
COUNCIL ON ENVIRONMENTAL QUALITY

# Permitting Technology Action Plan

MAY 30, 2025

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# Introduction

On April 15, 2025, President Trump signed the Presidential Memorandum, *Updating Permitting Technology for the 21st Century* to address the lack of transparency, fragmented data management, and outdated technology in the Federal environmental review and permitting process. The Presidential Memorandum calls on the Council on Environmental Quality (CEQ) to establish a Permitting Innovation Center and develop a Permitting Technology Action Plan to leverage modern technology to effectively, efficiently, and expeditiously navigate the Federal environmental review and permitting process for infrastructure projects. This Permitting Technology Action Plan will guide the government-wide implementation of 21st-century technology to eliminate needless delays to important infrastructure projects, protecting the economic well-being and welfare of the American people.

The Presidential Memorandum directs Federal agencies to make maximum use of technology in environmental review and permitting processes for infrastructure projects of all kinds. Given that direction, CEQ encourages all agencies to work towards the service delivery standards outlined in this Permitting Technology Action Plan. However, the Presidential Memorandum specifically directs the agencies listed in 42 U.S.C. 4370m-1(b)(2)(B)(i)-(xii) to adopt and begin implementing the data and technology standard and minimum functional requirements within 90 days of this plan's issuance.

# Updating Permitting Technology for the 21st Century

This section describes the primary elements and goals of the Permitting Technology Action Plan and Permitting Innovation Center, informed by CEQ's E-NEPA Report to Congress, and outlines the service delivery standards for modern National Environmental Policy Act (NEPA) and permitting technology systems.

## Permitting Technology Action Plan

The Permitting Technology Action Plan will guide Federal agencies as they make maximum use of technology to digitize permit applications, expedite reviews, enhance interagency coordination on projects, and give sponsors more transparency and predictability on project review schedules. This Permitting Technology Action Plan contains:

- Minimum functional requirements for environmental review and permitting systems;
- An initial NEPA and permitting data and technology standard;
- A 90-day timeline and implementation roadmap for the agencies listed in 42 U.S.C. 4370m-1(b)(2)(B)(i)-(xii) to adopt and begin implementation of the data and technology standard and minimum functional requirements; and
- A governance structure for implementation.

To make maximum use of technology in environmental review and permitting processes, Federal agencies need to move toward developing and employing an integrated, interoperable digital ecosystem of NEPA and permitting technology systems. In order to achieve this interoperability, agencies should plan to build systems on modern cloud-based technology stacks wherever possible. This will allow seamless information exchange between agencies, simplify interactions for applicants, and deliver transparent information to stakeholders.

## E-NEPA Report to Congress

This Permitting Technology Action Plan is informed by CEQ's E-NEPA Report to Congress,[1] required by 42 U.S.C. 4336d. The report found that because agency practice relies often on outdated systems, fragmented data management, and disconnected digital tools, technology has tremendous potential to increase the efficiency and effectiveness of agency NEPA and permitting practices. To realize that potential, CEQ's E-NEPA Report to Congress recommended:

- Creating common standards for data associated with NEPA processes and documents;
- Developing a common model for how to structure data and design agency systems that will enable sharing of information;
- Supporting agency adoption of shared NEPA tools through iterative development of new and existing software applications; and
- Automating the exchange of data among agency systems to provide a unified experience.

This Permitting Technology Action Plan integrates these core recommendations.

## Permitting Innovation Center

On April 30, 2025, CEQ established the Permitting Innovation Center that will be staffed and led by CEQ, and supported by the General Services Administration Technology Transformation Service. The Permitting Innovation Center will coordinate with agencies on implementing this Permitting Technology Action Plan, including through designing and testing prototype tools and providing technical support for implementation. Prototyping efforts will focus on case management systems, application submission and tracking portals, automation of application and review processes, data exchange between agency systems, and acceleration of complex reviews.

CEQ will make information available on these efforts at: Permitting.Innovation.gov.

## Service Delivery Standards for Modern NEPA and Permitting Technology

In order to deliver effective and efficient environmental review and permitting processes for the 21st century, the Federal government must leverage technology to tackle longstanding problems—for example, reliance on outdated systems, fragmented data management, and disconnected digital tools, as identified in the E-NEPA Report. The solutions laid out in this Permitting Technology Action Plan will achieve a unified interagency environmental review and permitting data system consisting of interconnected agency systems and shared services. CEQ has identified four service delivery standards—high-level goals for environmental review and permitting systems—and ten core capabilities necessary to enable modern service delivery (see *Minimum Functional Requirements and Implementation Paths* section). As agencies consider the use of artificial intelligence (AI) in their NEPA and

[1] Council on Environmental Quality, *Report to Congress on the Potential for Online and Digital Technologies to Address Delays in Reviews and Improve Public Accessibility and Transparency under 42 U.S.C. 4332(2)(C)* (July 17, 2024), *available at* https://ceq.doe.gov/docs/ceq-reports/CEQ-E-NEPA-Report-to-Congress_Final-(508).pdf

permitting software systems, they should reference the Office of Management and Budget memorandum M-25-21 on *Accelerating Federal Use of AI through Innovation, Governance, and Public Trust*.

To achieve a modern standard for efficient, effective, and agile service delivery for NEPA and other permitting processes, agencies should identify available resources to prioritize innovation in four key areas:

## 1. Business Process Modernization

Environmental review and permitting processes are comprised of a variety of business processes – workflows, tasks, and structured activities – that can be managed as a series of actions and events. Agency use of modern software that can track the full lifecycle of these processes is critical for effective project management and process improvement; enabling workflow automation, transparency, and tracking, and simplifying reporting requirements. CEQ's study of NEPA and permitting technology shows that, while some agencies have implemented detailed case management systems that track progress and tasks over time, many agencies rely on a variety of manual processes for managing reviews. Agencies should implement modern business process management systems that track workflows. These systems should also produce interoperable event, task, and other milestone data that can be shared with other agencies' systems. Modern systems can reduce costs and improve performance for all agencies, whether they process high volumes of low-impact project reviews or manage more complex, multi-stakeholder reviews, or both. Case management systems are essential tools for managing the tasks and activities associated with evaluation of environmental review and permit processing, and provide agencies more data and insight into these processes (e.g., to identify wait time/touch time ratios, flag potential bottlenecks, or highlight opportunities for process improvement interventions).

## 2. Workflow Automation

Even low-impact project reviews, such as categorical exclusions, may require frontline staff to consider multiple data sources and workflow steps before making a decision. Well-defined business rules can enable process automation that allows agencies to expedite routine review tasks and workflows. CEQ's Permitting and Innovation Center can assist agencies with developing the policy and governance structures necessary to build, update, and maintain business rules related to permitting workflow automation. Existing best-in-class environmental review and permitting tools use defined decision logic, derived from statutory and regulatory requirements and supplemented by subject matter expertise, to create business rules that can assist staff by walking them through the applicable criteria and necessary information requirements for an agency decision. For instance, the U.S. Fish and Wildlife Service's Information for Planning and Consultation system uses determination keys—a logically structured set of questions—to determine whether a project qualifies for a pre-approved consultation outcome based on existing programmatic consultations. Similar systems can employ automation through predefined geospatial data queries and the development and storage of a decision record that supports the agency permit or review determination. These tools are particularly useful for lower-complexity reviews (e.g., the application of a previously established categorical exclusion under NEPA) where the actions, conditions, and circumstances that must be analyzed are pre-defined.

## 3. Digital-First Documents

The existing practice of preparing environmental review and permitting documents, even when technology is used, is often still a digitized paper-based process. Agencies should design environmental review and permitting documents to deliver structured and readily usable data, with a traditional document format being just one application of that data. Taking a digital-first perspective will improve document quality, lead to more concise reports, and enable the reuse and accessibility of the data underpinning the agency analysis and decision. One method that agencies can use to achieve this digital-first approach is the creation of structured data packages as part of the environmental analysis. These data packages should follow a standard format, use consistent metadata structures, reference existing data sources used in the analysis, and where novel studies or models were conducted, include that information as supplemental documentation. CEQ's NEPA and Permitting Data and Technology Standard provides a basic document-level metadata structure for agencies to follow. Structuring environmental review and permitting documents as data will enable objective, technology-assisted evaluation of environmental impacts, analysis, and documentation, and accelerate future document drafting.

## 4. Minimizing Timeline Uncertainty

Agency leadership, project sponsors, and the public should have access to up-to-date information on the status of project reviews and accurate timelines for process completion. Timeline data should include milestones for agency actions as well as project sponsor actions, such as the submission of required information for application processing. In addition to tracking major milestones associated with the formal, publicly available project schedule, agency case management systems should also track events and milestones that occur before and after these major process milestones to assist with internal agency planning and ongoing process improvement. Implementing automated data collection and reporting from case management systems enables program and office leadership within an agency to have access to predictive analytics that reduce or eliminate risk in reaching a decision. This information can assist agencies with improving transparency and accuracy of timeline estimates, which in turn can help project sponsors better plan for their application preparation and their project delivery milestones.

# Minimum Functional Requirements and Implementation Paths

In order to reach these four standards of 21st-century environmental review and permitting service delivery, agencies should develop and implement the following ten fundamental capabilities:

1. Implement data standards
2. Application data sharing
3. Automated project screening
4. Access to screening criteria
5. Automated case management tools
6. Integrated GIS analysis tools
7. Improved document management
8. Automated comment compilation and analysis
9. Administrative record management
10. Adopt common or interoperable agency services

These ten capabilities represent the minimum functional requirements agencies will need in order to accelerate innovation in NEPA and permitting technology specifically, though they do not address other requirements for effective service delivery in general (e.g., cybersecurity, cloud architecture, IT governance). If implemented, these capabilities will help enable agencies to digitize, automate, and scale efficient and effective services for their staff, project proponents, and the public. Conversely, agencies that fail to adopt and implement these capabilities will likely face barriers to reaching modern technological capacity and functionality.

The capabilities are described below in the context of a functional maturity model,[2] starting with "foundational capabilities" and progressing to "leading-edge practices." CEQ created this maturity model of minimum functional requirements to serve as a roadmap for agencies as they modernize their NEPA and permitting technology systems and work to create a unified interagency permitting and environmental review data system. Agencies should work to achieve "leading-edge practices" for all ten capabilities. However, depending on a given agency's existing technological capabilities, they may be more or less advanced along this maturity model for a given capability. Accordingly, the precise nature of the steps and sequence of actions necessary to implement this Permitting Technology Action Plan will differ from agency to agency. As discussed in the *Implementation Roadmap and Timeline* section, agencies will develop implementation plans to achieve the leading-edge functionality in each of the minimum functional requirements, or where not applicable, explain why this is the case. Wherever possible, CEQ encourages agencies to jointly develop tools, share codebases and configurations layers, and use shared services to expedite the creation of a unified system.

[2] A maturity model is a structured framework used to assess and improve an organization's capabilities, practices, and processes in a specific area. It can help organizations understand their current state and identify areas for continuous improvement.

In implementing the Presidential Memorandum and this Permitting Technology Action Plan, CEQ will provide policy leadership and guidance to assist agencies in delivering a unified government-wide interagency environmental review and permitting data system. Development of such a system will consider important issues, including the sensitivity of certain information managed by agencies. Such a unified system will be achieved through decentralized interconnected agency systems and, in some cases may be most effectively accomplished through centralized shared services such as a common applicant portal or a data store (see capability 10 below). Achieving a unified and interoperable system will require all agencies to adopt and sustain many, if not all, of the leading-edge practices described below. Within the framework described herein and as appropriate, properly marked sensitive data received from applicants will be protected from public disclosure and improper utilization by AI.

CEQ has identified the following ten minimum functional requirements that will enable agencies to achieve the service delivery standards for modern NEPA and permitting technology discussed above:

## 1. Implement Data Standards

Data standards for environmental reviews and permitting enable all aspects of efficient review systems. CEQ has issued an initial NEPA and Permitting Data and Technology Standard as part of this Permitting Technology Action Plan. This data and technology standard provides a common government-wide approach to structuring data associated with NEPA and permitting processes. The data and technology standard is designed around NEPA concepts and context, but it is meant to encompass permitting and other authorization processes as well. Future versions of the data and technology standard may be modified with lessons learned as agencies apply the standard outside the NEPA context. Agencies are encouraged to specify additional data and information requirements for their own agency-specific processes and requirements.

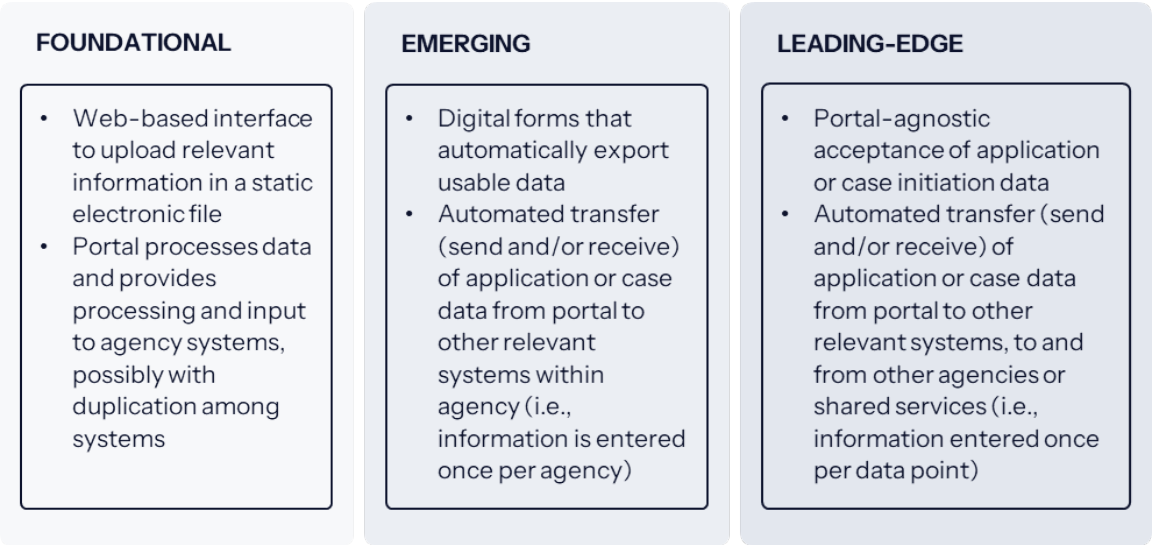
These data standards will support interoperability between systems; increase data visibility and usability; provide a framework for structuring documents for technology-enabled review; and define information or steps required to conduct reviews. In particular, the data standards form the basis for interoperable systems by enabling common Application Programming Interfaces (APIs), a common mechanism for applications and databases to exchange machine-readable information. Each agency's adoption of this data standard, through mapping and aligning agency system architecture, is an essential first step for successfully deploying the rest of the minimum functional requirements described below.

### Implementation Path for Data Standards

## 2. Application Data Sharing

Enabling automated transfer of relevant environmental review and permit application data among all agencies that may need to issue authorizations, undertake analyses, or otherwise be involved in government actions necessary to review, facilitate, or authorize a given project will significantly improve the efficiency and effectiveness of environmental reviews. Even in cases where a Federal agency is the project sponsor, such as with Federally-managed lands and infrastructure, that agency will still benefit from using application data sharing to transmit environmental review and permit-related data with other agencies and offices involved in the project review. Application data can be easily and securely shared through a well-designed common application portal; alternatively, such data can also be shared through a "no-wrong-door" approach, where only relevant data moves to appropriate systems through automated mechanisms such as APIs– regardless of which agency initially received the information.

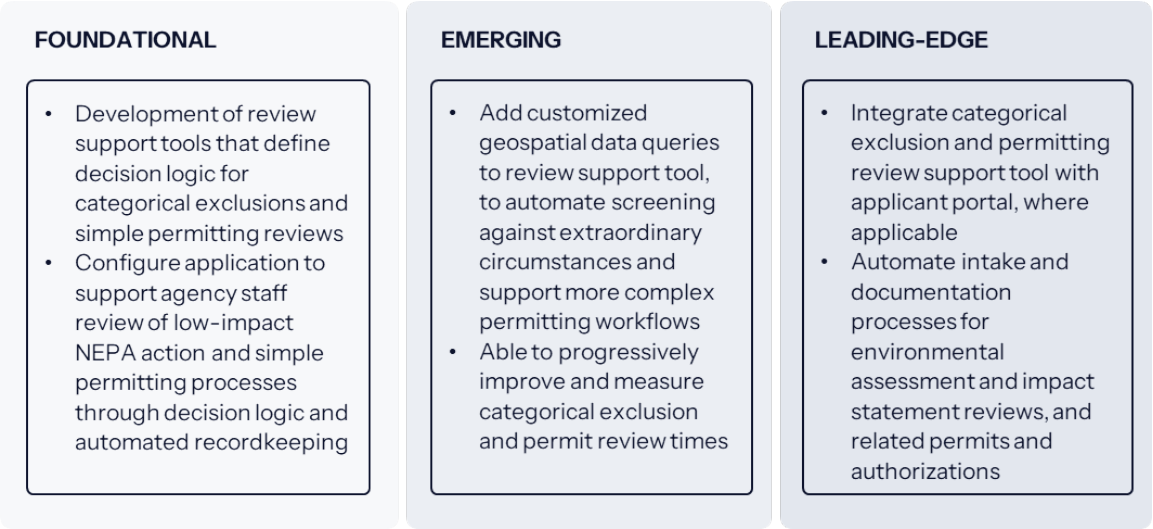
### Implementation Path for Application Data Sharing




## 3. Automated Project Screening

Agencies should develop modern project screening systems that assist frontline staff as they complete complex and currently time-consuming processes. These include reviewing applicant-provided information for completeness and accuracy, making subject matter expert determinations, and screening project data against pre-defined geospatial data layers and decision logic. Such systems can: assist agency staff in rapidly determining whether a categorical exclusion, programmatic consultation, or general permit applies to an action; automate the creation of a project administrative record; and promote consistency and accuracy in review methodology. If further review is needed, a leading-edge system could also initiate a workflow to advance the application to the next level of review. It could also inform modifications to an action to allow it to proceed under a categorical exclusion, programmatic consultation, or general permit under applicable laws.

### Implementation Path for Automated Project Screening

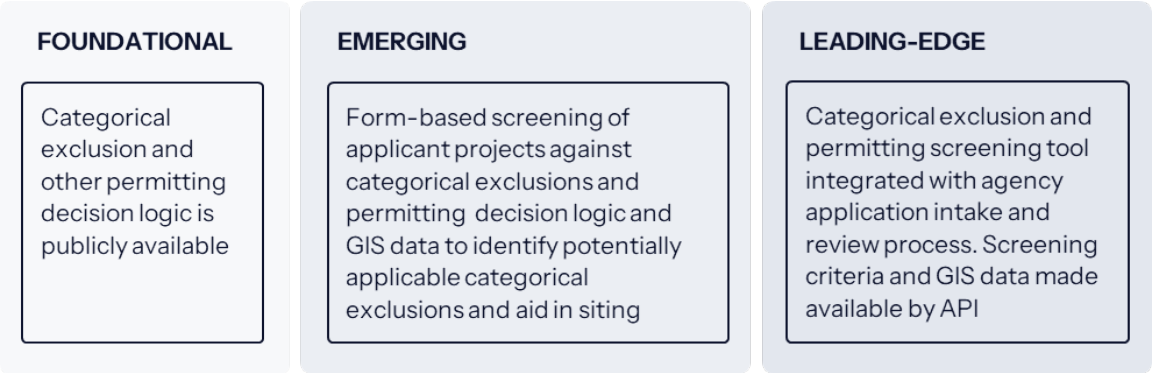



## 4. Access to Screening Criteria

Agencies should develop decision models for environmental review and permitting processes and make publicly available the criteria used in making decisions in a standardized format, such as decision model notation (DMN), to facilitate the development of improved tools outside of government that can inform project siting decisions. Decision criteria used by Federal agencies in screening tools for conducting analysis or project design can be valuable information for project sponsors and private sector service providers looking to inform the development of initial project proposals and permit applications.

As Federal agencies build screening tools, they should publish the underlying decision models, an inventory of geospatial data layers used, and other structured data sources. This information will enable project sponsors and private sector service providers to design and propose projects with fewer potential impacts. Sharing decision models will also assist with the development of increasingly complex systems that could integrate multiple agency processes and provide agencies that have not yet developed an automated project screening tool with a shared resource to use as a starting point. Project sponsors relying on agency-validated decision models and geospatial data layers can better evaluate proposals and mitigate impacts during site selection and planning phases, which can in turn accelerate Federal reviews and reduce the likelihood of required design changes during reviews.

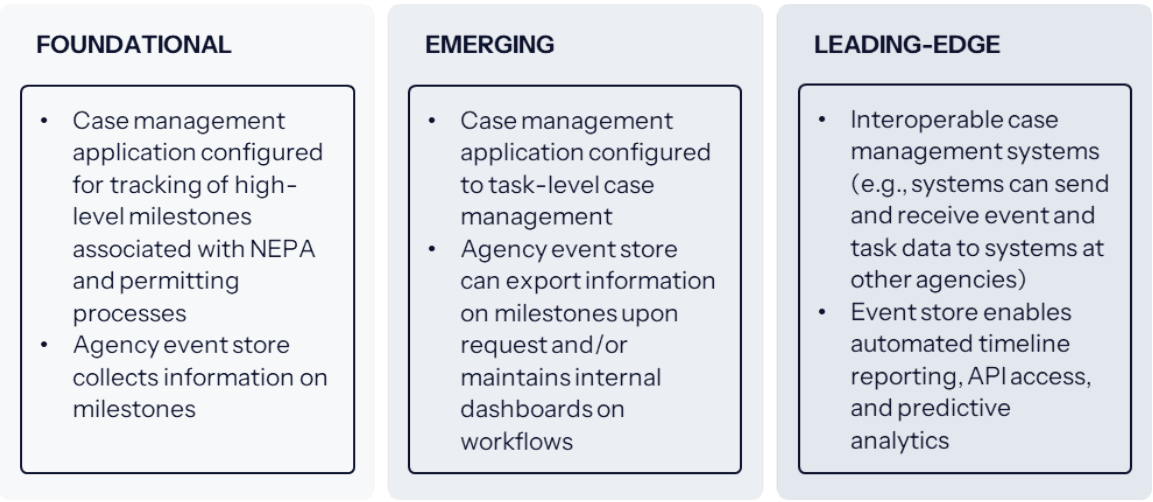
### Implementation Path for Access to Screening Criteria




## 5. Automated Case Management Tools

It is critical for agencies to enhance how they track the events, tasks, and rules that underlie environmental review and permitting processes. Some agencies currently implement detailed case management systems that track progress and tasks over time; but many agencies rely on spreadsheets, email, phone, or other "manual" processes for conducting and managing reviews. Modern case management relies on an underlying "event store," or repository of relevant data and metadata that enables advanced tracking, reporting, and optimization. Agencies should implement case management systems that aid workflows and produce interoperable event, task, or other milestone data artifacts. These functions are essential to agencies as they evaluate current processes, track key metrics and performance, and pilot improvement interventions.

### Implementation Path for Automated Case Management Tools

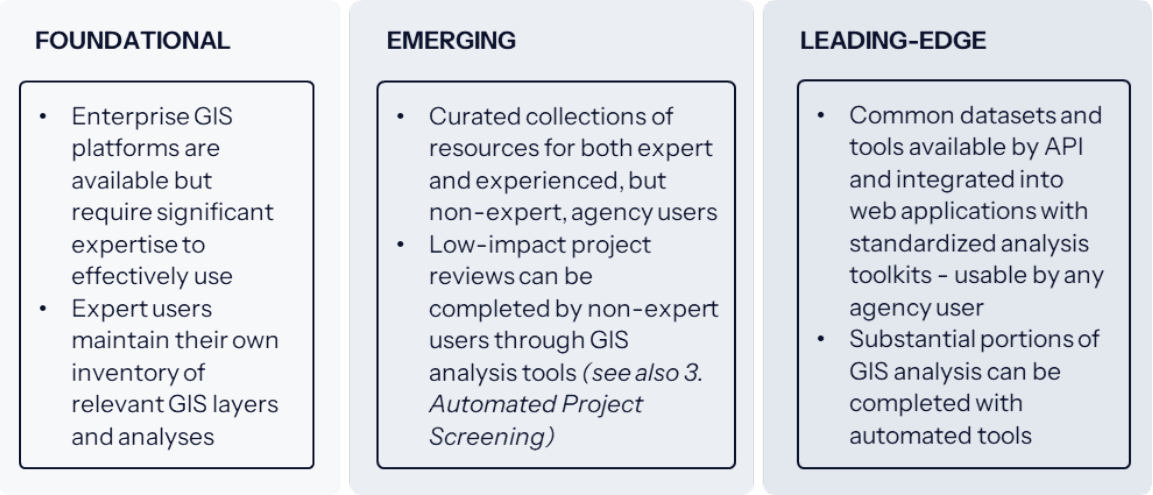


## 6. Integrated GIS Analysis Tools

Environmental review and permitting processes rely on up-to-date and accurate geospatial information to inform agency decision-making. While environmental impacts vary based on the type of project being reviewed, the location of the project also is important in assessing a project's potential impact and what reviews or permits might be applicable. Many systems in the environmental review and permitting software ecosystem interact with, process, display, or store some form of geospatial data. Implementing modern GIS systems can also reduce staff burden by enabling automated review and avoiding duplicative analysis. For example, the Environmental Protection Agency maintains the NEPAssist tool which can cross-reference an input project location (i.e., a drawn polygon or other spatial boundary) against over 50 pre-defined data layers covering resources such as air, water, habitat, and floodplains.

Federal agencies should collaborate on identifying and sharing the most commonly used geospatial data layers and models for each resource analyzed as part of an environmental review, permit-related analysis, or for a given study area, subject to restrictions associated with protected data. This collaboration should take into account the need for ongoing curation of geospatial data, definition of authoritative datasets, identification of data gaps, and other considerations. Well-defined and updated geospatial data layers will assist with the development of tools that can expedite reviews, adoption of existing analyses, and exchange of relevant planning-related information among agencies and with project sponsors.

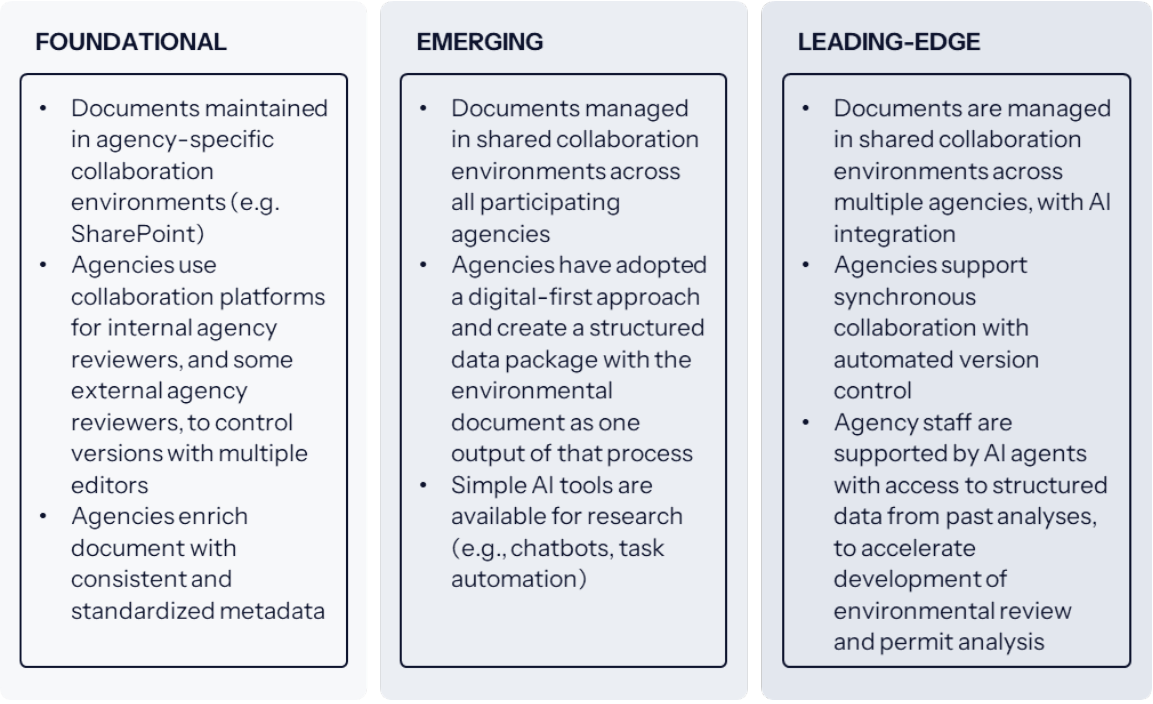
### Implementation Path for Integrated GIS Analysis Tools



## 7. Improved Document Management

Environmental review and permitting processes can generate large amounts of documentation; some of which is highly technical in nature, and much of which is supported by geospatial information and complex analysis. The current documentation process results in agencies packaging this complex information into a PDF or similar static file format, without providing access to the native file type or original data structure used in the analysis (e.g., geospatial data layers, model variables and outputs). Agencies can improve upon these existing practices by preserving metadata associated with geospatial analysis conducted as part of a review (i.e., a shapefile defining the geographic extent of the area analyzed for each resource category along with reference to the geospatial data layers used in the analysis). Similarly, for modeling and other analysis conducted in support of an environmental review or permitting process, agencies should preserve a machine-readable version of such analysis to assist with topic-based exploration, adoption or reliance on existing analyses for future reviews, preserving computational notebooks and datasets in their native format if applicable. Designing data structures and document management systems with machine-readable data in mind will enable AI analysis of existing studies and unlock future innovations in drafting support and knowledge discovery in older documents or datasets. Agencies should think of environmental review and permitting document content as structured data and build systems that can enable collaboration with other agencies, AI tools, and other data.

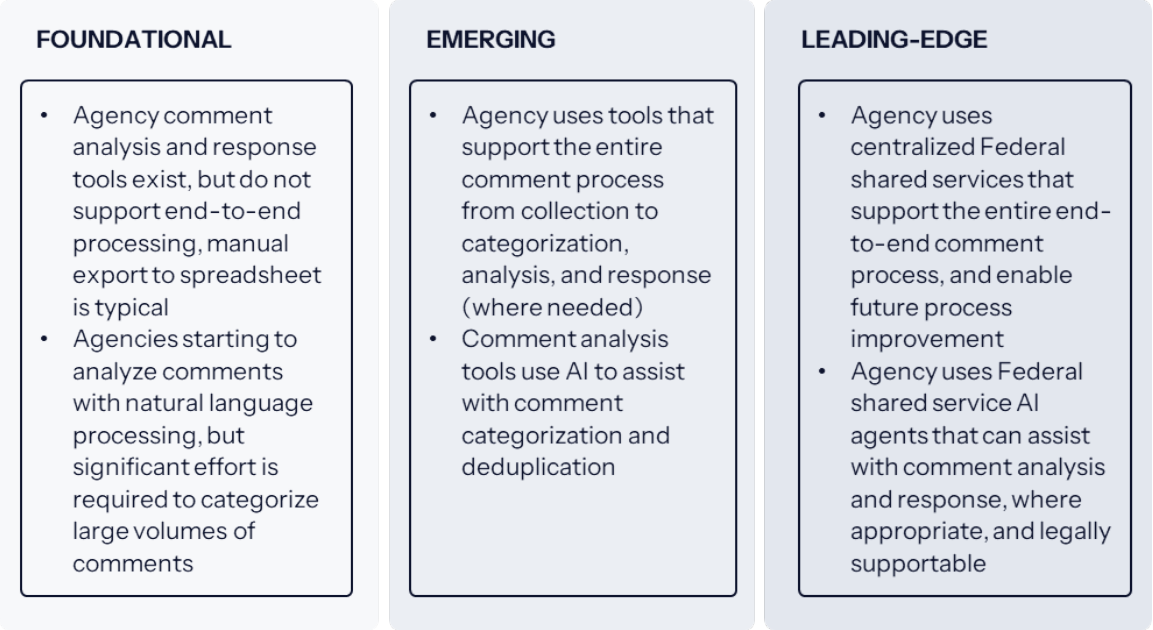
### Implementation Path for Improved Document Management



## 8. Automated Comment Compilation and Analysis

For required public comment processes, agencies have a variety of methods for requesting, storing, reviewing, and responding to comments from the public. Although there is significant experience in analyzing comments using natural language processing (NLP), there is also significant potential for AI tools to assist with comment analysis. Comment processing, from submission to analysis and response, is a function that could benefit from common or shared services and platforms. While many agencies currently use Regulations.gov and the Federal Docket Management System to accept and process comments, agencies should have access to robust shared services for comment categorization and response that handle the lifecycle of comment submission, analysis, categorization, and response with AI support (where such support is appropriate and legally authorized).

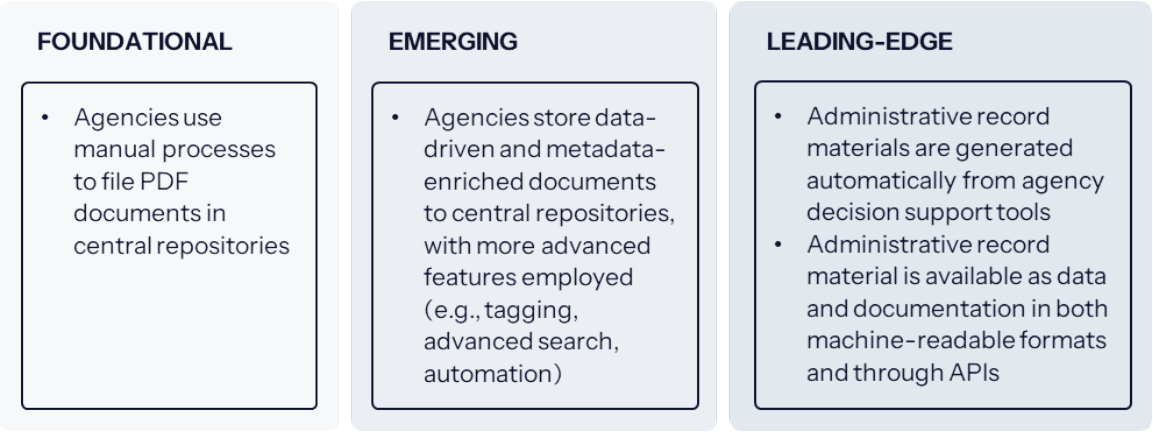
### Implementation Path for Automated Comment Compilated and Analysis




## 9. Administrative Record Management

Retrieving applicant- and agency-generated documents that supported an environmental review or permit decision are required for a variety of purposes, including compliance with the applicable federal records requirements and responding to Freedom of Information Act requests or legal challenges of agency decisions. For example, in litigation, storing and retrieving information that makes up the administrative record should be an efficient process that is automated throughout the analysis and document development process. Implementing data standards and modern systems can enable agencies to easily maintain both portable document formats and data-rich repositories accessible by machine and human users.

### Implementation Path for Administrative Record Management




## 10. Adopt Common or Interoperable Agency Services

The typical process for building and operating environmental review and permitting software systems relies on a patchwork of technology stacks, ranging from low-code platforms with varying capability to custom-built, legacy systems that lack modern architecture or resilience. Agencies should investigate and increasingly invest in commercial-grade enterprise systems that allow for integration of shared services, shared applications, and common user experiences—while promoting data transparency and meeting or exceeding the latest security standards.

### Implementation Path for Common or Interoperable Agency Services

# Implementation Roadmap and Timeline

Agency implementation of the minimum functional requirements and data and technology standard that are part of this Action Plan will require planning for necessary resource allocation, including budgetary and staffing considerations. CEQ will work with agencies as they develop implementation plans to assist with prioritizing implementation actions and will provide templates and guidance for agencies to use in implementation planning. As agencies develop their implementation plans, they should consider the information contained in CEQ's E-NEPA Report to Congress, specifically section 2.5.2 *De-Risking the Development of NEPA and Permitting Technology*.

Pursuant to the Presidential Memorandum, agencies shall adopt and begin implementing CEQ's data and technology standard and minimum functional requirements by August 28, 2025 (ninety days from the issuance of this Permitting Technology Action Plan). To meet this requirement, agencies will:

- Identify the concepts in the data and technology standard in their existing NEPA and related permitting systems, conduct a cross-walk between those systems and the data and technology standard, and provide estimated completion dates for data retrieval capabilities and API implementation;
- Assess their current technological capabilities across the ten minimum functional requirements;
- Develop and submit to CEQ an implementation plan which lays out actionable steps necessary to achieve the foundational, emerging, and leading-edge practices identified in the *Minimum Functional Requirements and Implementation Paths* section; and
- Begin taking actions identified in their agency implementation plan.

Agency implementation plans should focus on NEPA and related authorization processes an agency is responsible for implementing. Agency plans should reflect incremental steps to achieve the leading-edge capabilities associated with each minimum functional requirement. Where a particular capability is not applicable given the agency's program requirements, an explanation to that effect should be provided. The specific actions in a given agency's implementation plan will depend on their existing technological capabilities, but agencies should plan to make meaningful progress towards the next stage of the maturity model for each minimum functional requirement in the next six to nine months. Agencies will provide periodic implementation updates no less than twice annually. CEQ will work with agencies to provide guidance and a format for these updates. As discussed in the *Governance* section, CEQ will use the Federal Permitting Improvement Steering Council to ensure agency views are represented in the development of updates to the data and technology standard and implementation of this Action Plan.

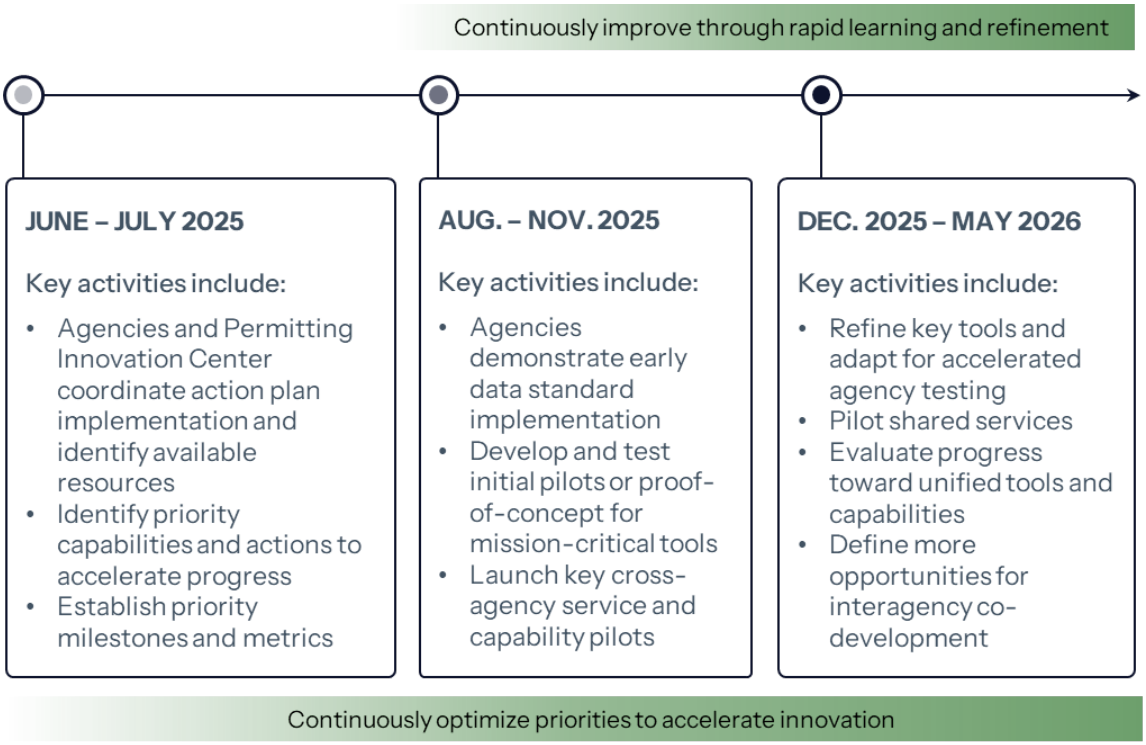
Concurrent with agency implementation, CEQ's Permitting Innovation Center will work with agencies on prototype tool development. The goal of this prototyping process is to design, test, demonstrate, and move to production tools that meet certain of the minimum functional requirements. CEQ will engage with agencies during the prototype development process so that agencies can inform the development process and use the prototypes to implement their own systems and reduce duplication of effort. The Permitting and Innovation Center will also look for opportunities to partner with agencies around the development of shared services, provide technical assistance, engage with agency Chief Information Officers, and assist with training and change management associated with technology implementation.

Private sector software and technology solutions will be a necessary component of the successful implementation of this Permitting Technology Action Plan. CEQ's Permitting Innovation Center will engage with private sector firms to provide demonstrations to agencies of commercial-off-the-shelf software, provide input on the solutions being sought by the Federal government, and solicit prototypes that can be acquired by agencies to fulfill the requirements of this Action Plan.

Effective implementation will require a range of innovative methods beyond traditional technology procurement and development, including:

- Rapid, agile prototyping and piloting of minimum-viable solutions;
- Prize and challenge competitions that disrupt traditional thinking and evolve what is possible; and
- Multi-agency procurements that more efficiently provision innovative shared services.

The following timeline lays out the key implementation steps necessary for agencies to take in order to meet this directive and implement the Permitting Technology Action Plan:



# Governance

The Federal environmental review and permitting process is carried out by many agencies with varying roles in the process such as project sponsor, lead agency, permitting or regulatory agency, consulting agency, along with various other roles and responsibilities. CEQ, through its Permitting Innovation Center, will develop prototype tools that implement the NEPA and permitting data and technology standard and support technology modernization for agencies involved in the environmental review and permitting process for infrastructure projects. In order to ensure that these agencies' views are represented in the development of these tools, updates to the data and technology standard, and implementation of this Action Plan, CEQ will rely on the Federal Permitting Improvement Steering Council (Permitting Council) for input and guidance as necessary. Where appropriate, CEQ will also conduct outreach to agencies not represented on the Permitting Council. CEQ will convene a staff-level working group to solicit input from agencies on the development of prototype tools, shared services, and other work of the Permitting Innovation Center.