Implementing Federal Clean Energy Programs: Lessons Learned from DOE & Partner Agencies

Summary Report

October 2025

Authors: Ramsey Fahs, Alan Propp, Louise White

The authors worked at the Department of Energy during the Biden administration, including at the Loan Programs Office, Office of Clean Energy Demonstrations, and Office of Technology Commercialization (formerly Office of Technology Transitions).

October 2025

This report is based on a synthesis of interviews conducted between February 2025 – August 2025. The views and experiences shared in these interviews reflect the personal points of view of individual participants and do not constitute a consensus among all interviewees. They are not exhaustive and at times interviewees reported conflicting information or divergent experiences. As such, this analysis is intended to surface a broad range of insights, not to present a settled, unified narrative.

The authors gratefully acknowledge the support of Renaissance Philanthropy and The Navigation Fund, for their funding and more broadly for their assistance to former federal workers. This report would not have been possible without them. The authors also thank the Federation for American Scientists for their partnership in publishing these results.

The authors thank the many federal employees and public servants who generously shared their time, insights, and experiences in support of this project. We are deeply grateful for their service and dedication to improving government and building a clean energy future.

Cover and report design by Rosie Jewell (rosiejewell.com).

Table of Contents

Executive Summary

Clean energy industrial strategy was a marquee project of the Biden Administration. It sought to restore American leadership in clean energy and other key industries through the passage and implementation of a trio of major laws: the Bipartisan Infrastructure Law (BIL), the CHIPS and Science Act, and the Inflation Reduction Act (IRA).

Despite a split Senate, the administration secured more than a trillion dollars in clean energy incentives, obligated roughly $97 billion in grant funding, and committed $108 billion in DOE loans. Hundreds of new and expanded manufacturing facilities and energy projects were announced in response to these laws. These programs and the projects they supported promised to catalyze massive private sector investment that would decarbonize the economy, spur a renaissance in American manufacturing, and generate good jobs.

Yet many of these promises took too long to materialize. Three years after the first of those laws passed, only a handful of federally funded projects had broken ground. This meant the political theory animating the administration's approach—that the economic development generated by clean energy projects and industries would create a durable bipartisan coalition—was never truly tested. Once in office, the new Trump administration moved rapidly to repeal tax credits, cancel loan commitments, claw back grant funding, and stall projects. As a result, private sector investment has pulled back, with at least 32 projects representing $22 billion in domestic investment canceled in the first six months of 2025. Years of work were undone in just a few months—a stark reminder that it is far easier to destroy than it is to build, and of the urgent need to move quickly from bill passage to irreversible real-world impact.

The slow pace of Biden-era implementation stands in stark contrast to the pace of past major federal investment. Under Franklin Roosevelt's New Deal, the Tennessee Valley Authority began building the Norris Dam just *four months* after the TVA Act passed in 1933. Under Barack Obama's 2009 Recovery Act, twice as much energy program funding had been disbursed in the first year as under BIL in the first three years.[1]

This report asks: why was the most recent clean energy rollout comparatively slow, and how can future efforts be faster? Its findings are based on more than 80 interviews with political appointees and career staff who sat at the heart of implementation, with a primary focus on the infrastructure offices at the Department of Energy (DOE).

[1] Historical contexts and intentions of these programs differed. Both the New Deal and ARRA were designed for fast stimulus in response to economic crises, while BIL and IRA programs were largely aimed at longer-term infrastructure and climate goals. Additionally, relative to Roosevelt and Obama's congressional majorities, Biden also faced the political challenges of a 50–50 Senate and under-resourced agencies weakened by prior cuts, which constrained implementation speed.

Their consensus: historic legislative ambition was undercut by an executive branch machinery that defaulted to caution, process, and reactive strategies rather than speed, outcomes, and clear direction. While many factors outside the administration's control contributed to slow project delivery, sharper execution of programs within the Executive Branch's sole purview could have meaningfully shortened implementation timelines.

Summary of Clean Energy Program Implementation Lessons Learned

Theme	Challenges	Example Positives to Build From
Deployment Goals	No clear sector-specific deployment targets; reliance on obligation[2] metrics gave false sense of progress	Clear, top-down priorities (e.g., CHIPS "Vision for Success") helped anchor decisions and speed action
Prioritization	Programs tried to meet too many goals at once (decarbonization, labor, equity, security), causing tradeoffs and delays	
Decision-Making	Too many principals, too few deciders; diffuse authorities and concurrence requirements slowed progress	LPO implemented new governance committees to provide clear escalation paths and cut decision times
Risk Management	Persistent bias against perceived risk-taking (especially post-Solyndra); reliance on "tried and true" status quo approach to grants made agreements less commercially viable and more vulnerable to cancellation	Updated "risk attitude" materials clarified expectations with staff New tools matched to markets (e.g., TFP capacity contracts) reduced risk and moved faster
Award Processes	Challenging compliance requirements (NEPA, Davis-Bacon, BABA, PRA); slow, complex award cycles and processes for grants and loans	PIAs, prize competitions, and OTA contracting models enabled faster, more workable awards when leveraged
Talent & Teams	Gaps in key leadership positions and convoluted, slow hiring processes for many staff; inability to remove underperformers; mismatch between amount of commercial vs. compliance staff for many programs	Top-notch talent was brought in, with many offices making recruitment a top priority; external OCED advisory committees added commercial expertise to fill gaps

[2] "Obligation" refers to when the federal government has confirmed a legal commitment to pay funds and has set aside funding. As highlighted later, obligation is not guarantee that money would actually be spent to support project deployment.

Interviewees offered many ideas for what a future team could do to enhance federal energy deployment programs and translate policy vision into concrete outcomes.

Implementation Ideas for DOE and the Executive Branch for Future Clean Energy Efforts

1) Set near-term direction and accountability to guide decision making and focus
• Establish an energy strategy actionable in four years with interim milestones and single individuals empowered to deliver on them • Create a culture of speed and decisiveness • Lean on small, empowered teams with high accountability for milestones and end-goals
2) Establish efficient award designs and processes to get projects funded faster and more durably
• Require default use of Other Transactions Authority for large deployment-focused awards • Overhaul the "Heads of Contracting Authority" designation for contracting • Simplify award processes for speed (e.g., rationalize use of RFIs, Notices of Intent) • Standardize approach to compliance requirements (e.g., NEPA, Davis-Bacon)
3) Pursue a talent plan that leverages all available flexibilities to bring the right people in
• Build a workforce using all hiring flexibilities • Develop an onboarding plan to equip talent • Support managers in addressing underperformance quickly
4) Update operating models at the White House and DOE (and other agencies) to reduce overlap and align with target outcomes
• Reorganize White House energy offices (and re-scope their function) • Rebuild DOE organizationally taking into account drastic Trump administration changes
5) Leverage the full federal toolkit (beyond grants and loans) to get projects moving faster
• Establish "Combination Play" strategies to transform critical sectors by leveraging relevant federal authorities, including underused tools (e.g., federal procurement, PMAs/TVA) • Adopt milestone-based, pay-for-outcomes support rather than cost-reimbursement structures

Beyond the executive branch, interviewees suggested several ways legislators could enable stronger outcomes through smarter statutory design, including balancing clarity with flexibility and ensuring agencies have adequate implementation capacity.

These interviews made clear that solving many of these challenges takes time—time that often isn't available once an administration is underway and dealing with the press of daily business.

Delivering meaningful real-world clean energy outcomes within a four-year term will require substantial advance planning. Tactical, specific implementation plans must be developed alongside any legislative agenda to set the federal government up for success to deliver on future clean energy and industrial ambitions.

That work must begin now.

This report aims to capture implementation lessons learned while they are still fresh to help empower the next wave of government leaders that want to advance clean energy outcomes. It is largely focused on the deployment-related offices at the Department of Energy, though its lessons are broadly applicable across federal government offices engaged in clean energy infrastructure development.

Introduction

In President Joseph Biden's oval office, on the wall above the fireplace usually reserved for paintings of George Washington, hung a portrait of Franklin Delano Roosevelt. The implied symbolism was obvious: a pro-labor Democrat entering office at a time of national crisis and embarking on a bold domestic program to reshape the American economy. Biden would be, the choice suggested, a Roosevelt for the 21st century.

That comparison began to feel credible with the passage of the Bipartisan Infrastructure Law (2021), the CHIPS and Science Act (2022), and the Inflation Reduction Act (2022). And just as the term "New Deal" became shorthand for Roosevelt's programs, the Biden administration quickly settled on "industrial strategy" as the catchphrase for this signature legislative troika.

This industrial strategy—as outlined in a series of speeches from senior administration officials—aimed to establish or revitalize American leadership in select industries like semiconductor manufacturing and clean energy by providing incentives that would spur massive private sector investment.

Clean energy and climate programs received the largest share of the funds secured by the Biden administration for industrial strategy. Between tax credits, loans, and grants, the federal government allocated over $1 trillion of funding to clean energy by many estimates.

By January 2025, DOE had committed $108 billion in loans across 53 clean energy projects—from nuclear and long-distance transmission to EV and battery supply chains. Roughly 84% of IRA funding had been obligated across DOE, EPA, USDA and other federal agencies, representing nearly $97 billion in committed federal funding.[3] Direct funding and tax credits helped catalyze hundreds of billions in announced clean energy and manufacturing projects, with more than 900 companies announcing new or expanded US facilities. DOE recast itself from an agency primarily focused on R&D to an active commercialization partner with the private sector. Many companies heeded the call, putting their trust (and money) in the administration's vision of a preeminent American industrial base and clean energy sector.

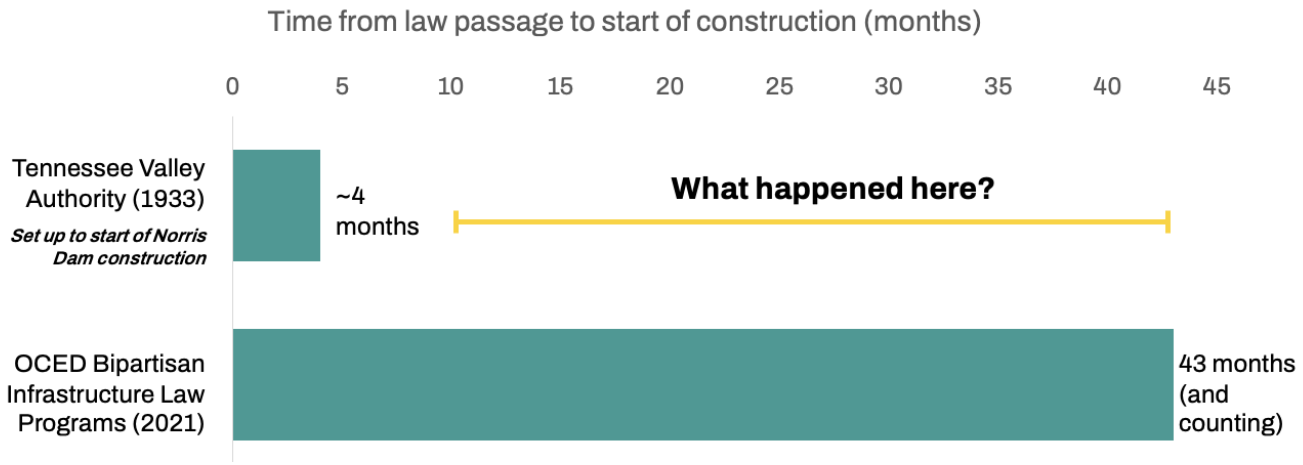
[3] "Obligation" refers to when the federal government has confirmed a legal commitment to pay funds and has set aside funding. As highlighted later, obligation is not guarantee that money would actually be spent to support project deployment.

But these accomplishments were slow in coming. A large share of funds was obligated in the last days of the Biden administration, and they were still months or years away from actually being spent on clean energy projects.

While Biden-era project announcements proved that federal action can unlock private investment at scale and shift industry culture, the Trump administration's subsequent moves to cancel grants and loans, repeal tax credits, and stall projects have driven home an equally stark lesson: **speed of implementation is imperative**.

History shows that the federal government can move fast. Consider the Tennessee Valley Authority, one of the New Deal's enduring legacies. Congress passed the TVA Act on May 18, 1933, part of the flurry of legislation that constituted the iconic "100 Days." Four months later, TVA began construction on the Norris Dam. In contrast, many of Biden's BIL programs had not begun construction three years after that law had passed. (In one case, a DOE office expected ~75% of its projects entering construction in 2029 or later, *after a hypothetical Biden second term had ended* and not accounting for any unexpected delays.)

Figure: Implementation Timeline for example New Deal and Biden Energy Programs



As a more recent comparison, when Congress appropriated $36.7B to DOE for energy and grid programs as part of the American Recovery and Reinvestment Act (ARRA) in 2009, roughly 7% of funding had been disbursed within one year—compared with 5% of DOE's BIL funds dispersed after three years.

These comparisons are not entirely fair. America in 1933 was a different country: practically no environmental laws, aggressive and sometimes cruel use of eminent domain, and an atmosphere of true desperation and crisis that granted New Dealers much more latitude to act quickly and decisively. The New Deal and ARRA were both focused on rapid implementation to respond to the Great Depression and Great Recession respectively while BIL and IRA programs were largely focused on longer term infrastructure and climate

goals. Additionally, FDR and Obama benefited from strong Congressional majorities, while the Biden administration was balancing a 50:50 Senate that forced compromises.

But the question remains: why did it take so long today to translate historic appropriations for clean energy deployment into real-world outcomes, and what could be done differently next time? This report focuses on answering that question based on interviews with more than 80 political and career staff on the frontlines of the Biden administration's clean energy implementation. Its focus is primarily on experiences at the large demonstration and deployment infrastructure programs at the Department of Energy (DOE).[4] Encouragingly, these conversations suggest a future administration could move significantly faster to support real-world progress if strong preparation and prework is started today.

The intent of this effort is not to cast judgment or assign blame—indeed, thousands of public servants worked extraordinary hours, often under intense pressure and scrutiny, to deliver as much progress as possible. Many lessons are much easier to see in retrospect, and they have been thrown into sharp relief by the current administration's strenuous (and arguably illegal in several cases) dismantling of Biden's clean energy programs.

Rather, the goal is to capture lessons and ideas from on-the-ground implementers before they are lost to inform the preparatory work that will enable future administrations to act faster and more effectively on clean energy and industrial deployment.

[4] The 80+ interviews conducted included individuals from the White House, USDA, EPA, Treasury, and several other departments, but the preponderance of the report's evidence and examples draw from DOE's experience standing up and executing BIL and IRA clean energy funding programs. Consequently, the operational lessons and recommendations are calibrated most directly to DOE's infrastructure offices and authorities, culture, and decision-making structures—and the White House environment overseeing DOE.

Lessons Learned

The Biden administration's passage of the Bipartisan Infrastructure Law, the CHIPS Act, and the Inflation Reduction Act represented the most ambitious federal investment in American industry and clean energy in nearly a century. Yet, interviewees almost unanimously felt that overall implementation did not live up to the ambition of these laws. Across interviews with political appointees and career staff, a consistent picture emerged: programs were delayed by indecision, risk aversion, and process complexity. At the same time, several bright spots—in which an individual office or program broke from this pattern—demonstrated an ability for government to move fast that can form the basis for future efforts.

Six key interconnected themes emerged from interviews as primary challenge areas: deployment goals, prioritization, decision-making, risk management, lengthy award processes, and talent management. While challenges hampered progress across these themes, future federal efforts can build upon several positives highlighted below.

Theme 1) Deployment Goals

Challenges to address:

The administration's 'whole-of-government' ambition was not consistently translated into sector-specific deployment targets and actionable plans with accountable owners. Guidance such as Executive Order 14082 on IRA implementation and draft sector strategies—such as the Grid Modernization Deployment Goals released in April 2024 and the National Nuclear Energy Strategy released in November 2024—lacked the specificity or arrived too late to inform day-to-day decisions. At the same time, a focus on obligation[5] as the "score board" for progress created a false sense of accomplishment by anchoring the administration on a metric that was far upstream of disbursements and real-world project deployments.

[5] Obligation is a government term of art that indicates a budgetary commitment by the government to outlay funds for something (e.g., a grant or a loan) at some time *in the future*. So while obligation is a necessary step, it does not actually provide the funds to the clean energy project in question. This "obligation" goal was intended to protect funds from rollbacks by a future administration, based on the historically-supported assumption that they would be politically and legally untouchable once obligated. Yet even after selection or obligation, many projects remained unfunded and more vulnerable than many in the Biden administration expected. Under the Trump administration, at least 34% ($31 billion) in unobligated IRA funds have been rescinded and tens of billions in awarded (and often obligated) projects canceled, despite the ongoing court cases challenging the legality of many of these actions.

> *"We didn't have sector-specific priorities. What we needed was, for example, across the transmission programs: here's the priority stuff we want to build, here's a list of all the stuff we could focus on, and here's the top 3 things we're going to try to get done... It's hard to do, but I don't think anybody really tried."*

Positives to build from:

Where priorities were stated upfront and consistently referenced, implementation moved faster. Clear top-down prioritization allowed staff to make tradeoffs and keep programs on mission. For example, outside of DOE, an interviewee noted how the Department of Commerce's CHIPS 'Vision for Success' document, released alongside the first FOA, defined four discrete objectives and nine cross-cutting themes that anchored the overall program direction, decisions, and messaging.

> *"The Secretary continued to reference and tie every decision back to this [Vision for Success] ... It was such a godsend when we were dealing with the one million fires."*

Theme 2) Prioritization

Challenges to address:

After the Biden administration's original Build Back Better Act (BBBA) failed to pass, many of the broad social programs that were part of this original legislation were carried over into IRA and BIL programs, with a variety of priorities squeezed into programs that were never designed to hold them. Programs frequently tried to satisfy multiple aims at once: decarbonization, onshoring, labor, equity, national security. This layering of priorities blurred mandates and slowed action. This proved to be particularly challenging for requirements that were at odds with energy industry realities (e.g., impractical BABA requirements for every component; labor union requirements for transmission projects where union labor didn't exist). Interviewees expressed a need for greater prioritization of these various goals to enable smoother implementation decision-making.

> *"DOE tried to solve structural inequality via grid infrastructure, which was an unrealistic goal."*
>
> *"The Made in America mandates were a real challenge. No one wanted to make the choice on this tradeoff ... so it delayed everything. We just needed to make a choice one way or another and move on."*
>
> *"There were so many policy priorities in the bill that even a strategy that created a simple hierarchy could have been really powerful."*

Theme 3) Decision-making

Challenges to address:

Implementation was slowed by too many "principals" and too few "deciders." At least eight White House offices claimed jurisdiction over clean energy issues, without clear mandates and decision-making rights between offices on various topics. Within DOE, similar decision-making challenges were present across and within offices. For many decisions, teams had to get concurrence from numerous divisions within their office and from leadership from other offices before acting, which significantly slowed down progress.

> *"There were way, way too many cooks in the kitchen [at the White House]… Everything kept getting argued and relitigated until it went up to the Chief of Staff to make a decision."*
>
> *"[In a prior role at another federal agency], every week, senior staff had a dedicated meeting to discuss major issues and recommendations. … I lost on an issue probably half the time, but I always had a chance to weigh in and hear during that meeting why a decision was made and knowing the why is so critical for keeping a united front and moving forward. We needed someone in [the Secretary's] office to run a process like that."*

Positives to build from:

As part of a broader process refresh, LPO leadership instituted new decision-making structures in 2024—including a program-level Program Committee and leadership-level Steering Committee with clear escalation pathways and explicit authorities to decide on application-specific and broader policy questions. This structure helped meaningfully reduce cycle times and helped contribute to shorter timelines for loan application reviews.

Theme 4) Risk Management

Challenge to address:

One of the primary effects of the logjam of individuals involved at every layer of the clean energy org chart was a persistent bias for what was perceived as the least risky path available in each situation. This bias toward perceived safety—shaped strongly by

Solyndra's[6] legacy—favored status-quo tools and exhaustive diligence regardless of actual financial and project risk.

> *"People overestimated the risk of action and greatly underestimated the risk of inaction."*
>
> *"After Solyndra, the scar tissue… meant there were 50 different ways to kill a project and not many ways to see it through."*

This conservatism had real costs—both in implementation speed and program design. For example, for many of the large multibillion-dollar infrastructure grants, DOE defaulted to its most familiar method of disbursing funds: cooperative agreement grants that are subject to 2 CFR 200 regulations—a tool originally designed for R&D, not commercial deployment. These contracts included a "termination for convenience"[7] clause that was later used by the Trump administration as justification for canceling at least $3.7 billion in grants (as of June 2025). This attempt to reduce risk by conforming to the status quo contracting model actually increased risk (of project delay, cost overrun, or cancellation) and harmed the administration's ability to achieve its goals.

> *"So what happens is like 50% of the effort gets rid of 95% of the risk, and then people spend another 50% of effort to get, like, another 3% of the risk reduced… Why don't we just try to get to that 95%?"*

Positives to build from:

One notable diversion from devotion to status quo grants-and-loans program design was the Grid Deployment Office's $2.5B Transmission Facilitation Program (TFP). Under TFP, DOE acted as an "anchor customer" for transmission projects through capacity contracts. Once the projects were built, DOE could sell that capacity short-term to generators who wished to use the transmission line. This program design neatly addressed one of the major barriers to financing transmission projects: establishing long-term bankable demand. DOE pursued this novel design because the section of the Bipartisan Infrastructure Law that established the program explicitly allowed for this design.

---

[6] The fixation on risk minimization had its roots in the 2011 bankruptcy of Solyndra and the subsequent years of nasty political fall-out for DOE and the Loan Programs Office, which had made a large loan to the company shortly before it went bankrupt. Many interviewees across government (and primarily beyond LPO) consistently cited this fear of a Solyndra-repeat as the justification for conservatism, risk aversion, and extended vetting—in DOE grant-making agencies, leadership conversations, and at the White House. As part of BIL and IRA implementation, within many DOE infrastructure offices, significant senior staff time was required to field a constant stream of information requests from the DOE's Inspector General (IG) and (to a lesser extent) representatives from the Government Accountability Office (GAO) who were looking for evidence of wrongdoing. Notably, as of Sept 2025, they still have not find anything significant. For example, in a December 2025 IG report about LPO's organizational conflicts of interest, the IG did not find any actual conflicts of interest, and ended up recommending a need for more trainings.

[7] This clause holds that the government can, at any time, terminate a contract if it "no longer effectuates the program goals or agency priorities."

> *"TFP gets an A+ in legislative design and in implementation. It was really good at solving market timing and risk issues without needing to use grants."*

Interviewees also noted a more informed approach to risk management at LPO than peer offices, with the specter of Solyndra (ironically) looming larger at other DOE offices or the White House than it did in the office that made the original loan to Solyndra. This was largely a result of the extensive improvements the office had put in place post-Solyndra and an intentional focus from senior LPO leadership to articulate and codify LPO's risk appetite and approach—a model for understanding risk that was more developed than in other parts of government.

Theme 5) Award Processes

Challenges to address:

Across the primary tools of clean energy industrial policy at the DOE—grants and loans—implementation required going through several convoluted processes, many of which could have been streamlined.

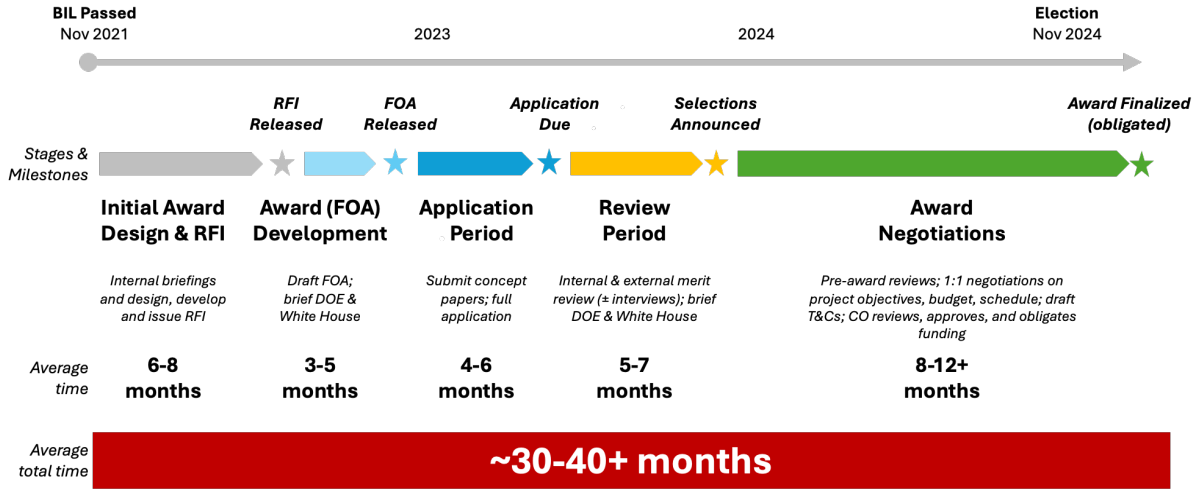
Both grants and loans ran into legislative compliance requirements that caused significant delays. The four laws most frequently mentioned by interviewees as the culprits behind slower implementation included the National Environmental Policy Act (NEPA), Davis-Bacon Act, Build America Buy America (BABA), and the Paperwork Reduction Act. While well-intentioned, these laws were nearly impossible to efficiently implement, with requirements often outdated, overly prescriptive, or simply misaligned with modern industry practice. This often increased work and friction for the very parties the laws were intended to help. Beyond reforming these regulations, interviewees noted opportunities to improve how DOE and other agencies implemented these requirements, including a need for less restrictive interpretations (focusing on the intent of the law rather than the details that rendered it impractical) and more consistency in compliance processes across offices.

Some lengthy processes were largely self-imposed, not required by statute. Processing financial assistance awards at DOE—the primary strategy for administering the over $30 billion worth of major grants[8]—took an average of approximately 30-40 months. Even after finalizing that award, a project was still at least months and often years away from beginning

[8] Many of BIL and IRA's demonstration and deployment grants flowed through DOE's infrastructure offices, including OCED's ~$27 billion for carbon capture, clean hydrogen, and long-duration energy storage demonstrations, GDO's $10.5 billion under the GRIP program for grid modernization, and MESC's ~$8 billion for domestic manufacturing of EV supply-chain components, battery production and recycling, industrial assessment centers, and more. This list of grants and offices with BIL/IRA implementation funding is not exhaustive and is focused on offices with major energy infrastructure funds (e.g., excludes SCEP home rebate programs) for this report.

construction. Interviewees cited issues with inflexible program designs (particularly for cost-reimbursement cooperative agreement models that were at odds with standard industry practice), extensive leadership and political briefings, complex application requirements (FOAs frequently ran 120–150+ pages), convoluted federal contracting processes,[9] and excessive documentation and reporting requirements for negotiations.[10]

Figure: Timeline of select BIL-funded DOE cooperative agreement grant processes (simplified)



Note: Data based on publicly available information of key milestones for selected major DOE BIL grant award programs, including OCED H2 Hubs and Industrial Decarbonization programs; GDO GRIP Round 1 and Round 2; and MESC Battery Grants Round 1 and Round 2.

> *"[Cost-reimbursement cooperative agreements] were really challenging to work with—they were not user-centric at all, and they didn't match private sector agreements, so it was hard for the private sector to get comfortable with them and understand their risks."*
>
> *"The FOA process was completely insane. It was 120 pages when only 6 pages mattered. … It was a very regimented process that was functionally inaccessible to the small organizations that we were focused on."*

[9] Federal Contracting Officers (COs) play a central role in the federal contracting process. The CO is a specialized government role that focuses entirely on ensuring DOE's contracts are compliant with applicable laws and regulations. While not attorneys, COs must sign off on any award contract—alongside legal, budget, and program teams—and are often the actual government signatory on grant contracts. With some exceptions, interviewees said many COs saw their primary role as protecting the government from scrutiny (as opposed to projects moving forward). Consequently, getting their approval could add weeks or months of time before an agreement was finalized and work could begin on even preliminary items like engineering studies.

[10] As of September 2025, the OCED website still hosts the negotiations guide for recipients, which includes links to over 20 requested documents with a combined length of over 120 pages. These documents were often required just to kick off the design / feasibility study phase of a project.

> *"Contracting was a mess… programs were treating things differently on what money would actually be reimbursed."*

Loans were primarily[11] administered by the Loan Programs Office (LPO) with ~$400 billion in loan authority after the IRA and also faced comparable challenges with the timelines of loan application reviews, particularly in the early days of IRA implementation. LPO underwent a remarkable rebirth from functional dormancy in 2020 to a serious, multi-billion-dollar loan pipeline by the time the IRA increased its loan authority by ~10x in 2022. While LPO invested meaningfully in the early days of the Biden administration in an outreach team to bring in new applications, the number of committed or closed loans did not keep pace with project pipeline growth.

Key challenges that LPO faced included a lack of clear top-down leadership direction and mandate (an issue particularly acute for the major 1706 Energy Infrastructure Reinvestment program[12]), weak initial intake discipline and low-quality applications, diffuse decision-making processes for application reviews, and a uniform due diligence approach that overburdened low-risk deals with exhaustive diligence levels.

> *"The biggest hurdle was that we didn't know our mandate. Were we a loan office that made loans? Or a project development office that supports projects through loans? It sounds like a fine distinction, but it's actually very important to decide so you can make decisions accordingly."*

Positives to build from:

Several solutions and new programs were implemented that helped address or avoid these award implementation challenges. Many of these were starting to hit their stride by the end of the Biden administration and provide important process lessons to build from.

For grants, innovative funding models—particularly Partnership Intermediary Agreements (PIAs) as well as prize competitions—helped speed up award processes by using simplified applications and a milestone-based award models. While total funding through the PIAs was a small fraction of DOE's total clean energy funds and it was generally not used for large-scale deployment projects, several interviewees pointed to these tools as some of DOE's most effective process and design improvements for implementing cash awards—models that could be scaled for future federal programs. This type of innovative funding

[11] The Grid Deployment Office (GDO) also had a loan program, overseeing ~$4.5 billion in loans for transmission.

[12] The lack of a clear mandate was especially acute in the 1706 Energy Infrastructure Reinvestment program, where staff were caught between competing interpretations of congressional intent. Initially framed as a tool to repower fossil communities and reduce emissions, the 1706 program's goals later shifted toward supporting investment-grade utility projects to reduce grid investment costs for taxpayers. This early ambiguity on the 1706 mandate fueled internal debates over technical eligibility versus repayment risk, slowed reviews, and left staff uncertain how to apply the program consistently, which resulted in delayed application of the program.

model is representative of a broader set of innovative grant options allowable under DOE's Other Transactions Authority (OTA). The Industrial Training and Assessment Centers, a relatively small program out of DOE's MESC office, used OTA to great effect after having major issues with the traditional 2CFR-based financial assistance construct.

> *"Turns out that being able to make extensive use of OTAs was the single most impactful thing that we did. Basically, we would not have been able to implement [this] without it."*

Outside of DOE, EPA's GGRF and USDA's New ERA mapped end-to-end processes early, planning the entire process early to identify potential challenges and using stage gates and deadlines to maintain momentum. This focus was in part driven by a need to meet legislatively imposed deadlines for obligation for these programs.

LPO initiated an internal redesign of its loan process in late 2023. A new governance model was implemented to improve decision-making.[13] Program-specific intake checklists helped filter out incomplete or non-bankable proposals. Project archetypes distinguished different levels of commercial and technical risk and appropriate levels of diligence. Standardized templates were developed for repeatable 1706 utility deal types. Finally, a Risk Appetite Guide codified the level of risk the office would accept, aligning staff on shared principles and reducing mission confusion. This resulting process redesign—along with a significant investment in human capital to bring in both commercial and operationally-savvy expertise—delivered measurable impacts, reducing the average time an applicant spent in due diligence from ~310 days in 2022 and early 2023 to ~160 days by end of 2024.

Theme 6) Talent & Teams

Challenge to address:

Personnel management is a perennial challenge in government, where it is difficult to fire underperformers and competitively compensate high performers. These issues are hard enough in normal government business, but were exacerbated in implementing the Biden administration's clean energy program because of the rapid expansion of certain departments' and offices' remits. Interviewees noted the administration did an exceptional job broadcasting the opportunity to work on an ambitious clean energy agenda, yet hiring high-caliber staff with the needed commercial expertise often took six months or more. With more than 30 HR steps required, many program managers had to double as nearly

[13] This included small program-specific Program Committees of six division representatives to review and recommend advancing Parts I and II of each application and make or escalate decisions, and a Steering Committee to confirm application readiness for due diligence and to resolve policy or underwriting issues

full-time hiring managers to bring in talent. A strict adherence to conservative ethics interpretations also conflicted out many needed experts.

> *"The most basic things were the hardest. It took 6 months to bring people in, and we only had 2 years."*
>
> *"How do you run a hydrogen project hiring people with hydrogen expertise, but then tell them they can't ever have worked for a company that was involved in hydrogen?"*

Beyond hiring, the difficulty removing the small minority of incompetent staff from key offices also hampered implementation efforts. This was exacerbated by staffing that skewed toward technical and compliance (engineering, legal, regulatory, contracting) rather than the commercial execution often needed for large demonstration and deployment challenges.

Positives to build from:

Several deployment offices—including GDO and LPO—were noted for treating recruitment as a core leadership job, which helped attract private-sector talent that made a real difference. OCED's use of advisory "steering" committees made up of individuals who had had long careers in private sector energy development also brought in commercial expertise to guide programs.

> *"At LPO, leadership prioritized recruiting high-talent individuals from industry and finance, sometimes through contractor or special advisor roles. Recruitment was seen as a principal part of LPO leadership's job, which is really rare in government."*
>
> *"GDO's early team had a unique mix of technical, project development, and private sector expertise. … Staff understood both utility realities and federal processes, making them more effective in application review and program design."*

These pockets of success can be expanded on in a more systematic, government-wide talent strategy.

Ideas for a Future Executive Branch

Interviewees highlighted several opportunities to improve future federal clean energy efforts. These ideas could be integrated into a broader energy policy and implementation gameplan, equipping a future administration to drive real-world clean energy outcomes at pace.

A future administration can move markedly faster by designing for speed and durability from Day 1. The planning for this work should begin now, so that the early days of a new administration can focus on execution rather than invention. The ideas below focus on actions within existing executive authority that could apply to the DOE's deployment offices, with some additional attention paid to the White House energy-related functions.[14]

1. Set Near-Term Direction & Accountability

Establish an energy strategy actionable in four years

To inform and focus implementing teams, the DOE and White House could promulgate a National Energy Strategy—developed prior to the administration and published within the first 100 days—that prioritizes a finite number of specific sectoral outcomes and identifies and empowers accountable "sector champion" owners for each priority (e.g., transmission, nuclear, geothermal). While long-term goals can be part of the vision, the strategy should be designed to be actionable in a single term. This national strategy should be specific enough to inform agency and office-level action plans, guide daily decisions and tradeoffs, and inform program designs and budgets. It could be updated to incorporate new legislation and market developments as applicable. The "sector champions" should have clear decisioning and interagency coordination authorities.

Taken together, a clear strategy and robust implementation plan can keep the entire federal machine moving toward the administration's four-year energy goals. Regular evaluation of progress against set goals can help elevate issues early, focus senior leadership and staff, and communicate progress to industry and the public.

To do this effectively, the homework must begin now. A serious strategy cannot be written overnight, or even in the first six months. Long before a future Day 1, sector playbooks and deployment targets should be developed (informed by market analysis and deep industry engagement, such as the model DOE took for its "Liftoff" reports), drafting needed templates

[14] Opportunities for other agencies with energy programs (e.g., EPA, USDA), DOE's R&D offices, and the national labs are important and warrant additional research, but are not covered here.

and guidance, and pre-identifying topic "champions". These efforts could simultaneously inform the Day 1 energy strategy and an economic or energy legislative agenda.

Create a culture of speed and decisiveness

One of the most important things a subsequent administration can do to achieve any national clean energy ambition is among the least tangible: create a culture that values speed and decision-making.

Multiple interviewees noted a widespread agency culture that prioritized process, federal "precedent," and consensus. More decisive, top-down messaging—supported by a clear execution plan—could have aligned teams and offices sooner, helping everyone pull in the same direction on what is expected and acceptable.

> *"There had to have been direction from the top to say the priority is going to be speed. And we understand that there will be some collateral damage along the way, but we will not let perfect be the enemy of the good. And the priority needs to be speed, not balancing this and fine-tuning that with every single stakeholder we have in mind. There's trade-offs. And there needed to be direction at the very top [to say that]."*

Lean on small, empowered teams with high accountability

Efficiently achieving clean energy deployment goals requires empowering and trusting frontline teams to deliver federal programs. This could include: empowering single decision-makers, backed with clear escalation frameworks to mitigate the "too many cooks" dynamics; pushing decision-making as far down as possible to move progress along and reserve senior leadership bandwidth only for the most sensitive, complex issues; and creating accountability for timelines to keep staff and leadership mutually aligned and informed on expectations, progress, and roadblocks.

Doing this effectively requires that senior leadership—starting with the Secretary—consistently reinforce any new models and lean structures, even in the face of GAO or IG recommendations that erroneously equate larger headcounts and lengthy reviews with prudent oversight.[15]

[15] A GAO report recommended that OCED expand beyond its then-200+ person staff to hire more people to ensure adequate oversight. The same report lauded OCED's extended negotiation timelines, conflating time in negotiations with prudent oversight. Yet in practice, several interviewees noted that OCED was already overstaffed and protracted contract negotiations undermined private-sector confidence in the value of working with DOE.

2. Establish Efficient Award Designs & Processes

Require default use of Other Transactions Authority for large awards

DOE should default to Other Transactions Authority (OTA) for large deployment awards.[16] When used properly, OTAs could dramatically improve the government's ability to work constructively with the private sector for major demonstration and deployment efforts. OTAs do not have to comply with the restrictive 2CFR 200 regulations that are often not well attuned to commercial deployment realities.

While OTA is not a panacea or a substitute for judgement, it does have the potential to be the foundation of a much better system for conducting industrial strategy. Using it effectively will require advance work from a new administration to develop basic contract terms that are acceptable to the government and private sector before a new administration tries to use them. Developing templates (with legal expertise) and a short playbook for OTA implementation processes and structures (e.g., milestone-based payments, availability or capacity contracts, price floors) can ensure program staff aren't reinventing terms deal-by-deal.

Overhaul the "Heads of Contracting Authority" designation for contracting

As mentioned above, contracting officers (COs) are a central party in all contracts between the DOE and an outside entity (like a clean energy company), but their incentives often impose structural risk aversion on the government. DOE should reform the contracting process, including by bringing contracting processes back into DOE HQ (from the Golden field office and NETL) and delegating signature authority to program leadership, rather than contracting officers, in certain cases.

Reimagine award processes for efficiency

Rapidly deploying grants and loans demands reengineering how RFPs are drafted, applications evaluated, and financial agreements negotiated.

For a new administration to be equipped to execute efficiently, pre-work is needed to map end-to-end award workflows, draft core documents (standard RFP language, terms & conditions templates), and develop faster processes. Completing this advance work would allow a new administration to be ready if and when Congress enacts new programs.

[16] OTA is a special contracting authority Congress has given some agencies that essentially allows for significant flexibility in structuring contracts and does not require adherence to 2CFR regulations. It was created during the Space Race, when Congress realized NASA could not expect to put a man on the moon if they had to follow the byzantine procurement processes of other agencies. It has since been used for next-generation defense systems, NASA's contracts with SpaceX, and Operation Warp Speed.

For grants and cooperative agreements, a fresh start may be more helpful than tweaking the existing playbook on the margins. An improved process would likely include: pre-designed funding frameworks and program designs aligned to a given industry's specific needs, minimized Notice of Intent (NOI) and Request for Information (RFI) formalities, reduced number of Funding Opportunity Announcement (FOA) reviewers, and radically simplified Requests for Proposals (RFPs) with more consistency where possible (e.g., consistent, concise legal disclaimers). Draft commercial contracts or term sheets could be published in advance alongside RFPs so applicants and counsel can engage constructively on key terms before selection.

For loans, process improvements could build on the operational redesigns discussed above. Additional improvements could include: publishing draft loan agreement or term sheet templates, aligning processes to focus on closing loans (not just conditional commitments), right-sizing in-house vs. outsourced expertise where possible, and reusing market reports and applying consistent data and assumptions to streamline diligence and reviews.

Standardize approach to compliance requirements

Across every major statute with which grants and loans must comply (NEPA, Davis-Bacon, Cargo Preference, and similar mandates), interviewees emphasized the need for top-down White House or Departmental guidance (model contract clauses, checklists, waiver templates) and dedicated "clearance teams" to resolve legislative questions quickly. Agencies' General Counsel and Chief of Staff should define a department-wide approach to compliance laws, with an emphasis on efficiency and outcomes. Specific ideas that interviewees mentioned:

- **NEPA**: Recent DOE actions under the Trump administration and court cases suggest there is room to rationalize NEPA without undermining environmental standards. A new administration should build on this by streamlining environmental reviews through pre-cleared programmatic Environmental Impact Statements and Categorical Exclusions for repeat project types. This approach could cut years off approval timelines, even if it means accepting some added litigation risk.
- **Davis-Bacon Act**: Current rules often require weeks of back-and-forth with DOL—even for small retrofits—slowing projects that already meet prevailing-wage tests. The White House or DOL should simplify compliance by standardizing or fast-tracking waivers, updating worker categories, and exempting small or non-construction activities to reduce burdens on projects.
- **Build America, Buy America (BABA)**: Requiring lawyers to certify every bolt or delaying projects until domestic equipment is available risks undermining the broader industrial-strategy goals BABA is meant to support. The White House, in concert with OMB, should focus BABA enforcement on a few high-impact sectors and provide waivers or exemptions for low-value components and equipment with no domestic supply chain yet.

Approaches to these compliance requirements should be fully developed in advance of a new administration and rapidly implemented.

3. Pursue a Talent Plan with Available Authorities

Build an equipped workforce, fully leveraging all available hiring authorities

A fast-moving deployment agenda lives or dies on talent. A future administration should arrive with a Day 1 personnel plan and a pre-vetted bench for critical leadership and program implementation roles.

Ultimately, fixing the root causes of federal talent bottlenecks requires civil service reform. In the absence of deeper reforms, the administration should aggressively use its available authorities (including Direct Hire, Schedule A, IPAs, and Special Government Employee pathways) to help fill specific expertise gaps.

Revamp onboarding to better equip leadership and team members

Building a robust onboarding program to equip each new hire (political and career, leadership and program staff) with the fundamentals of government implementation could have helped avoid many early delays. DOE could launch an onboarding bootcamp that covers program strategy, federal award mechanics (e.g., 2 CFR vs. OTA), risk frameworks, and internal and external government reporting requirements.

Significant pre-work to develop the structure and depth of onboarding programming—as well as high quality, ongoing training, rather than perfunctory requirements today[17]—and of modernized performance management structures could help with quick implementation.

Give managers tools—and backing—to remove underperformers

Departments should direct their HR teams to work with office leadership to develop performance management plans to appropriately remove any underperformers (importantly, this should be designed to maintain the integrity of the civil service as nonpolitical, while still enabling removal of the relatively few poorly performing employees). Strategies could include revising performance management plans to be usable tools instead of the barriers they are today, building an HR 'SWAT' team, increasing tolerance for litigation, and leveraging administrative leave or office transfers as a last resort.

Normalizing employee separation where needed should be coupled with investment in retention and development of high performers.

[17] For most new federal employees, interviewees reported that low-quality, repetitive trainings took up hours on topics unrelated to achieving the goals of their position/office

4. Build Outcome-Oriented Operating Models

Reorganize White House Energy Offices (and re-scope their function)

The President should appoint a single White House Clean Energy Director with clear authority, consolidate existing offices with overlapping jurisdictions, and clarify scopes and reporting lines for remaining offices. This director should be empowered with support from the President, including ready access to the White House Chief of Staff. This recommendation is not novel—in fact, it was mentioned in a similar report published during the Biden transition—but it has proven a consistent challenge for energy and climate focused administrations.

(Re)Build DOE operations to be fit-for-purpose

The next administration should come in with a clear plan for how, if at all, it plans to reorganize DOE. The contours of such a plan are necessarily vague right now as they will depend on the state DOE is in after several more years of the Trump administration. For now, the main indicated action is to track the changes the Trump administration is making in organizational structure and staffing of the Department.

Arguably as important as the DOE reorganization plan itself, according to interviewees, is the ability to "rip the bandaid" and execute it quickly (e.g., in the first 90 days of a new administration) to minimize the intra-departmental jockeying and acrimony that necessarily accompanies large-scale reorganization. Some interviewees felt that to the extent possible a next administration should attempt to work within the existing organizational structure rather than attempt a distracting, logistically taxing reorganization to a theoretically improved structure.

5. Leverage the Full Federal Toolkit

Establish "Combination Plays" to transform critical sectors

The 'sector champion' mentioned above for each national clean energy objective should make use of all available government tools to best deliver sector-wide outcomes. The government has significant flexibility in spurring clean energy development, including several options that require limited or no new appropriations.

The current administration has provided one example of what a more holistic approach might look like. Its recent deal with rare-earths supplier MP Materials—in which the government combined an equity stake, loans, warrants, and a 10-year price floor and

offtake agreement for the company's facility—shows how a sufficiently motivated Executive Branch can comprehensively derisk deployment in a key sector.[18]

Specific federal tools that interviewees mentioned could be better leveraged included:

- Leveraging the Power Marketing Administrations[19] (PMAs) as transmission leaders
- Using the government's sizeable purchasing power in electricity and materials procurement to address offtake issues for clean energy technologies
- Taking equity stakes as a means of administering grant capital to de-risk projects while creating accountability and potential upside
- Offering revenue certainty mechanisms (e.g., price floors, contracts-for-difference) that mitigate offtake or merchant risk for clean energy projects of strategic importance
- Establishing pay-for-outcomes award models
- Combining loans, grants, tax credits, and revenue certainty mechanisms in the same project to achieve the most tailored support package
- Making strong use of the federal government's convening power and bully pulpit to coordinate across regions, sectors, and stakeholders

The sector champion could drive 'combination plays' that bundle grants, loans, tax credits, procurement, permitting reforms, technical assistance, and federal assets into cohesive strategies and implementation actions. For example, a transmission play could pair capacity contracts (akin to GDO's Transmission Facilitation Program), LPO utility financing, direct PMA build-outs, targeted permitting reforms, and standardized interconnection support.

Adopt milestone-based, pay-for-outcomes support rather than cost-reimbursement

Pay-for-outcomes models guarantee payments when a project reaches a certain milestone (e.g., commercial operation, verified production). Compared with the status quo of cost reimbursement grants in which the government pays out for eligible invoices, pay-for-outcomes models can significantly streamline the process for administering awards—easing application requirements and oversight burden on DOE—and give projects more of an incentive to achieve outcomes and control cost, reducing taxpayer exposure to cost overruns. Instead of defaulting to cooperative agreements and cost-reimbursement models, DOE's infrastructure offices should identify and then develop actionable strategies for significant appropriations that have flexibility to use a pay-for-outcomes approach.[20]

---

[18] In the case of the MP deal, some sources have suggested the Executive Branch was motivated by the financial interests of Trump administration insiders. Nevertheless, Heatmap News reported that the deal "is making former Biden officials jealous with its swift, decisive, and impactful action. (Several interviewees for this report expressed a similar sentiment.)

[19] The Power Marketing Administrations (PMAs)—Bonneville, Western, Southwestern, and Southeastern—collectively control more than 33,000 miles of high-voltage transmission lines (over 5% of the nation's total) across 29 states

[20] There are still cases where cost-reimbursement grants will be the best option—including ones in which the technology risk is simply too high to attract sufficient private capital—but overall DOE could shift much more of its concessionary capital for commercial deployments to a pay-for-outcomes construct.

Conclusion: Implementation Starts Now

The federal government is a complicated, sprawling organism and four years is not a long time. On the whole, the individuals who worked on clean energy implementation were smart and dedicated to advancing the public good—often working more and making less than they would have in the private sector. By the end of the administration, many programs were starting to hit their stride. But with so much progress undone under the new Trump administration, interviewees voiced disappointment that their work has proven less durable than they expected.

To achieve more next time, preparatory work must begin now. And that work must achieve a level of detail that has not been typical of prior efforts. Ironically, the most salient recent example of such preparatory work was Project 2025, which took a blunt force approach to dismantling the federal government (and its clean energy efforts) and benefited from the fact that it is far easier to destroy than to build.

Any attempt by the federal government to play an important role in advancing industrial and clean energy development across the United States will require a great deal more thoughtfulness and detail than even Project 2025 achieved.

It's not enough to say we need to make full use of DOE's authorities; we need the drafted Secretarial directives and advance legal legwork to do it, and leadership well-equipped with the details and government-insider knowledge to execute on it.

It's not enough to say we want more nuclear, transmission, or critical minerals projects; we need to have identified the priority projects and designed the strategies and programs needed to actually put them in motion on Day 1.

It's not enough to say we should take a "whole-of-government" approach to an issue like clean energy; we need a detailed plan for how to use the $5 billion/year in electricity purchases and the PMA's 45,000 miles of transmission lines—all under the direct control of the federal government—to achieve explicit policy outcomes.

And it's not enough to say we need to rebuild the federal workforce; we need a roster of hundreds of people that can be brought on and trained rapidly to implement within weeks.

Vague aspirations and notional plans are useless or worse, providing a comfortable illusion of preparedness without any of its benefits. **To live up to the spirit of the New Deal—the spirit that saw the Executive Branch turn legislative text into active construction of a large hydropower facility in four months—the next administration must come armed not only with broad aspirations, but also with the detailed plans required to implement them.**

Appendix

Appendix A) Glossary

ARRA — American Recovery and Reinvestment Act

BABA — Build America, Buy America Act

BBBA — Build Back Better Act

BIL — Bipartisan Infrastructure Law

CHIPS — CHIPS and Science Act

CFR — Code of Federal Regulations

CO — Contracting Officer

DOE — Department of Energy

EPA — Environmental Protection Agency

EIR (1706) — Energy Infrastructure Reinvestment (DOE LPO program)

FERC — Federal Energy Regulatory Commission

FOA — Funding Opportunity Announcement

GAO — Government Accountability Office

GDO — Grid Deployment Office

GGRF — Greenhouse Gas Reduction Fund

HR — Human Resources

IPA — Intergovernmental Personnel Act

IRA — Inflation Reduction Act

ITAC — Industrial Training and Assessment Centers (DOE MESC program)

IIJA — Infrastructure Investment and Jobs Act

LPO — Loan Programs Office

MESC — Office of Manufacturing and Energy Supply Chains

NEPA — National Environmental Policy Act

NETL — National Energy Technology Laboratory

NOFO — Notice of Funding Opportunity

OCED — Office of Clean Energy Demonstrations

OGC — Office of General Counsel

OMB — Office of Management and Budget

OPM — Office of Personnel Management

OTA — Other Transactions Authority

PIA — Partnership Intermediary Agreement

PMA — Power Marketing Administration

PRA — Paperwork Reduction Act

PUC — Public Utility Commission

R&D — Research and Development

RFI — Request for Information

RFP — Request for Proposals

TFP — Transmission Facilitation Program

TEFP — Tribal Energy Financing Program

TVA — Tennessee Valley Authority

USDA — U.S. Department of Agriculture

2 CFR 200 — Title 2, Code of Federal Regulations, Part 200

Appendix B) Methodology & Interview Representation

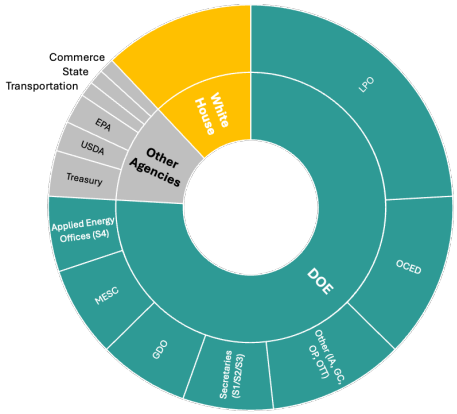
Figure: Interviews by the numbers

83 Interviews

8 Federal agencies & the White House

12 DOE Offices

Split of interviewees by Agency & DOE Office



Examples titles interviewed (not exhaustive)

- Deputy Assistant Secretary
- Under Secretary
- Office Director
- Division Director
- Chief of Staff
- General Counsel
- Senior advisor
- Special assistant
- Program manager
- Investment advisor
- Attorney advisor
- Legislative affairs lead

Agency Scope: The primary focus of this report is based on insights from the Department of Energy (DOE). Interviews included individuals from the White House, USDA, EPA, Treasury, and other departments, but the most evidence and examples draw from DOE's experience standing up and executing BIL and IRA clean energy deployment programs. Consequently, the operational lessons and recommendations are calibrated most directly to DOE's infrastructure offices—and the White House environment overseeing DOE. Many concepts are broadly relevant (e.g., streamlining award processes, building a culture of timely decision-making), but the specific process and organizational fixes cited may require adaptation to fit different agencies' programs and authorities.

Methodology: The authors spoke with 83 individuals involved in the implementation of clean energy programs during the Biden administration. Interviewees ranged from Cabinet-level appointees to front-line program managers across a variety of departments and offices. All interviews were conducted on background and not for attribution. Some quotes were lightly edited for clarity and brevity.

Each interviewee was asked how implementation of the Biden administration's clean energy industrial strategy succeeded, where it fell short, and what the interviewee thought the Executive Branch should do differently next time if given a similar opportunity. The focus was on actions within Executive Branch authority.

In conducting these interviews and framing the recommendations, the authors presume the central objective is to accelerate clean energy deployment. Alternative objectives (e.g., labor, equity, geopolitical) could lead to different assessments and prescriptions.

Appendix C) Ideas for Legislators

While the focus of this report was on executive branch authorities at the DOE, interviewees noted several deployment lessons that apply to federal policymakers shaping new appropriations and legislative packages. These recommendations will require build-out by groups familiar with and engaged in the policy-making process (on and off the Hill) to be actionable for future legislation.

Key observations highlighted by interviewees relevant to policymakers:

Supporting agency implementing capacities when designing new energy policy

"There was no winning," one interviewee noted, regarding the scale and breadth of programs DOE was tasked with administering on short deadlines. Another DOE interviewee recalled from previous time on the Hill shaping IRA:

> *"There was no attention paid to how we enable those agencies to handle [this funding]. … We had a call with [a committee staffer] that told us '[a specific agency] is not capably set up for this. You can't give them $30 billion and expect them to be able to handle it. If you think you can, you don't understand how this stuff works. This is going to be a bad thing for America.' …. We [went ahead] anyways."*

Congress should consider agency capacity for implementation when designing new policy. For example, one interviewee noted how DOE's Transmission Facilitation Program benefitted from sufficient administrative funding to hire enough high-quality staff, versus another interviewee noted that GGRF only had $30M (<0.1% of total funding) to administer a $27B program.

Many interviewees also noted the need for more flexible appropriations to support agency capacity building and ability to respond to industry needs. For example, several interviewees mentioned increasing a flexible budget for the Secretary to leverage to respond to pressing needs, such as critical cross-office efforts (e.g., a data center task force) or innovative program development (e.g., supporting staff in developing innovative and more efficient programs like PIAs/prizes/OTAs).

Striking the right balance of program flexibility and specificity in statute.

The way statutes are drafted can have major implications for whether programs can deliver on intended outcomes. Several interviewees noted that overly prescriptive statutes can constrain agency discretion and slow delivery, while others had enough specificity to be liberating while leaving flexibility in implementation.

For example, the Transmission Facilitation Program (TFP) was frequently cited as excellent in design with its authorizing statute explicitly exempting the program from restrictive 2 CFR 200 grant requirements and allowing the use of a mix of instruments (capacity contracts, loans, etc.). This enabled DOE staff to select the right approach to catalyze transmission buildout. In contrast, several interviewees noted that the statutory design of LPO's 1706 Energy Infrastructure Reinvestment program was challenging to implement, especially the requirements that eligible projects had to be explicitly tied to existing infrastructure, which turned out to be very limiting in the types of projects that could qualify. Ultimately, LPO largely used this program to support utility infrastructure to remain compliant with statutory requirements and timelines, despite this not being the original intent of the program.

Additional retrospective analysis of statutory design for various energy programs could help inform future legislation—particularly around what kinds of specificity helps clarify program intent versus what constrains implementation. This can help ensure agencies are equipped with both the authority and the flexibility to deliver intended program outcomes.

Clarifying approach to sub-national implementers, including sub-federal capacity-building where relevant

Several interviewees said state, local, and tribal governments were not sufficiently equipped and ready to respond to the scale of BIL and IRA programs.[21]

> *"At the state and local level, they weren't ready. I was invited to [a state convening] to talk about BIL and all its programs. [At the end], hands go up to ask really basic questions. How do I apply for a NOFO? Is there a website? Is there a process? I was like, Oh no, they aren't ready.*
>
> *"We needed increased capacity for state and local governments to do this work. In the American Rescue Plan, they had funding that was just direct transfers to state and local governments to help fill budget holes due to COVID. … [With BIL and IRA], we were having to [get states to] apply for this funding before they were able to take the time to plan."*

This raises two questions for legislators: Should future efforts route such a large portion of funds through state, local and tribal governments that were ill-prepared to apply for them? And if so, how can such legislation embed sufficient capacity-building to allow sub-national entities to take full advantage of the funding?

Assuming future efforts do make the same use of sub-national governments, embedding provisions into policies and appropriations for ecosystem capacity building could produce better outcomes. This could include expanding fellowship programs for local governments

[21] This was not true of every such government. The fifty states, hundreds of Tribes, and thousands of local governments exhibit widely varying levels of Institutional capacity In energy policy.

(e.g., PUC and SEO fellowships) or direct transfer funds that can be used for project planning/development (as happened in ARRA).

Further analysis to understand the right support mechanisms is needed. This should include identifying which deployment-ready tools (e.g., formula grants, direct transfers, performance-based bonuses) can be administered with limited impacts to sub-federal public capacity constraints and what complementary programs can be implemented to build capacity (e.g., fellowship programs to expand PUC capacity, formula grants that are repeated over time).

The focusing impact of "shot clocks"

In ARRA in 2009 and in the EPA's Greenhouse Gas Reduction Fund in 2022, statutory "shot-clocks" forced agencies to publish guidance quickly and make rapid decisions to get funding obligated before the mandatory deadline. Integrating some reasonable statutory deadlines into policies and funding programs could help agencies focus efforts; deadlines should align with program realities (e.g., short-term for mature tech programs, longer for riskier tech). Interviewees noted that there can be drawbacks to this approach if timelines are unrealistically short to be high quality, so additional research into appropriate timelines could help ensure policies are both efficient and high quality.

Beyond specific energy programs, some interviewees also noted the opportunity to implement sunset dates for various offices or programs. "It's very hard for the government to stop doing something," one interviewee noted, identifying how integrating some reasonable sunset dates can help clarify expectations and goals for a particular program or office—both with the agency, the Hill, and broader public.

With fiscal headwinds and urgent power sector needs, efforts can start now to determine best practices for legislation and develop model statutes and guidance that build implementation realities into legislative design from the outset.

Appendix D) High priority areas for further assessment

This report examined the implementation of federal clean energy programs and surfaced actionable ideas to make future federal efforts more efficient and outcome oriented. While the details of future clean energy efforts are inherently uncertain, interviewees identified several areas where significant preparatory work can begin now with a high likelihood of being valuable regardless of what form future policy takes. These include:

- **Sector-specific strategies:** Based on market analysis and industry engagement, develop specific plans for priority sectors (e.g., nuclear, grid, clean fuels) that map federal authorities to sector-specific challenges and propose targeted interventions that meet key industry bottlenecks. Outputs could include 15–20 page strategies per sector, accompanied by draft executive or department orders, regulatory guidance, or example program design structures to make those interventions actionable.
- **Compliance implementation plans:** Create pre-drafted compliance playbooks for statutes like NEPA, Davis-Bacon, BABA, Paperwork Reduction Act, and Cargo Preference. Outputs could include short memos on each law's implications for deployment and draft legal guidance from White House or agency counsels on streamlined, outcome-focused compliance that manages litigation risk.
- **Detailed talent development plans and resources:** Absent deeper civil service reforms, build a strategy to maximize federal hiring flexibilities (e.g., Schedule A, special government employees, IPAs) and strengthen management tools to support high performance. Outputs could include a 15–20 page hiring and management plan, OPM/agency-level guidance memos, a talent database with hundreds of qualified candidates, and a practical onboarding guide for new hires (leadership and staff).
- **Program design and implementation (including OTAs):** Prepare plans for innovative program designs, implementation processes, and contracting approaches that fully leverage DOE's Other Transactions Authority and other commercial-style tools (e.g., price floors, offtake agreements, contracts-for-differences). Outputs could include example program designs (including what supportive authorities exist), streamlined award processes and timelines, draft DOE directives on default OTA use for large awards, delegated OTA contracting authority for program offices, and model OTA contract templates (and other contracting tools). The goal should be ensuring programs are catalytic, commercially workable, and executable on a reasonably fast timeline.

This preparatory work should be informed by deep engagement with key stakeholders to ensure solutions are actionable and attuned to the latest industry and community needs—including input from private sector and industry leaders, state and local governments, and implementation experts (e.g., legal counsel familiar with government contracting). It should also map the full set of existing authorities (including remaining appropriations) that could be leveraged from Day 1.

Appendix E) Questions for further assessment

Interviewees also noted several open questions that deserve further research to inform federal (and non-federal) action on clean energy deployment. Questions identified include:

- **Program options given fiscal constraints:** If large-scale spending is limited, how can an administration maximize low-cost funding tools (e.g., financing, catalytic programs like TFP, revolving funds, equity positions) and other political tools (e.g., permitting reforms, convening power)? Which federal tools can be most catalytic given current sector-specific needs?
- **Private sector trust:** Public-private collaboration is critical for a private-sector-led, government- enabled energy strategy. After the current administration's many cancellations, how can public-private trust be rebuilt to support deployment?
- **State and local capacity:** How can the capacity of sub-national public entities and frontline implementers be strengthened to better implement federal resources? How can the federal government better support multi-state and regional efforts where needed (e.g., transmission planning)?
- **Messaging**: What are better ways to communicate climate and clean energy programs to build enduring public support (e.g., affordability first, jobs)?
- **Community benefits and workforce development:** How can community-benefit requirements be structured to achieve real outcomes without slowing project delivery? What are reasonable expectations for their impact?
- **Federal workforce:** How can the federal government re-establish itself as an attractive, mission-driven place to work amid recent workforce disruptions?
- **AI and digital tools:** How can agencies make better use of AI to boost implementation efficiency and workforce productivity, especially for tedious but necessary tasks (FOAs, legal boilerplate, compliance)?
- **Federal risk appetite:** Given federal clean energy policy must adapt to fiscal realities, geopolitical constraints, and the evolving needs of industry, how should the government define its acceptable risk level to advance energy goals? How can that be defined up front to avoid defaults to the safest—but often least effective—options?
- **Role of federal government in managing the electric grid:** With growing grid challenges affecting national priorities (e.g., data-center load growth, affordability), does today's federal approach to the electric grid still work? Or should the government's role in grid management and support be rethought?

These questions point to opportunities for fresh thinking on how the federal government can best support continued clean energy innovation, commercialization, and deployment across America.