# Reimagining U.S. Environmental Permitting in the Age of Commercial Solutions

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## Executive Summary

In the United States, environmental permitting delays remain a critical obstacle to infrastructure development. Despite bipartisan consensus on the urgency of decarbonization and energy security, permitting processes can stretch over several years, delaying vital projects and increasing costs. The April 2025 Executive Orders from the Trump Administration provided a strong mandate to fast track modernization: government agencies are now directed to prioritize commercial off-the-shelf (COTS) digital solutions and accelerate permitting digitization.

This whitepaper argues that the U.S. can meet these challenges by embracing digital processes, structured data, and embedded AI - building on successful international models, such as Denmark's. By focusing on standardization and leveraging proven technologies, agencies can increase speed, consistency, and transparency in permitting while maintaining compliance and public trust.

**1. The Problem:**
## A National Bottleneck to Infrastructure Progress

Environmental reviews under NEPA and permitting under various federal and state statutes often exceed 2-4 years, with some projects stalling indefinitely.

*These delays carry high costs:*
- Increased project financing costs
- Diminished investor confidence
- Setbacks to national energy security goals

An international research project estimated permitting cost in energy projects to be 1% of the total project of these often very large scale investments. Any developer and investor would happily pay two percent to get a permit fast, but this cannot be bought, because the processes are (un)structured in a way that prevent acceleration.

The new executive order on permitting acknowledges this issue, demanding the use of modern technology to eliminate delays and inefficiencies. However, without a strategic framework and digital infrastructure, implementation risks fragmentation and inconsistency across agencies.

**2. Analysis:**
## Why U.S. Permitting Falls Short

Permitting in the U.S. suffers from entrenched structural and procedural inefficiencies:

*A. Fragmented Jurisdiction and Legal Complexity*
Permitting often involves coordination across federal, state, tribal, and local agencies, each with their own mandates, review standards, and timelines. This patchwork system increases complexity and encourages risk-averse behavior.

*B. Unstructured and Manual Workflows*
Many permitting applications are submitted in unstructured formats, typically long PDF reports and scanned documents. Agencies lack standardized metadata schemas and centralized repositories, making every permit a bespoke effort. Reviewers must manually extract, interpret, and cross-reference data.

*C. Lack of Process Support and Transparency*
Workflow management is often driven by email, spreadsheets, or outdated legacy systems. Applicants and stakeholders experience minimal visibility into process stages or expected timelines. This opacity fuels frustration and legal challenges.

*D. Resistance to Digital Transformation*
Despite the availability of mature COTS solutions, U.S. agencies have been slow to modernize. Procurement cycles often favor custom-built platforms, ignoring off-the-shelf solutions with proven efficacy elsewhere.

**3. Policy Shift:**
## Executive Orders Mandating Commercial Solutions

The April 2025 Executive Order on COTS-first procurement* changes the landscape:

- All federal agencies must prioritize commercial, cost-effective, and scalable solutions when acquiring technology.
- Custom software development must be justified against market alternatives.

Simultaneously, the Permitting Modernization Order mandates:

- Use of modern IT and data systems to support coordinated, transparent, and timely permitting
- Elimination of duplicative reviews and manual document handling
- Integration of permitting systems across jurisdictions.

These orders provide both the carrot and stick needed to catalyze transformation.

**4. The Solution:**
## Structured Digital Bureaucracy with Embedded AI

*A. Proven International Models*
Denmark's Environmental Protection Agency has demonstrated that environmental permitting can be digitized in a matter of months to increase efficiency, reduce labor-hours and review timeframes, and increase transparency and trust. By adopting a standardized case handling platform, integrating real-time data, structuring, and embedding AI for decision support, Denmark reduced permit processing times by 17-25%, while improving quality and consistency.

*B. Application to U.S. Agencies*
U.S. authorities can adopt this approach by:

- Standardizing permitting data across agencies
- Mandating digital submission formats with structured metadata
- Deploying COTS platforms with embedded regulatory logic and AI-enabled guidance
- Integrating GIS, precedent databases, and stakeholder input tools into a unified workflow.

Such all-encompassing platforms already exist and have been deployed internationally in democratic, compliance-heavy contexts. The challenge is not inventing new technology, but applying what works.

*) whitehouse.gov/fact-sheets/2025/04/fact-sheet-president-donald-j-trump-enforces-requirement-of-cost-effective-commercial-solutions-in-federal-contracts/

**5. Benefits**

## Numerous benefits for the United States

*Faster Approvals:*
Structured workflows and embedded AI reduce case review time and human error.

*Greater Consistency:*
Rules and precedents can be embedded in systems, reducing variability and increasing predictability for developers.

*Streamlined Reviews*
Seamless inter-agency reviews and data-sharing will reduce one of the largest time-traps for the process.

*Enhanced Transparency:*
Real-time dashboards allow public and inter-agency tracking of status and delays.

*Smarter Public Engagement*
Standardized and AI enhanced public commenting processing will increase the quality of the inclusion of stakeholders and reduce the time spent on this part of the process.

*Stronger Governance:*
Standardization reduces risk of lawsuits, appeals, and procedural non-compliance.

*Lower Costs:*
COTS platforms reduce the need for lengthy procurement cycles and IT maintenance.

**6. Perspective:**

## Bureaucracy as Infrastructure

Just as roads and bridges are vital infrastructure, so too is the administrative machinery that governs them. A modern permitting system is public infrastructure for decision-making. The political climate now demands smart regulation; rules that are enforced efficiently and transparently through digital means.

## Conclusion and Recommendations

*Conclusion*
The U.S. faces a unique window of opportunity. The political mandate for faster permitting is aligned with an executive order favoring proven, cost-effective COTS solutions. If agencies can adopt structured digital bureaucracy and embedded AI, the result will be faster, fairer, and more transparent permitting, without compromising the environment.

*Recommendations for U.S. Decision-Makers*

1. Adopt a “COTS-first” approach to permitting IT based on what already works internationally.
2. Mandate structured digital submissions for all environmental permits.
3. Use embedded AI for guidance and quality control, not decision replacement.
4. Coordinate permitting schemas across agencies to enable reuse and interoperability.
5. Set performance goals tied to processing time, transparency, and data quality.

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