17.46
Pipelines	18	0.82	6.38	40.64
Ports and Waterways	1	7.82	7.82	7.82
Renewable Energy Production	11	0.56	7.46	27.29
Surface Transportation	67	0.03	4.97	19.59
Water Resources	7	0.2	2.02	4.64
All	135	0.03	5.7	40.64

Table 3: Minimum, Average and Maximum Times (Months) for Endangered Species Act Consultation



### 3.3 Section 404 Permit and Section 10 Authorization

The Section 404 of the Clean Water Act (CWA) regulates the discharge of dredged or fill materials into the US waters including wetlands [10]. The permitting actions are managed by the US Army Corps of Engineers [11]. Related to CWA’s Section 404 is the Section 10 of the Rivers and Harbors Act of 1899 that requires the authorization “for the construction of any structure in or over any navigable water of the United States” [12]. The time to complete the CWA Section 404 permit and Rivers and Harbors Act Section 10 authorization are provided in Figure 5.

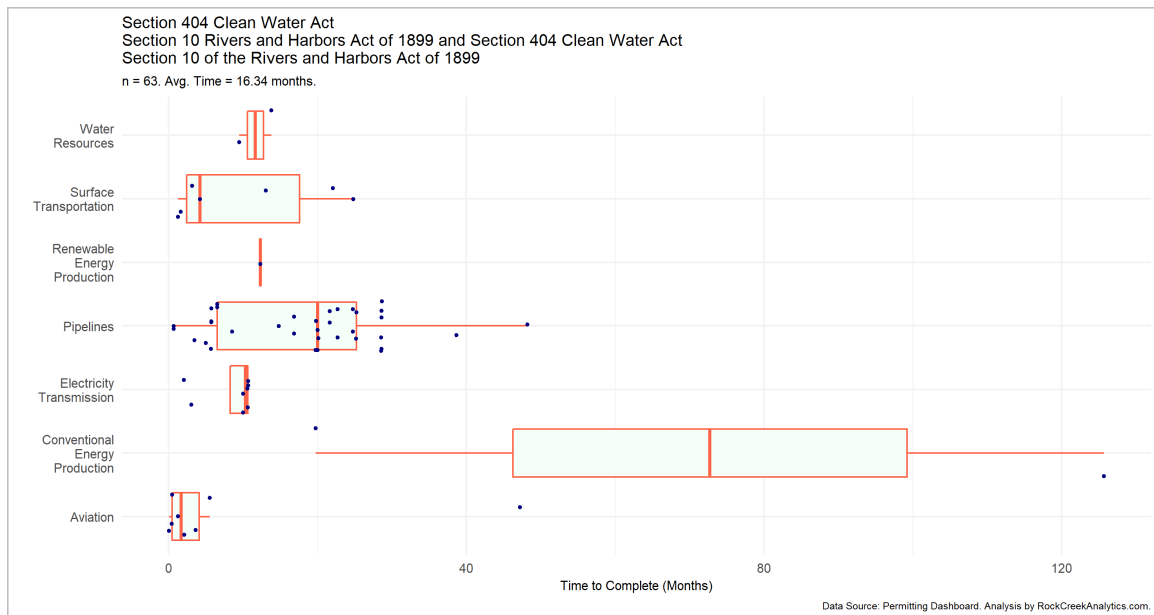


Figure 5: Time to Complete - Section 404 of Clean Water Act Permit and Section 10 of the Rivers and Harbors Act Authorization

Sector	Cases	Minimum	Average	Maximum
Aviation	8	0.03	7.59	47.24
Conventional Energy Production	2	19.76	72.72	125.69
Electricity Transmission	8	2.04	8.46	10.68
Pipelines	35	0.69	18.57	48.2
Renewable Energy Production	1	12.33	12.33	12.33
Surface Transportation	7	1.28	10.05	24.82
Water Resources	2	9.5	11.65	13.81
All	63	0.03	16.34	125.69

Table 4: Minimum, Average and Maximum Times (Months) for Sec. 404 CWA Permit and Sec. 10 of Rivers and Waters Act Authorization

### 3.4 Section 305 Essential Fish Habitat Consultation

Section 305 Essential Fish Habitat (EFH) consultations are needed if a Federal action “*may adversely affect essential fish habitat*” [13]. These consultations are done with NOAA [14] and governed by the Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1801-1891(d)) Section 305(b). Time to complete are shown in Figure 6.

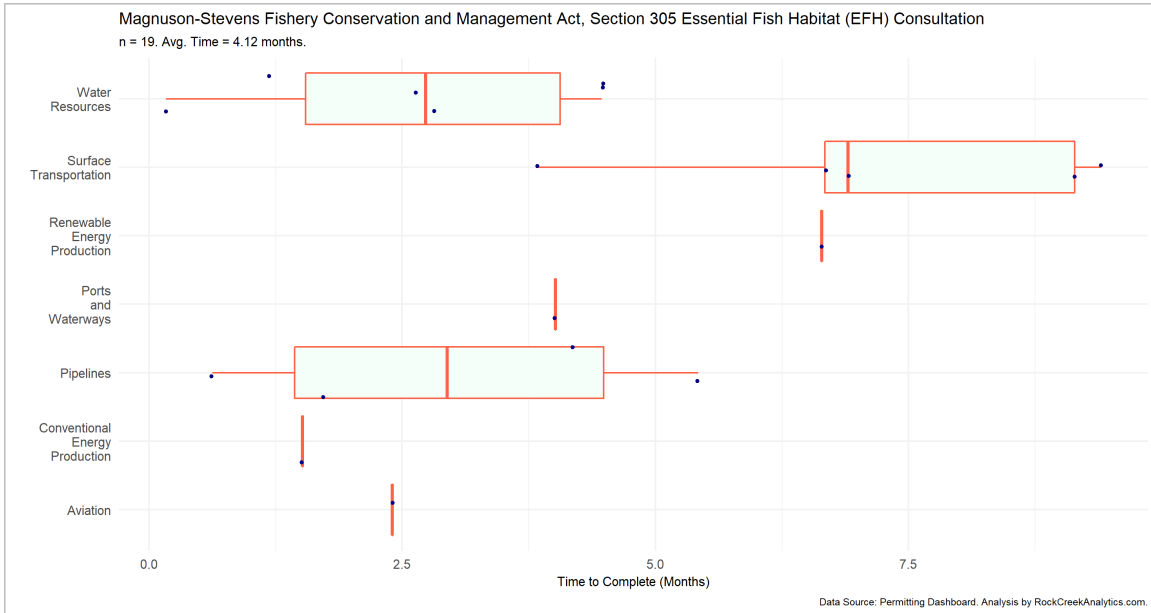


Figure 6: Time to Complete - Section 305 Essential Fish Habitat Consultations.

Sector	Cases	Minimum	Average	Maximum
Aviation	1	2.4	2.4	2.4
Conventional Energy Production	1	1.51	1.51	1.51
Pipelines	4	0.62	2.98	5.42
Ports and Waterways	1	4.01	4.01	4.01
Renewable Energy Production	1	6.64	6.64	6.64
Surface Transportation	5	3.85	7.19	9.4
Water Resources	6	0.16	2.62	4.47
All	19	0.16	4.12	9.4

Table 5: Minimum, Average and Maximum Times (Months) for Section 305 Consultation

### 3.5 USACE Section 408 Permit

Section 408 is the “process that allows alteration to a federally authorized project” [15]. The permit is managed by the US Army Core of Engineers (USACE). Figure 7 provides the time to complete the Section 408 permits.

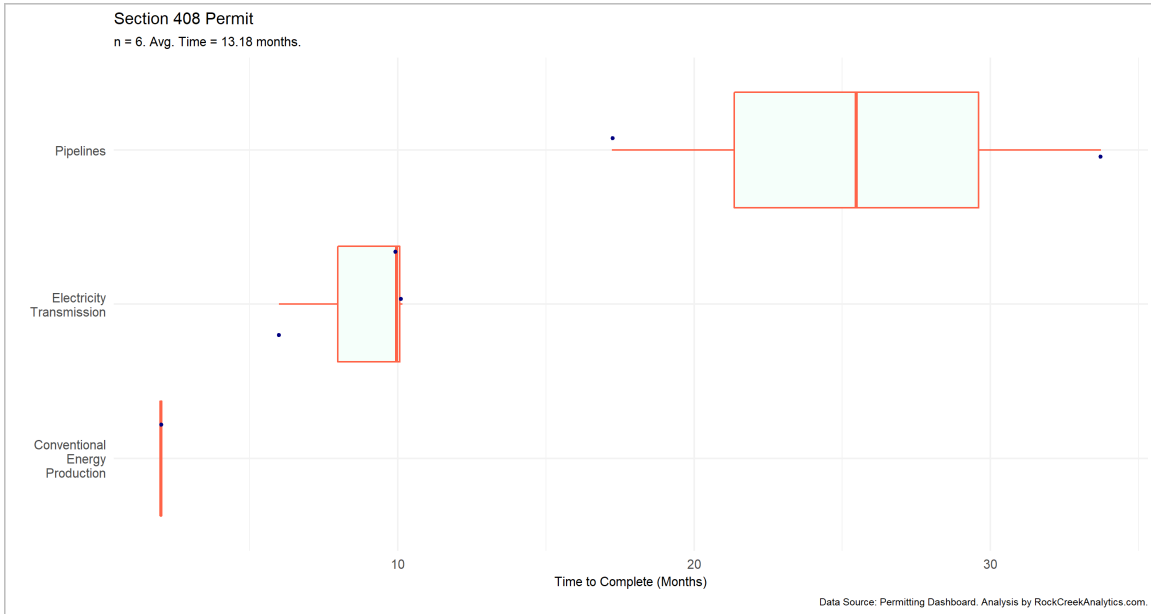


Figure 7: Time to Complete - Section 408 Permit

Sector	Cases	Minimum	Average	Maximum
Conventional Energy Production	1	2.01	2.01	2.01
Electricity Transmission	3	5.98	8.7	10.16
Pipelines	2	17.23	25.48	33.73
All	6	2.01	13.18	33.73

Table 6: Minimum, Average and Maximum Times (Months) for Section 408

### 3.6 Right-of-Way Authorization

Right of way (ROW) authorizations are required for proposed rights-of-way over, upon, under, or through public lands. Depending on the project, location and the specific characteristics of the project, the ROW authorizations need to be obtained from Department of Interior’s Bureau of Land Management [16], the Fish and Wildlife Service [17] or the Bureau of Indian Affairs [18] or the US Department of Defense [19]. Figure 8 provides time to complete the right of way authorizations.

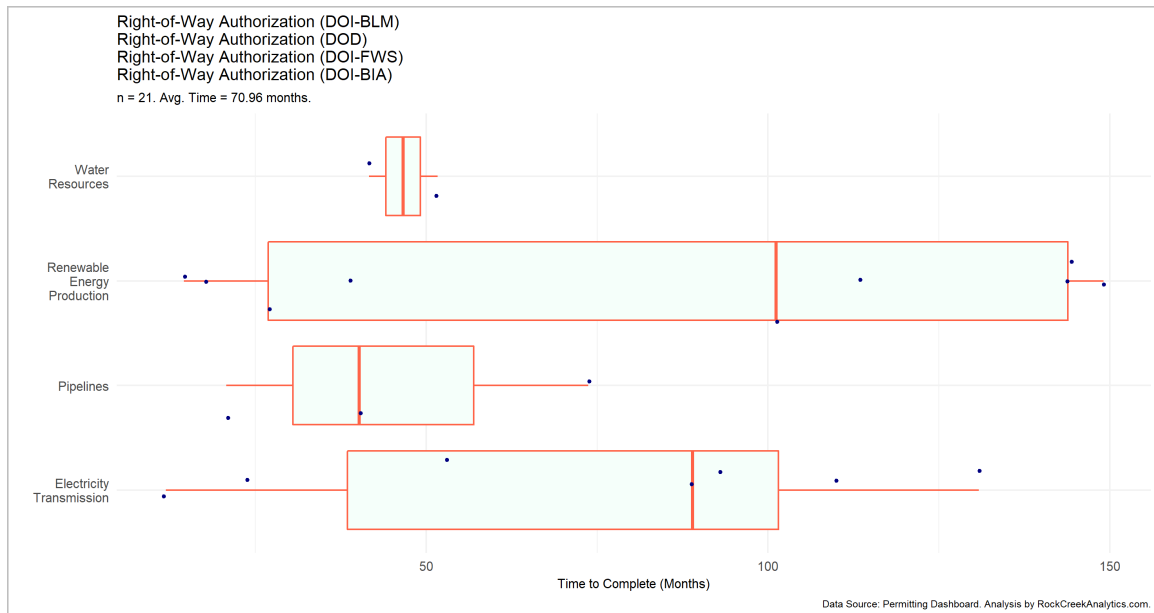


Figure 8: Time to Complete - Right-of-Way Authorization

Sector	Cases	Minimum	Average	Maximum
Electricity Transmission	7	11.87	73.1	130.85
Pipelines	3	20.75	44.87	73.68
Renewable Energy Production	9	14.53	83.4	149.13
Water Resources	2	41.59	46.62	51.65
All	21	11.87	70.96	149.13

Table 7: Minimum, Average and Maximum Times (Months) for Right of Way Authorization

### 3.7 Section 106 Historic Preservation Review

Section 106 (National Historic Preservation Act of 1966) reviews are necessary when “a federal or federally-assisted project has the potential to affect historic properties” [20]. Figure 9 provides time to complete the Section 106 reviews.

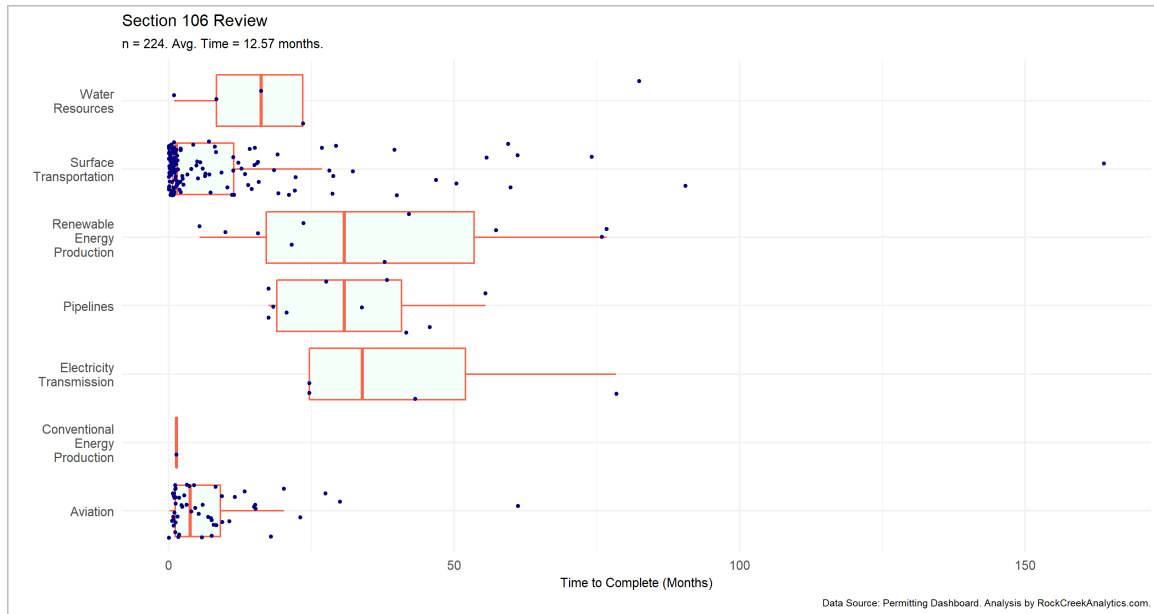


Figure 9: Time to Complete - Section 106 Review

Sector	Cases	Minimum	Average	Maximum
Aviation	54	0.1	7.48	61.18
Conventional Energy Production	1	1.35	1.35	1.35
Electricity Transmission	4	24.66	42.72	78.38
Pipelines	10	17.52	31.66	55.5
Renewable Energy Production	10	5.42	36.59	76.67
Surface Transportation	140	0.03	10.18	163.79
Water Resources	5	0.99	26.29	82.39
All	224	0.03	12.57	163.79

Table 8: Minimum, Average and Maximum Times (Months) for Section 106 Review

### 3.8 Natural Gas - Pipelines, Facilities and Export

Natural gas projects (pipelines and facilities) requires relevant certificates or authorizations from the Federal Energy Regulatory Commission [21]. Export of natural gas requires authorization from the Department of Energy [22]. These times to complete are show in Figures 10, 11 and 12.

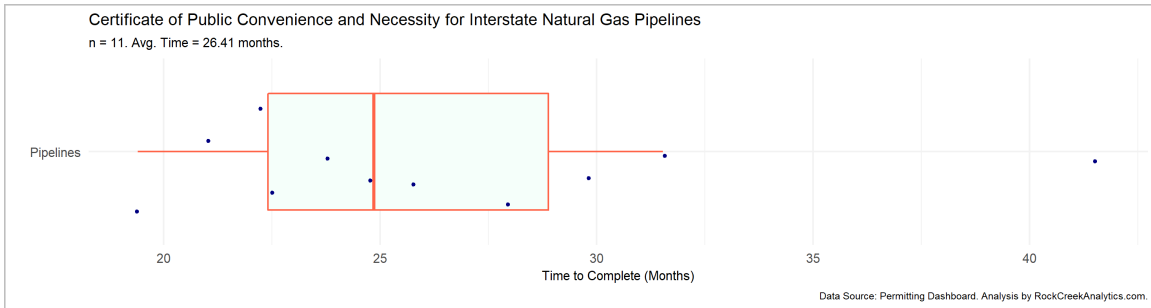


Figure 10: Time to Complete - Certificate of Public Convenience and Necessity for Interstate Natural Gas Pipelines

Sector	Cases	Minimum	Average	Maximum
Pipelines	11	19.4	26.41	41.62
All	11	19.4	26.41	41.62

Table 9: Minimum, Average and Maximum Times (Months) for Natural Gas Pipelines Certificate of Public Convenience

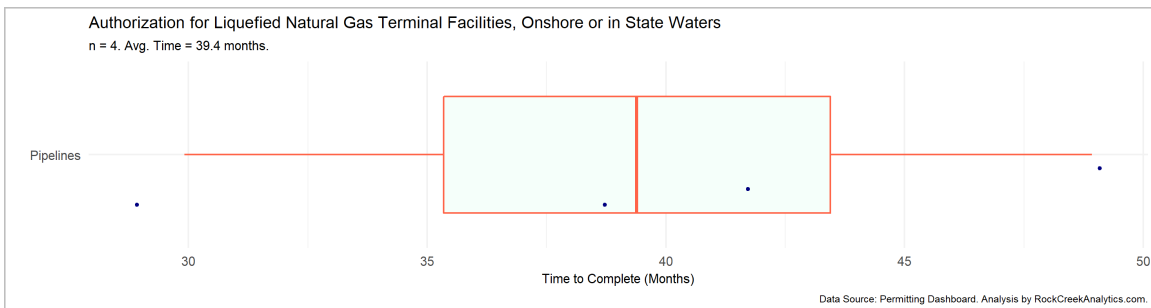


Figure 11: Time to Complete - Authorization for Liquefied Natural Gas Terminal Facilities

Sector	Cases	Minimum	Average	Maximum
Pipelines	4	29.92	39.4	48.92
All	4	29.92	39.4	48.92

Table 10: Minimum, Average and Maximum Times (Months) for LNG Facility Authorization

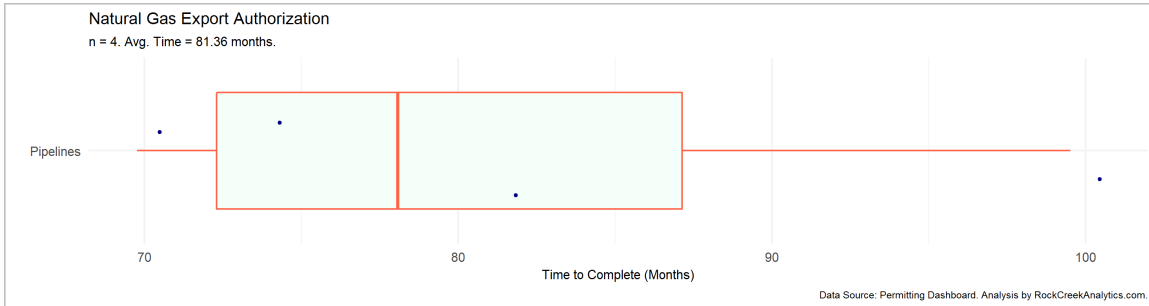


Figure 12: Time to Complete - Natural Gas Export Authorization

Sector	Cases	Minimum	Average	Maximum
Pipelines	4	69.76	81.36	99.52
All	4	69.76	81.36	99.52

Table 11: Minimum, Average and Maximum Times (Months) for Natural Gas Export Authorization

### 3.9 Nuclear Power Plant – Combined (Construction and Operating) License

The US Nuclear Regulatory Commission issues a combined license to construct and operate nuclear power plants [23]. The time to complete this license is shown in Figure 13.

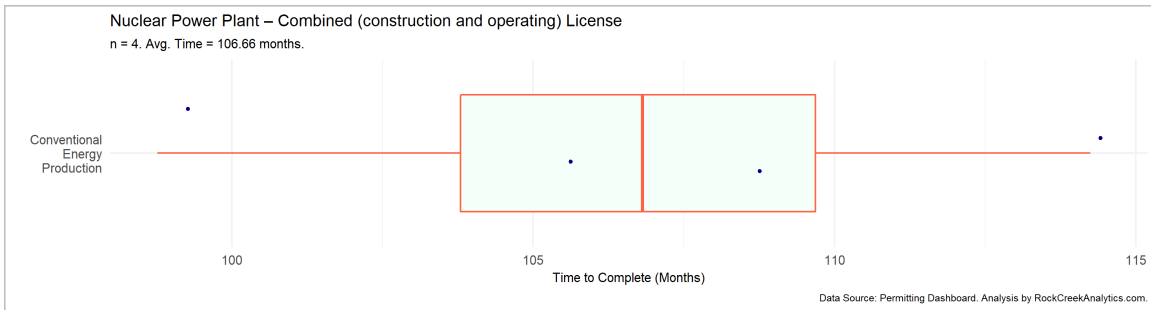


Figure 13: Time to Complete - Nuclear Power Plant – Combined (Construction and Operating) License

Sector	Cases	Minimum	Average	Maximum
Conventional Energy Production	4	98.76	106.66	114.25
All	4	98.76	106.66	114.25

Table 12: Minimum, Average and Maximum Times (Months) for Nuclear Power Plant License



## 4 Closure

This article has provided an overview of the typical time to complete the most common permits required in large infrastructure projects. We do caution that the timeline information provided is used only as a guidance; every project is unique in its combination of sector, location, size, footprint, technologies involved and environmental impacts and the exact time for any project's specific permits will depend on those factors.

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