

# OTHER TRANSACTIONS AT THE DEPARTMENT OF ENERGY

A PRACTITIONERS' PERSPECTIVE

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This guide discusses structural challenges in federal funding and contracting practices, but those challenges are not a reflection on the dedication or capability of the U.S. Department of Energy (DOE) workforce. Across offices, administrations, and roles, current and former DOE staff have consistently worked to improve programs, adapt tools to new missions, and deliver results under significant statutory, budgetary, and operational constraints. Many of the promising practices described in this report exist because of their initiative, persistence, and public service. We are grateful for their ongoing efforts and for the insights—both formal and informal—that informed this work.

We welcome questions, feedback, and further discussion about the concepts presented in this guide. Please contact us at [info@waypointstrategygroup.com](mailto:info@waypointstrategygroup.com) to continue the conversation or to share your experience applying these approaches.

## Executive Summary

The U.S. Department of Energy (DOE) is the federal government’s primary agency for funding energy research, development, demonstration, and deployment. With annual discretionary budgets exceeding \$46 billion and supplemental appropriations from legislation such as the Infrastructure Investment and Jobs Act and the Inflation Reduction Act, adding tens of billions more, DOE wields substantial financial resources to advance the nation’s energy innovation agenda. To deploy these funds, the department relies on several mechanisms, including traditional procurement contracts, grants, and cooperative agreements, each governed by extensive federal acquisition regulations and statutory requirements.

Among DOE’s available instruments is Other Transaction (OT) authority, a contracting mechanism defined primarily by what it is not: OTs are legal agreements that are neither contracts, grants, nor cooperative agreements, and are therefore not subject to the Federal Acquisition Regulation or many other federal procurement laws. This negative definition gives OTs substantial flexibility to tailor terms, negotiate intellectual property arrangements, and attract nontraditional contractors who might otherwise avoid government work. Other federal agencies, notably the National Aeronautics and Space Administration (NASA) and the U.S. Department of Defense (DOD), have used OT authority far more extensively than DOE, which has historically underutilized this tool despite possessing the statutory authority.<sup>1</sup> (DOD is “using a secondary Department of War designation,” under Executive Order 14347, dated September 5, 2025).

OT authority offers flexibility that can meaningfully improve execution speed and reduce administrative burden while enabling a balanced risk-management approach. This report argues that realizing OT’s potential requires matching the tool to situations where it can improve outcomes for energy and industrial innovation and commercialization while building the institutional capacity and infrastructure, including frameworks, policies, procedures, and staff capacity, to use it effectively. Leveraged well, OT becomes a powerful component of DOE’s toolkit, leading to improved industry experience and outcomes. Leveraged without preparation, even valuable tools underperform.

This report offers a practitioner’s perspective on OT at DOE, grounded in direct experience with completed award cycles. Our central argument is that OT is valuable in specific contexts but is not a universal solution, and that implementation capacity matters far more than statutory authority. DOE already has OT authority. It lacks the institutional capacity and infrastructure to use that authority effectively as a unique tool to achieve real impact.

We organized the report around two questions that should guide DOE’s approach:

1. **When does OT actually help?** Not all projects benefit from OT flexibility. Understanding which project types, performer profiles, and program objectives are well-served by OT enables strategic deployment rather than default adoption.
2. **What does DOE need to use OT effectively?** OT authority alone is insufficient. Effective use requires institutional infrastructure: clear policy, established frameworks and appropriate term sheets, simplified timelines for approvals, clarified roles and responsibilities across federal project managers, legal and contracting, trained staff, and organizational capacity.

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1. [GAO-08-798R, Department of Energy: Implementation and Use of Other Transactions Authority Provided in the Energy Policy Act of 2005 \(June 6, 2008\)](#).

## Key Findings

**Different projects need different approaches.** We identify five project archetypes with distinct OT needs, driven by differences in project risk profiles and team compositions: early-stage R&D, mid-stage demonstration, first-of-a-kind deployment, consortia and novel structures, and demand-side mechanisms. Each requires a different OT variant with appropriate risk tolerance and structured flexibility. Universities, by contrast, are generally better served by standard financial assistance.

Archetype	Primary Flexibility	When to Use OT	When to Avoid OT	Fit
<b>A</b> <b>Early-Stage R&amp;D (For-Profit)</b> <i>Seed-Series B</i>	Cash flow; IP flexibility; Oversight burden	Cash flow critical; IP must be VC-compatible; Light oversight at small scale	Early exploration → Grant and/or Prize DOE expertise valuable → CA	<b>MODERATE</b>
<b>B</b> <b>Mid-Stage Demo</b> <i>Scaling Proven Tech</i>	Teaming; Cost accounting; Milestones	Innovative teaming; Interactive selection; Commercial accounting (GAAP)	Execution risk dominates → CA Company prefers familiar → CA	<b>MODERATE</b>
<b>C</b> <b>FOAK Deployment</b> <i>First Commercial</i>	Commercial speed; private financing; Project revenue	Private financing required; Lender compatibility essential; Speed critical	No financing complexity → CA Single counterparty → CA	<b>STRONG</b>
<b>D</b> <b>Consortia &amp; Hubs</b> <i>Multi-Party</i>	Team and commercial structure; Governance	Evolving teams; Special Purpose Entity leads; Complex commercial relationships	Single performer → CA Stable membership → CA	<b>STRONG</b>
<b>E</b> <b>Demand-Side</b> <i>Market Creation</i>	Performance-based payment; Market creation	Neither FA nor procurement fits; Policy hooks beyond FAR; Performance-based	Outcome-based only → Prizes Design immature → wait	<b>STRONG</b>
<b>F</b> <b>University R&amp;D</b> <i>Academic Research</i>	Rarely needed — edge cases only	Novel multi-institution; Complex industry IP	Basic research → Grant Applied w/ DOE role → CA	<b>WEAK</b>
<b>OT ENABLES (All Archetypes)</b> Milestone payments • Modified cost accounting Flexible teaming • Negotiable IP terms		<b>UNIVERSAL RISKS</b> Extended negotiations without frameworks Bespoke terms • Inconsistent outcomes		

Figure ES-1. Project Archetypes and Mechanism Fit

**Cross-cutting policy issues persist regardless of the mechanism.** Seven issues must be addressed in every award, whether OT or another mechanism. Without clear, Secretary-level (or Secretary-delegate) policy positions, every negotiation re-litigates fundamental issues, extends negotiation timelines, shifts policy risk to career staff, and potentially creates inconsistent terms across awards. This ambiguity can damage projects due to delays and financing availability, erode trust when different teams receive apparently different treatment, and increase risk on both sides.

Issue	Key Question	Sample Decision Format
IP Rights	What government return is expected from federally funded technologies?	Parameters by project type and funding level
Buy America	When are waivers appropriate? What criteria govern?	Pre-approved waiver categories with documented criteria
Davis-Bacon	How to determine applicability for activities in gray areas?	Presumptive categories + consultation process for edge cases
NEPA	What categorical exclusions are available? How to minimize timeline impact?	CatEx list by technology area + parallel processing guidance
Real Property	What ownership and disposition terms forms are acceptable?	Thresholds and frameworks by project size
Cost Sharing	What minimums by project type? What forms are acceptable?	Percentages by archetype; acceptable in-kind forms
Program Income	How to treat commercial revenue from funded projects?	Treatment options by award size with clear triggers

**The flexibility requires structure.** OT can modify cost accounting requirements, negotiate different IP arrangements, structure milestone payments, and tailor administrative requirements. These flexibilities help certain projects and partners move faster, reduce administrative burden, and manage risk. But flexibility without structure can lead to bespoke negotiations that exhaust staff, disadvantage small companies, delay work starting, and produce inconsistent outcomes. Practitioners can mitigate this tension through deliberate design. Establishing agency-level policy positions, a focus on real program needs, objectives, and risk tolerance, program-level prototypical frameworks (~80% complete), and project-level bounded negotiation together preserve meaningful flexibility while enabling speed, predictability, balanced risk management, and institutional learning.

**Institutional capacity is the binding constraint.** DOE has limited OT-warranted contracting/agreements officers, limited General Counsel (GC) staff with OT expertise, no standardized templates, inconsistent approaches across offices, and established expertise in other mechanisms that may bias or anchor staff to existing ways of operating. These constraints, not statutory limitations, determine what is achievable. Expanding OT use without building capacity and guardrails can lead to additional failures that could discredit OT for years, removing a useful capability from DOE's toolkit and blunting its ability to support energy innovation.

## CONSIDERATIONS FOR INTENTIONAL PROGRAM DESIGN

Intentional design is essential for any program, regardless of mechanism utilized. The program objectives and the expectations and needs of potential participants should be characterized before talking about best-fit approach.

1. **What are you trying to accomplish, and why?** "Support clean energy innovation" is not specific enough. "Fund demonstration of novel refining approach for critical minerals at pilot scale through partnership

with a Series C company needing government co-investment” is specific. Articulating the underlying reason increases the likelihood that final agreements will align with true objectives.

2. **What terms are needed? What performer type?** What government involvement level? What payment structure? What IP arrangement? What oversight? These functional requirements should drive selection.
3. **Can existing mechanisms work?** Can requirements be effectively met with grants or cooperative agreements? Would a prize provide the right incentives and constraints to accomplish desired goals? If the barrier is institutional bureaucracy rather than statute, fixing cooperative agreements might be the solution.
4. **If OT, which archetype?** If OT flexibility is genuinely needed, which of the five variants fits? If none fits, either the program is genuinely novel or the analysis hasn’t identified actual needs.

## Core Recommendations

There are immediate and near-term actions that would increase the utility and value of OT.

Actor	Key Actions
DOE Leadership	<ul style="list-style-type: none"> <li>• Establish agency policy positions on the 7 cross-cutting issues: IP, Buy America, Davis-Bacon, NEPA, real property, cost sharing, and program income</li> <li>• Develop a streamlined staffing, resource, and governance plan across all functions</li> <li>• Establish a Program Design Center that reports to the DOE front office as a tactical resource and knowledge center to accelerate, align and standardize program design and implementation</li> </ul>
Congress	<ul style="list-style-type: none"> <li>• Focus program guidance on objectives rather than approach or specific mechanisms</li> <li>• Focus oversight on outcomes</li> <li>• Reauthorize 42 U.S.C. 7256(g) in perpetuity to resolve uncertainty about long term IP flexibility</li> </ul>
Practitioners	<ul style="list-style-type: none"> <li>• Use intentional, problem-centric program design to focus on program objectives, real needs and a balanced risk approach first rather than starting with a mechanism</li> <li>• Develop and vet multiple generalized draft OT term sheets for strong fit project archetypes, including FOAK, consortia, and demand side projects.</li> <li>• Document and share lessons learned</li> </ul>
Private Sector	<ul style="list-style-type: none"> <li>• Engage with DOE to develop generalized draft term sheets</li> <li>• Ask questions early about terms and negotiability</li> <li>• Review draft agreements carefully</li> </ul>

Note: As with the policy decisions, many of these recommendations improve overall governance and institutional capacity and, as such, apply to mechanisms beyond OT.

## The Bottom Line

OT can provide real advantages for the right projects—speed, flexibility on terms, compatibility with commercial financing expectations and structures. The goal is to enable better outcomes for energy and industrial innovation and investment by using the right tool effectively for each situation. This requires deliberately building institutional capability: policy clarity, standardized frameworks, trained staff, disciplined deployment, and a balanced risk approach. Done well, OT becomes a valuable component of DOE’s toolkit, accelerating and streamlining projects and programs while improving outcomes. Done poorly, it becomes another disappointing cycle of enthusiasm and disillusionment, potentially limiting legitimate and impactful uses of OT in the future and blunting DOE’s ability to effectively support advanced energy innovation and commercialization.

Proactive decision making and deliberate action now are crucial to realizing the full value of OT.

## Paper Roadmap

### Where to Focus

Audience	Primary Value	Sections
DOE Leadership	Policy decisions, capacity building	I, IV, V, VI
Congressional Staff	Oversight and authorization context	I, IV, VI
Program Managers & COs	Practical guidance, mechanism selection	II, III, V
Private Sector	Realistic expectations, navigation	III, V, VI
Policy Researchers	Grounded framework for analysis	All

**Section I:** Introduction frames the problem within current OT discourse, explains why DOE’s situation differs from other agencies (dual statutory authorities, institutional history, and distinct commercial dynamics), and establishes what this practitioner-grounded report provides.

**Section II:** The Current Toolkit and Landscape provides an overview of DOE’s funding mechanisms, situating OT within the full portfolio. It examines what OT actually means and can modify, what other mechanisms offer (grants, cooperative agreements, prizes, partnership intermediary agreements), and how accumulated “plaque” in existing mechanisms drives some OT demand.

**Section III:** A Framework for OT provides the analytical core. It introduces risk tolerance as an organizing principle (compliance, execution, and impact risk), then proposes five OT variants matched to distinct project archetypes: early-stage R&D, mid-stage demonstration, first-of-a-kind deployment, consortia/novel structures, and demand-side mechanisms. It addresses when universities benefit from standard financial assistance, resolves the standardization paradox through “flexibility with discipline,” and discusses balancing flexibility with institutional capacity through a focused pilot approach.

**Section IV:** Policy, Capacity, and Process Challenges consolidates the seven cross-cutting policy issues that persist regardless of mechanism (IP, Buy America, Davis-Bacon, National Environmental Policy Act, real property, cost sharing,

and program income), the institutional capacity and process impediments that limit execution, and the conditions that would make OT work effectively.

**Section V:** How to Operationalize translates analysis into action: disciplined mechanism selection, day-one policy decisions, prototypical OT framework development, capacity building and knowledge management (including a proposed DOE Program Design Center), integrated selection and negotiation processes, award administration considerations, and parallel effort to remove plaque from existing mechanisms.

**Section VI:** Recommendations distills specific, actionable guidance organized by audience: DOE leadership, Congress, DOE practitioners, and Private Sector partners.

**Section VII:** Conclusion synthesizes key insights, summarizes what the report has established, and frames the path forward, including the leadership moment, potential as a model for other agencies, and an invitation to ongoing conversation.

**Appendices:** Glossary of Terms | Lessons From Around the U.S. Government (DOD, NASA, CHIPS)

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## SECTION I: INTRODUCTION

### A. The Need to Extend the OT Discourse

Other Transactions (OTs) have emerged as one of the most frequently discussed tools for improving federal program execution at the U.S. Department of Energy, and for good reason. Program managers facing timeline pressure see OT's flexibility as a path to speed up awards. Commercial partners seeking government support and struggling with federal cost accounting and reporting requirements see OT as a way to work with the government without retrofitting their systems. Policymakers looking to demonstrate commitment to innovation and private-sector partnership see OT as a tangible signal that the government is willing to do business differently. Multiple stakeholders are actively trying to understand and access the opportunity that OT presents. DOE developed the DOE OT Guide in 2023<sup>2</sup> and updated OT regulations in 2025.<sup>3</sup> The appeal reflects genuine frustrations with other federal funding mechanisms.

OT authority provides flexibility that standard mechanisms lack. But while conversations are motivated by good faith efforts to improve government programming, experience to prove this out is lacking. Many proponents have limited experience with funding mechanisms, including OT, and little experience directly negotiating, administering, or troubleshooting federally funded projects. They have not seen multiple complete cycles using a range of funding mechanisms. The gap between advocacy and implementation creates uncertainty and often drives the government to adopt highly conservative approaches to manage compliance and execution risk. The DOE efforts to date have focused primarily on execution logistics and compliance rather than impact. Government accounting and compliance requirements have created conditions where only organizations willing to invest in government-specific systems can effectively participate. OT offers potential relief from some of these barriers, but only if deployed with the institutional infrastructure to realize that potential.

When programs struggle (and some will, regardless of the mechanism they utilize), the current discourse encourages misattribution. Delays are blamed on insufficient OT use rather than on unclear policy. Negotiation failures are attributed to the choice of mechanism rather than to inadequate preparation. The prescription becomes "more OT" when the actual problems lie elsewhere: in accumulated requirements that burden all mechanisms, in unresolved policy questions that no mechanism can escape, in institutional capacity that takes years to build.

DOE has seen this pattern before. Each new authority (cooperative agreements, prizes, even OT) arrived with promises of transformation, experienced a cycle of enthusiasm and disappointment, and settled into appropriate but limited use. The risk now is that OT follows the same trajectory, discredited when expectations exceed what any single mechanism can deliver, despite OT's genuine value. The goal is to use OT deliberately to enhance DOE capability to responsibly deliver limited federal funds to impactful projects, deploying flexibility where it creates value while maintaining the predictability and consistency that enable efficient execution.

Consider what happens without this discipline. When practitioners deploy OT as the default rather than a strategic choice, every negotiation becomes bespoke and broad, given OT's flexibility. Well-resourced companies with sophisticated legal teams and staff secure favorable terms, particularly when they can leverage a public announcement of selection; smaller companies without experienced counsel or staff accept initial offers or exhaust themselves in negotiations they cannot sustain. Government staff, lacking established frameworks, OT experience, and the resources to effectively support wide-open versus narrow negotiations, face delays and make inconsistent decisions that can disrupt work and create precedents they did not intend.

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2. [DOE: Guide to Other Transactions \(August 2023\)](#).

3. [2 CFR Part 930 "DOE Other Transaction Agreements."](#)

This report examines how to deploy OT effectively—matching it to projects and programs where the flexibility adds value, building the infrastructure that enables efficient execution, and avoiding the common pattern where new authorities arrive with high expectations but insufficient preparation.

A central finding of this report is that seven cross-cutting policy questions recur across DOE programs regardless of the funding mechanism: intellectual property rights, Buy America/Build America requirements, Davis-Bacon wage requirements, National Environmental Protection Act (NEPA) compliance, real property, cost sharing, and program income. Clear positions on these seven issues—established by political leadership at the outset and integrated into flexible frameworks—could reduce negotiation timelines by half or more and would benefit all mechanisms, not just OT.

## B. Why DOE Is Different

DOE's OT situation differs from other agencies in ways that matter for implementation. Importing approaches from the U.S. Department of Defense (DOD) or the National Aeronautics and Space Administration (NASA) without adaptation produces poor results.

### Dual Statutory Authorities

Unlike most agencies, DOE has two distinct OT authorities with different origins and characteristics.

Section 7256(a) derives from the DOE Organization Act of 1977, which authorized the Secretary to enter into agreements “of any kind” necessary to carry out the Department’s mission. This organic authority mirrors NASA’s Space Act authority, which has supported decades of flexible partnerships. As Congressman John Dingell stated during the original debates, this provision was intended to give DOE the flexibility such that the Secretary “can do literally almost anything he wants to in terms of expending money and making agreements.”<sup>4</sup>

Section 7256(g), enacted as part of the Energy Policy Act of 2005, provides explicit OT authority with specific intellectual property (IP) flexibility provisions, along with implementation timelines that likely reflect Congressional interest in ensuring that DOE establishes the capacity to use OT effectively. This authority sunsets in 2030 unless reauthorized, creating uncertainty for long-term planning.

The 7256(a) authority does not sunset, providing a durable foundation for OT use even if 7256(g) expires. However, the relationship between the two authorities and their respective IP provisions creates complexity that requires careful legal navigation.

### A Brief History of OT at DOE

The DOE Organization Act of 1977 created the agency in response to the energy crises of that decade, with Presidents Nixon, Ford, and Carter each invoking the Manhattan Project as a model for addressing energy dependence. The Act granted the Secretary broad authority to enter into agreements “of any kind” necessary to carry out the department’s mission, envisioning DOE not merely as an R&D enterprise but as an agency capable of deploying energy technologies through partnership with private enterprise.

This expansive vision proved short-lived. After the failure of the Energy Security Act of 1980 and attempts to terminate

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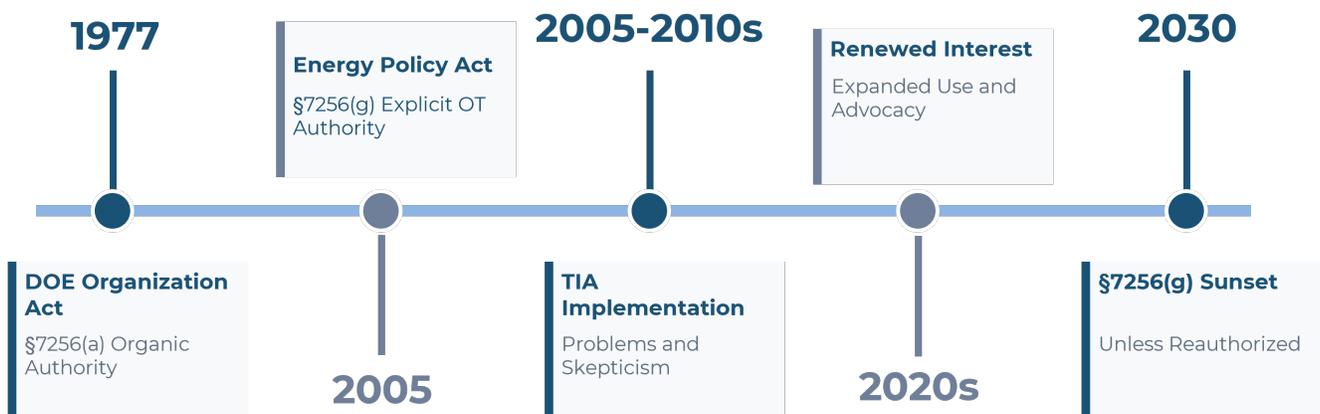
4. From Committee hearings for the Department of Energy Organization Act of 1977.

DOE as an agency, DOE retreated into R&D, nuclear weapons work, and environmental cleanup, with serious deployment efforts largely dormant until the Energy Policy Act of 2005. That statute revealed Congressional frustration with DOE’s contracting limitations: it granted explicit OT authority, cross-referenced DOD’s framework, and imposed a 90-day deadline for implementing regulations.<sup>5</sup>

The first significant OT experiment at DOE was the Technology Investment Agreement (TIA) framework, running from the early 2000s into the early 2010s. DOE deployed TIA with heavy constraints, an OT in name only that provided limited practical flexibility beyond IP negotiability. The IP flexibility was also underutilized due to a lack of comfort and trust in the modified approach.

When some TIA-funded bioenergy projects failed (primarily due to market conditions and technology readiness), the negative outcomes became associated with OT. Between this “blame the mechanism” reaction and the lack of differentiation from cooperative agreements in this case, there was a lasting institutional consequence: a cohort of DOE staff came to view OT as complicated, risky, and low-value. Legal interpretations became more restrictive. GC and program staff developed skepticism that persists in some quarters today.

## Timeline of DOE OT Authority and Use



Source: DOE Organization Act (1977), Energy Policy Act (2005)

Figure 1.1. Timeline of DOE Authority and Use

DOE is therefore not starting from a clean sheet. Expanded OT use must overcome not just the usual challenges of building new capability but also the specific challenge of undoing constrained interpretations that took root after TIA.

## Institutional Constraints

DOE’s OT infrastructure has historically been minimal. For years, the department had just one contracting/agreements officer formally warranted<sup>6</sup> with OT authority. The legal power to bind the federal government to OT agreements rested on a single point of failure, making OT execution dependent on one person’s availability, workload, and continued employment. While this has improved somewhat, DOE lacks the distributed OT capability required for effective execution.

5. [Santi Ruiz, “How to Fix a Department’s Funding Tools \(Narayan Subramanian Interview\),” Statecraft, April 2025.](#)

6. A Department of Energy (DOE) Contracting Officer (CO) warrant is an official [Certificate of Appointment \(SF 1402\)](#) that grants a specific individual the legal authority to bind the Federal Government by awarding, administering, modifying, or terminating contracts.

## Different Commercial Dynamics

The energy and industrial sectors differ from defense in ways that affect the utility of OT. In the applied R&D space, the U.S. Department of Defense (DOD) is often the procurer of the solutions it funds, whereas the Department of Energy is not. As a result, DOE-funded companies need a fundamentally different business strategy than DOD-funded companies. At the later demonstration and deployment stages, energy projects often involve different financing structures (project finance, tax equity), different regulatory environments (state public utility commissions, Federal Energy Regulatory Commission), and different commercial relationships (utilities, offtakers, project developers) than the defense industrial base with which DOD typically engages.

Commercial partners' needs differ accordingly. A defense contractor accustomed to federal cost accounting<sup>7</sup> may find OT's flexibility on this point less valuable than an energy startup whose systems were not designed for government work. A nuclear developer integrating private financing needs to use terms that satisfy lenders, a consideration less prominent in traditional defense procurement.

In short, DOE cannot simply import DOD's OT playbook. The legal foundations, institutional capacity, commercial partners, end users, and political environments differ between the agencies. Effective OT use at DOE requires tailored approaches informed by other agencies' experience but adapted to DOE's context.

## C. What This Report Provides

This report offers practitioner-grounded analysis of what OT likely can and cannot accomplish at DOE, based on direct experience with completed award cycles across multiple energy subsectors, commercialization stages, and contracting structures. It provides assessments from experts who have designed programs, negotiated agreements, administered projects, and observed the consequences of various approaches.

The report begins by situating OT within DOE's funding mechanism landscape, clarifying what OT can modify and why other mechanisms remain appropriate for many applications. It then develops a framework for matching OT approaches to distinct project types, addressing when OT helps, when it creates problems, and how to balance flexibility with the consistency that enables efficient execution. The final sections translate analysis into action: identifying the policy decisions, institutional capacity, and process improvements required to make OT work effectively, with specific recommendations for leadership, practitioners, and external partners.

### What We Don't Cover

This report focuses on DOE's applied energy programs. We believe lessons on OT may be pertinent to other parts of DOE that also conduct applied research, such as the National Nuclear Security Administration, but recognize that significant differences relative to the applied energy programs exist in mission, project teams, and project structures. We do not attempt a comprehensive treatment of OT use across all federal agencies, though we reference other agencies where their experience is instructive. We do not provide a legal treatise on OT authority. And we do not offer a single recommendation for all circumstances. The right answer depends on the program, the project, and the institutional context.

We also acknowledge the limits of our own experience. OT use at DOE remains relatively nascent. Some of the

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7. [FAR Part 30, Cost Accounting Standards Administration.](#)

programs we discuss are too recent to evaluate fully. There are consequences of expanded OT use that will only become visible over time. Where our experience is limited, we say so.

### **A Note on Perspective**

In the interest of full disclosure, the authors of this paper have extensive experience designing, executing, and evaluating multiple cycles of programs and projects using grants, cooperative agreements, prizes, PIAs, and procurement. However, given the limited use of OT to date, we have not led or even seen complete cycles using this approach beyond the TIAs noted previously. Prior experiences inform our perspectives and opinions, but in the end, they are primarily prospective, not retrospective, on OT.

We are not neutral observers. We have opinions about how DOE should approach these questions, and those views shape the report.

We believe OT is valuable and that its value is best realized through disciplined deployment. We believe institutional capacity matters more than statutory authority. We believe consistency and predictability are undervalued in discussions that focus primarily on flexibility. We believe the accumulated complexity in existing mechanisms deserves as much attention as the pursuit of new ones. And we believe that nothing is a panacea. Anyone who claims to have found the single solution to DOE's program execution challenges has not spent enough time executing programs.

Readers may disagree with some of our conclusions; however, we hope they will find the evidence and analysis useful regardless.

## SECTION II: THE CURRENT TOOLKIT AND LANDSCAPE

Understanding OT requires understanding the full landscape of mechanisms available to DOE. OT is not a replacement for other tools; it is one option among several, each suited to different purposes. Effective program design starts with understanding what each mechanism does and when to use it.

### A. What “OT” Actually Means

“Other Transactions” is defined in statute by what it is not: neither procurement contract nor grant nor cooperative agreement nor prize. This negative definition—an agreement that is “other” than the standard types—creates both flexibility and confusion.

#### The Funding Mechanism Landscape

DOE deploys funding through several distinct mechanisms, each with different characteristics and requirements. Each requires a different composition of oversight staff and capabilities, including different types and/or levels of warrants and skill sets for contracting and agreement officers. Over the past 10 years, DOE has diversified its approach across these mechanisms. We have noted below several of the most commonly used mechanisms for supporting energy innovation and commercialization.<sup>8</sup>

**Grants** provide funding with minimal federal involvement.<sup>9</sup> Grants are one type of what the government defines as financial assistance (FA).<sup>10</sup> The recipient proposes work, receives funds, and executes with limited oversight. Grants are appropriate when the government’s interest is in enabling activity rather than directing it—typically in basic research, where the value lies in the researcher’s expertise and judgment. When discussing applied R&D or demonstration, we are typically referring to project grants, as opposed to block grants or formula grants, which are more often awarded to state governments and tribes for regranting and deployment support. We do not address block and formula grants in detail in this report.

**Cooperative agreements** provide funding with “substantial involvement” by the federal government.<sup>11</sup> Cooperative Agreements are the second type of FA. Unlike grants, cooperative agreements contemplate active federal participation: technical guidance, milestone reviews, collaborative problem-solving, changes to scope or budgets. The substantial involvement is a feature, not a burden—it reflects legitimate government interest in partnership beyond mere funding. Cooperative agreements are appropriate where increased government engagement can provide value, both by sharing expertise and by providing greater risk oversight—projects with early-stage companies pursuing high-impact, high-technical-risk projects are a good example.

**Procurement contracts** pertain when the government is acquiring something for its own use. The relationship is buyer-seller: the government specifies what it wants, the contractor delivers, and the government pays. Federal Acquisition Regulation (FAR) governs procurement, with extensive requirements designed to protect the government as purchaser.<sup>12</sup>

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8. These are not all contracting approaches available: [AAF Contracting Cone, Defense Acquisition University](#).

9. [2 CFR 200.1 “Grant agreement or grant.”](#)

10. [2 CFR 200.1 “Federal financial assistance.”](#)

11. [2 CFR 200.1 “Cooperative agreement.”](#)

12. [Federal Acquisition Regulation \(FAR\)](#).

**National Laboratory Agreements** operate through a distinct mechanism that offers relevant lessons for OT implementation. The management and operating contracts that govern DOE’s relationship with national laboratories provide inherent flexibility that mirrors some of what OT seeks to achieve. Program staff can adjust work scope more readily, redirect funding between tasks without extensive modification processes, and respond swiftly to emerging needs. This flexibility has made laboratories an attractive option for program offices seeking to avoid financial assistance constraints, whether appropriately due to program goals or as a workaround when other mechanisms prove cumbersome. Programs like technical assistance initiatives and testing access programs have leveraged laboratory relationships to distribute smaller awards quickly and iterate based on results. The lesson is not that OT should replicate laboratory funding structures, but that DOE already operates with significant flexibility in one part of its portfolio. Understanding how that flexibility functions—and why it does not translate directly to extramural funding—can inform realistic expectations for what OT can achieve with external partners.

**Prizes** pay for outcomes rather than activities.<sup>13</sup> The government defines a challenge, competitors attempt solutions, and winners receive awards. IP typically stays with performers. Prizes are particularly useful when multiple approaches might succeed, and parallel experimentation is valuable.

**Partnership Intermediary Agreements (PIAs)** are structurally different, as they create an intermediary between DOE and program actors.<sup>14</sup> The intermediary’s role is to engage on behalf of the government to accelerate technology transfer and licensing, and to advise and support actors with programmatic needs (like reporting and budgeting). The intermediaries may also play a convening role, bringing together relevant parties to execute the programmatic vision with greater flexibility than other mechanisms.

Mechanism	Government Role	Typical Use	Key Characteristics
Grants	Minimal involvement	Basic research	Lightest touch; recipient autonomy; government shares IP ownership
Cooperative Agreements	Substantial involvement	Applied R&D	Partnership model; shared engagement; government shares IP ownership
Procurement Contracts	Buyer	Acquisition for government use	FAR governs; government specifies deliverables; IP not applicable
National Laboratory Agreements	Variable - direct labs to support DOE efforts	Spans R&D to consortia-like and technical assistance	Flexible contracts responsive to government requests
Prizes	Outcome definer	Innovation challenges	Pay for results; IP to performer
PIAs	Substantial involvement with Intermediary	Flexible – can support R&D through deployment	Intermediary re-granting, advising and other support; IP typically excluded.

13. Examples at [CMEI Prizes and Competitions](#).

14. Examples at [DOE Partnership Intermediary Agreement](#).

OT	Flexible	Various	Neither FA nor procurement; customizable; IP flexibility
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## What OT Can Modify

Every agreement, regardless of mechanism, must address the same core parameters to be effective. OT's value is not that it eliminates these requirements, but that it can resolve them in ways that standard frameworks cannot.

- **Cost accounting requirements.** Standard financial assistance requires compliance with 2 Code of Federal Regulations (CFR) 200 cost principles. OT can waive or modify these requirements and accept commercial accounting standards instead.
- **Intellectual property rights.** Standard provisions (Bayh-Dole for financial assistance, FAR clauses for procurement) establish default IP treatment. OT can negotiate different arrangements within statutory limits.
- **Competition requirements.** Standard mechanisms have competition requirements. OT provides greater flexibility in structuring or limiting competition.
- **Payment structures.** Cooperative agreements typically use reimbursement; procurement uses various structures tied to deliverables. OT can use milestone payments, fixed amounts, or other structures suited to project needs.
- **Administrative requirements.** Program staff can tailor reporting, documentation, and oversight requirements, rather than following standard templates.

**None of these flexibilities are automatic.** Each requires a deliberate decision about what the project needs and what terms serve program objectives. OT, like all the mechanisms that DOE utilizes, is a design space. Agreements can range from structures barely distinguishable from cooperative agreements to highly customized arrangements that look nothing like standard federal awards.

## B. What Other Mechanisms Still Offer

Before reaching for OT, understand what cooperative agreements and other mechanisms provide. Much criticism of cooperative agreements conflates their inherent characteristics with accumulated implementation burden or "plaque."

### Grants: Straightforward and Proven

Grants are frequently underutilized at DOE despite being the appropriate instrument for certain applications.

- **Minimal involvement by design.** The recipient proposes work, receives funds, and executes with limited federal oversight. When the government's interest is in enabling activity rather than directing it, grants preserve performer autonomy while achieving public benefit.
- **Streamlined administration.** Without substantial involvement requirements, grants avoid the collaborative overhead that cooperative agreements build in. For straightforward projects where federal guidance isn't

needed and high trust exists, this simplicity is a feature.

- **University alignment.** Academic institutions have built administrative infrastructure around grants. Their sponsored research offices, cost accounting systems, and compliance frameworks are designed for this instrument.

DOE's shift away from grants, as cooperative agreements became widely available in pursuit of increased oversight, illustrates the overcorrection pattern. Program managers wanting to issue \$200,000 grants for straightforward work were told, "We do cooperative agreements" without considering whether substantial federal involvement was needed. The result was unnecessary administrative burden on projects that would have been better served by a lighter touch.

## Cooperative Agreements: Substantial Involvement as a Feature

The "substantial involvement" that defines cooperative agreements reflects legitimate government interest. When DOE funds technology development, it often brings expertise to the table: technical and commercial expertise, connections to national laboratories and other experts, access to testing facilities, and technical knowledge that can improve outcomes. Cooperative agreements formally incorporate this contribution.

DOE also recognizes that innovation and technology development are difficult and that projects may need to refocus or pivot as they progress. Monitoring provisions ensure a high level of awareness and visibility into project status, enabling DOE to see emerging issues early and collaborate with the project teams on mitigation strategies and plans.

For projects that benefit from government involvement (technical guidance, collaborative problem-solving, access to federal resources), the cooperative agreement mechanism is appropriate. The involvement is not bureaucratic overhead; it is the partnership that the mechanism is designed to enable.

Beyond the cases where substantial involvement is a benefit to both parties, there are also cases where cooperative agreements may be better simply because of institutional systems and expertise. This is often the case with university performers, who are highly familiar with the requirements and processes for financial assistance and have built their reporting systems to comply with this type of award. For these groups, OT may be a complication and burden without significant additional value.

## Cooperative Agreements: The Plaque Problem

Much frustration with cooperative agreements stems not from their inherent design but from accumulated requirements that have built up over time. These burdensome requirements are not limited to cooperative agreements, but we have focused on them here due to their prevalence as a default choice in DOE programs.

- **Requirements beyond statutory minimums.** Templates often include provisions that no statute or regulation requires, added at some point for some reason, never removed. Cooperative agreements are now the default approach in many offices, with limited appetite to consider lower-touch approaches such as simple grants. Even within cooperative agreements, processes such as application requirements and merit reviews expand beyond the actual requirements as defined in 2 CFR 200. While it is important to retain elements that enable better decision making by DOE at selection and project gates and better outcomes for the projects, there is certainly room for simplification between the 25-page DOE guide with multiple attachments and the 147-word

requirement definition in 2 CFR 200.205.<sup>15</sup>

- **Restrictive contractual or legal interpretations codified as rules.** Conservative interpretations that represented one possible reading of requirements have become embedded as if they were requirements themselves.
- **Template proliferation.** Each office develops its own templates, adding provisions without systematic review. Requirements accumulate without anyone assessing the aggregate burden.
- **NOFOs-as-law perception.** Staff treat the template Notice of Funding Opportunity (NOFO)—the primary request-for-proposals structure for financial assistance programs—as immutable law rather than an accumulated practice that they could change. In practice, this means the NOFO documents often run to more than 100 pages, with large sections of information that are not differentiated or even necessary early in the application process. Similarly, this drives complex, multi-part application packages, only part of which truly informs selection decision-making. There are opportunities to simplify both the NOFO and associated application requirements and move to a just-in-time submission model. NOTE: If moving in this direction, it is essential to consider *when* DOE announces selections, as early announcements could distort or delay negotiations and award finalization (see Section IV.D).

The distinction between statutory requirements and accumulated practice is essential. If the barrier to effective execution is plaque rather than statute, the solution might be to clean up cooperative agreements and consider established alternatives, such as grants, rather than switching to OT. Understanding these dynamics helps identify what can be changed and what requires sustained effort.

Compliance activities suffer from what Dan Davies calls “the problem factory.”<sup>16</sup> Agencies initially mitigate known compliance risks—those previously identified by the Inspector General (IG), U.S. Government Accountability Office (GAO), or external critics. But compliance risks always expand. Agencies start anticipating new compliance risks to mitigate “just to get ahead of it.” The agency becomes both the problem factory (generating the problem) and the solution factory (solving the problem it generated). This approach incentivizes the problem factory to generate more problems for the solution factory. The world of compliance risks is vast and probably unbounded.

- **Easier to add than remove.** When a problem occurs, someone adds a requirement to prevent recurrence. Requirements rarely sunset and tend to require protracted discussions when there is an opportunity to make changes, which can be fleeting.
- **Default to restrictive interpretation.** Legal or contracting staff facing novel questions often choose conservative interpretations. Those interpretations become embedded in templates.
- **Organizational silos.** Work burdens are high, and opportunities to adopt organizational best practices are limited. Each program office develops materials, building upon prior versions without sufficient reassessment. Challenging established templates requires high effort and time commitment, and is therefore often avoided.
- **Institutional memory fades and resistance to change is entrenched in the culture.** Staff who joined after leadership added requirements don’t know where they originated. “That’s how we’ve always done it” replaces

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15. [2 CFR 200.205 “Federal agency review of merit of proposals.”](#)

16. [Dan Davies, “The Problem Factory: Preemptive Risk Aversion in Infrastructure Planning and the Role of Professional Services,” Niskanen Center, 2025.](#)

reasoned assessment. Or, a “we cannot do it that way because we tried it once and it failed” gets entrenched. Incentives to try new approaches and take risks do not exist.

Political appointees face a particular challenge: it takes months to distinguish between true requirements and accumulated practice. DOE staff who lack context for requirements can give inconsistent advice to appointees and exacerbate the problem. The first instinct for incoming team members may be to throw up their hands at the byzantine craziness of it all and look for any available alternative. By the time understanding of the rationale behind the requirements develops, significant time has passed.

This dynamic has a significant implication: much OT enthusiasm may be a reaction against the plaque rather than a genuine need for flexibility that cooperative agreements cannot provide. If true, an alternative path exists: systematically identifying and removing the plaque from established mechanisms rather than escaping to OT.

### Prizes: Agile Capabilities

Prizes offer distinct advantages for some programs and participants:

- **Low Barrier to Entry.** Prize entries can be simple, lowering the burden to engage so that it is less prohibitive for smaller organizations, state and local governments, and entrepreneurs. This can shorten the required application windows and reach a broader set of potential participants.
- **Outcome-based payment.** The government pays only for demonstrated achievement, not for effort. No cost accounting or reporting is required or expected.
- **IP to performer.** Standard prize structures leave IP with participants, supporting commercialization.

DOE has built significant prize capability through programs like the American-Made Challenges network. This capability, cultivated intentionally over several years, demonstrates that effective program execution comes from institutional investment, not just mechanism selection.

### Combinations: Evolving Engagement for Evolving Needs

To achieve the most effective programmatic outcomes across subsequent programs, combining mechanisms may prove a powerful pathway to advancing to market. The combinations of programs stated here are for illustrative purposes, and they are not to imply that these combinations are currently being used.

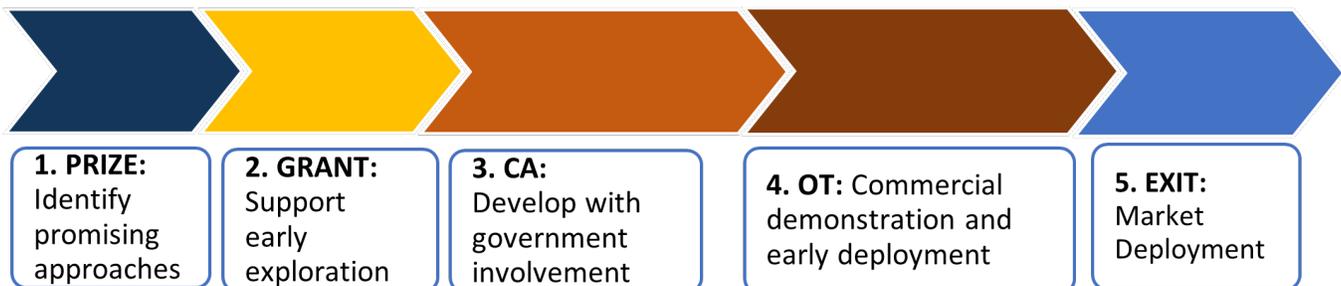


Figure 2.1. Mechanism Progression Example

Other combinations serve different purposes:

- **Parallel mechanisms for different performer types.** A single program might use cooperative agreements for university participants and OT for commercial partners.
- **Hybrid structures.** Cooperative agreements with prize components for specific milestones combine the partnership model with outcome-based incentives.

The key insight is that mechanism selection should serve program design, not constrain it.

## KEY TAKEAWAY

OT is one tool in the toolkit. Its value depends on which specific flexibilities a project genuinely needs. Before choosing OT, understand what cooperative agreements and other mechanisms provide, distinguish between statutory requirements and accumulated plaque, and ask whether the flexibility you seek would survive prudent risk management. The answer often points toward combinations of mechanisms or streamlined existing tools rather than OT.

### “Convergent Evolution” Thought Experiment

A useful exercise for understanding OT's actual value: Imagine adding constraints until risk is controlled. What remains?

Pathway 1: Add oversight, milestones, and cost documentation to manage execution and compliance risk. The result looks remarkably like a cooperative agreement.

Pathway 2: Define outcomes, eliminate substantial involvement, leave IP to the performer to minimize barriers to entry and oversight burden. The result is effectively a prize.

Pathway 3: Remove the competitive process to quickly select an awardee for a specialized need. The result is similar to a Determination of Noncompetitive Financial Assistance (DNFA), an established approach under which typical financial assistance competition requirements are waived in specialized circumstances.

Pathway 4: Narrow competition, specify deliverables, require government ownership to manage execution risk, and ensure mission fit. The result approximates procurement without FAR.

If the end state approximates an existing mechanism, with stronger institutional knowledge and capacity to execute, what has OT provided? In many cases, it is likely to provide value, but if that value is not articulated clearly, any convergent evolution will drive delays as teams and leadership debate the value of a new mechanism versus an established mechanism that seems substantively similar. Instead, before proceeding with OT, ask: What specific provisions would this OT modify from standard frameworks? Would those modifications survive internal review, legal scrutiny, and risk assessment?

## SECTION III: A FRAMEWORK FOR OT

OT's flexibility serves different projects differently. Matching the right OT approach to the right project type—and recognizing when other mechanisms serve better—enables DOE to realize the tool's potential.

This section provides a framework for matching the mechanism to project characteristics and the types of risks the program seeks to address, moving beyond “OT or not” to a more nuanced assessment of what program design will be most effective. This is critical to get right as; once a funding opportunity is released there isn't a way to change the selected funding mechanism on the fly. Releasing a NOFO for cooperative agreements typically means funding all awards using that mechanism. A change could require re-releasing that funding opportunity to update the funding mechanism. It is possible to include multiple types of awards in a single opportunity, but it is essential to consider and communicate when each would be used, or negotiation scope, complexity, and timelines may increase even further.

### The Spectrum Approach

The choice is not binary. Multiple dimensions matter: performer capitalization, technology and commercial adoption readiness, timeline pressure, IP development stage, team composition, and risk tolerance. A framework that accounts for these dimensions enables more precise matching than simple rules.

### Risk Tolerance as Organizing Principle

Effective mechanism selection requires understanding risk as a multi-dimensional concept. DOE manages three overlapping types of risk, each with different characteristics and implications:

**Compliance risk** concerns waste, fraud, and abuse—ensuring funds are used appropriately. This risk is tangible and measurable, and it lends itself to checklists, audits, and dashboards. Public trust depends on responsible stewardship of taxpayer funds.

**Execution risk** concerns whether performers deliver projects on time, within scope, and according to plan. Like compliance risk, program staff can monitor execution risk through milestones, reporting requirements, readiness metrics such as Technology<sup>17</sup> and Commercial Adoption Readiness Levels<sup>18</sup> in project planning, and structured oversight.

**Impact risk** concerns whether projects—even if completed properly and compliant with all requirements—actually achieve their intended effect on the energy system. This risk is harder to measure and requires consideration of a complex, interconnected, and changing external environment. Technologies evolve, markets and competitive conditions shift, and the state of play at program launch may differ substantially from conditions at project completion. Ongoing assessment and monitoring of adoption and commercialization barriers are critical to ensure continued situational awareness.

These risks exist in tension. Efforts to minimize compliance risk often lead to conservative financial and contracting practices that slow execution and delay impact. Staff risk spending more time documenting invoices and milestones than ensuring that objectives remain relevant over time. By managing one category of risk to near-zero, DOE can inadvertently increase another—the risk that programs miss their window of relevance entirely. The appropriate

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17. [DOE G 413.3-4A: Technology Readiness Assessment Guide, 2011.](#)

18. [Adoption Readiness Levels \(ARL\) Framework, DOE Office of Technology Commercialization.](#)

balance shifts as commercial maturity increases:

**Early stage:** Lower investment levels warrant higher tolerance for technical failure and lighter compliance controls. The goal is to place bets on promising approaches, not to ensure that every project succeeds. Impact risk dominates—the question is whether the portfolio can identify technologies worth advancing. Compliance and execution oversight should be proportionate to investment scale.

**Mid-stage:** Moderate investment warrants balanced controls. Technologies have shown promise; more accountability is appropriate. Teams are becoming more complex and commercially mature. Execution risk becomes more prominent—can the team deliver what they’ve proposed? But impact risk remains: demonstration projects must still position technologies for commercial adoption, not just prove technical feasibility in isolation.

**Deployment:** Higher investment and closer proximity to market warrant stronger accountability on compliance and execution—large taxpayer commitments deserve substantial oversight. Yet paradoxically, this is also where process delays create the greatest impact risk. Commercial deals have timelines. Partners have other options. Companies have other capital projects to consider for competing on book or leveraged institutional financing. Industries have limited windows for commercial downtime. The tension between thorough oversight and commercial speed is most acute precisely when the stakes are highest.

The framework should not be read as “early stage = light touch, deployment = heavy hand.” Rather, the *types* of risk that warrant the most attention shift between project types. Early-stage programs can tolerate technical failure but must be designed to produce useful learning even from failed projects. Deployment programs must execute efficiently enough to remain commercially relevant while maintaining accountability proportionate to investment scale.

A systems view of risk suggests that mechanism selection—including whether to use OT—should consider which risks are most critical at each stage and how different mechanisms help or hinder management of each type.<sup>19</sup> OT’s flexibility can enable faster execution and reduce impact risk from process delays. But OT’s lack of standard terms or articles can also increase compliance risk if programs lack clear frameworks. The question is not whether OT reduces risk, but whether it shifts risk in the right direction for the specific project context.<sup>19</sup>

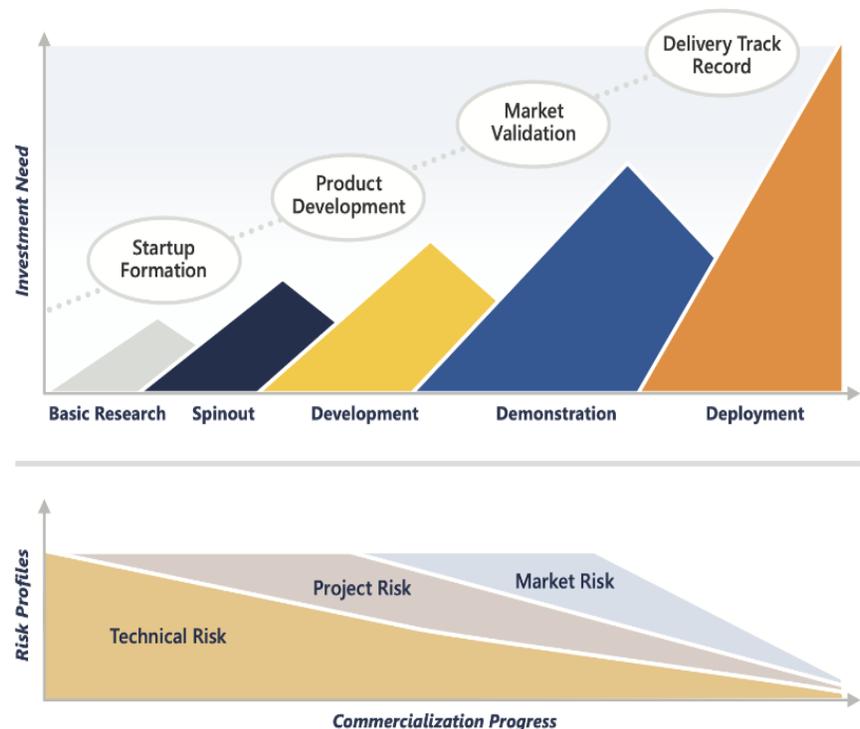


Figure 3.1. Commercialization Progress, Investment Size, and Risk Profile

19. [DOE: OCED Investment Value Proposition, December 2024.](#)

## A. Project Archetypes and Key Considerations

As noted above, OT’s flexibility serves different projects differently. It is critical to assess the key flexibilities sought by various projects and performers, and to standardize approaches where possible and valuable to improve efficiency, transparency, and outcomes.

We propose five standard OT variants, each designed for a distinct project archetype that requires different types of flexibility depending on its commercialization stage.

Variant	Archetype	Primary Flexibility Focus
A	Early-stage R&D (TRL 2-5)	Cash flow, IP flexibility, light oversight
B	Mid-stage Demonstration (TRL 5-7)	Teaming, cost accounting, milestone structures
C	FOAK Deployment (TRL 7-8)	Commercial speed, private financing integration
D	Consortia/Novel Structures	Teaming flexibility, governance flexibility
E	Demand-Side Mechanisms	Performance-based payment, market creation

### i. Early-Stage R&D (For Profit, Friends & Family to Series B)

**Characteristics:** Limited capitalization (\$1-20M), short runway (12-24 months), small teams without dedicated administrative staff, developing IP core to valuation, typically no federal experience. Every dollar and every month matters.

**What They Need:** Early-stage companies need predictable cash flow—knowing when money will arrive matters as much as payment structure—along with minimal administrative burden that doesn’t overwhelm small teams without dedicated compliance staff. They need IP arrangements that support fundraising rather than complicate it, and above all, speed to award.

**When OT Helps:** Milestone-based payments can change reimbursement cycles (assuming adequate DOE capacity). Reduced cost accounting requirements remove the burden from startup financial systems. IP flexibility under 7256(g) can enable terms more compatible with venture financing.

**When OT Creates Problems:** Extended negotiations consume exactly the time and attention early-stage companies cannot spare. The startup CEO spending three months negotiating federal terms instead of building the company is not a value-add proportionate to the level of support. IP flexibility can, counterintuitively, cause problems if subsequent funding comes through mechanisms without the same flexibility.

**When Grants or CAs Are Better:** Grants may be appropriate for very early exploration and in high-trust situations. Cooperative agreements with streamlined terms may work when DOE expertise can help guide the project. However, both are inherently tied to IP restrictions as well.

## Case Study: SETO Milestone Programs

SETO designed milestone-based payment awards to focus companies\* on substantial, measurable achievements toward project goals rather than reimbursement for best effort. The intent was to align DOE payments with meaningful technical progress.

However, legal and financial assistance requirements created operational constraints under 2 CFR 200. Specifically, milestones could only reimburse actual costs incurred, requiring upfront cost estimates for each milestone in the project plan. When actual costs came in below estimates, which was common, the award required modification to realign dollar amounts and preserve remaining funds for the awardee. Due to the volume of modifications across the whole portfolio of projects, these modifications took weeks to months to complete, during which payment was held.

The modification delays created cash-flow gaps that, in some instances, forced companies to furlough staff, seek bridge financing, or take other inefficient actions to manage operations while waiting for reimbursement.

The outcome revealed that program designs requiring extensive bureaucratic processes, even when well-intentioned, can undermine the success of the very companies DOE aims to support. Using OT can mitigate many of these challenges by allowing DOE to design programs and projects that do not need to adhere to the rules that require regular project modifications that do not add value to the project output. A thoughtfully designed OT project could define technical and commercial project milestones, but give flexibility to reimburse awardees for actual costs, without any project modifications. This would lead to faster reimbursement cycles allowing the awardee to focus on their research, development, or demonstration work.

\*SETO only funded for-profit entities through this program

## ii. Mid-Stage Demonstration Projects

**Characteristics:** Proven technology still unproven at scale, significant capital (\$10-100M+ awards), more mature performers with established systems, core/most valuable IP largely developed. The risk has shifted from “does this work?” to “does this work at scale and level of integration?”

**When OT Adds Value:** OT adds value when projects require innovative internal teaming and financial arrangements that don’t fit standard templates such as offtake agreements, when utilizing Generally Accepted Accounting Principles removes the burden of retrofitting company accounting systems, or when more interactive pre-selection discussions would improve outcomes.

**When CA Is Better:** Cooperative agreements are better for projects requiring heavy government involvement to provide expertise and resources and manage risk, when higher technology risks increase the likelihood that project plans will shift and early visibility helps mitigate that risk, or when the company itself prefers predictability over flexibility.

### iii. First-of-a-Kind Deployment

**Characteristics:** Very large capital requirements (hundreds of millions to billions), DOE funding as a minority share of the total capital stack, intense timeline pressure from market-entry windows, complex partnerships across multiple parties, and private financing requirements that constrain structure.

**Why OT Could be Right:** Well-structured OT offers strong opportunities for FOAK because these projects cannot wait eighteen months for negotiations—commercial speed is essential. Standard structures struggle to accommodate the complex partnership integration these projects require, with multiple commercial counterparties and parallel private financing. And private financing compatibility matters: lenders and investors have specific expectations that standard federal terms may not accommodate.

Recent experience from the CHIPS program illustrates these dynamics. Even with flexible award structures, “federal interest” provisions—which give the government super-senior position in bankruptcy—complicated private financing arrangements. As one CHIPS official noted, this “created a considerable hurdle without commensurate benefit” for most deals where bankruptcy probability was remote.<sup>20</sup> The lesson: FOAK flexibility must extend to how government security interests interact with private lender requirements, not just payment structures.

**FOAK Still Needs Structure:** These are the largest investments DOE makes. Financial oversight matters at scale. Taxpayer interests require protection. The flexibility should be in how technical and financial accountability is structured, not whether it exists.

#### CASE STUDY - Kairos Power

Kairos Power, a fluoride salt-cooled reactor developer, was initially working with DOE under a cooperative agreement. As Kairos sought to rapidly commercialize its technology, it sought to convert its cooperative agreement to a milestone-based OT, which was later followed by a commercial partnership with Google for power purchase that involved commercial terms, delivery commitments, and business arrangements,<sup>21</sup> and a Power Purchase Agreement with TVA for deployment at a TVA site.<sup>22</sup>

The new structure tied DOE payments to project milestones aligned with deployment progress, enabled commercial partnerships to proceed without federal contract constraints, and provided flexibility for raising capital.<sup>23</sup>

The outcome was that commercial partnerships could proceed on commercial terms while maintaining DOE support. The case illustrates that OT value for FOAK deployment isn't just about where projects start—it's about enabling transition as projects mature from demonstration to commercial deployment. The conversion pathway demonstrates that projects can begin under cooperative agreements and shift to OT as commercial relationships require different terms.

20. [Mike Schmidt, "Eight Legal Challenges CHIPS Navigated," \*Factory Settings\*, January 2026.](#)

21. [Google, "New nuclear clean energy agreement with Kairos Power," October 2024.](#)

22. [Google, "Our first advanced nuclear reactor project with Kairos Power and Tennessee Valley Authority," August 2025.](#)

23. [Kairos Power, "U.S. Department of Energy and Kairos Power Execute Novel Performance-Based, Fixed-Price Milestone Contract," February 2024.](#)

#### iv. Novel Structures, Partnerships, and Consortia

Some projects don't fit neatly into standard categories. They involve unique legal arrangements, unconventional partnerships, or organizational structures that federal funding mechanisms struggle to accommodate. These novel structures represent perhaps the purest use case for OT: situations where the flexibility exists precisely because no existing template works. DOE has increasingly used consortium and hub structures to coordinate research and commercialization across multiple institutions, companies, technologies, and geographies. The Hydrogen Hubs program<sup>24</sup> is the largest recent example, but other examples, such as the Manufacturing USA Institutes<sup>25</sup> exist across the department. DOE typically funds these consortia through cooperative agreements or grants to a lead organization, which then subawards to consortium members. This structure creates substantial friction:

**Fund allocation complexity.** Moving funds from DOE to the lead organization to consortium members involves multiple layers of contracting and compliance. Each layer adds administrative cost and timeline. Funds move through a prime recipient instead of directly to each participant, creating delays at every handoff.

**Modification burden as consortia evolve.** As consortia evolve to meet the needs of the research community and industry, whether new members join, work scopes shift, or budget reallocations are needed, each change requires formal modifications that create delay. A consortium that needs to pivot based on technical findings may wait months for the paperwork to catch up or find that their agreement lacks the scope flexibility needed, risking timely recompetes for funds, while adding no value to the desired outcomes. Generally, cooperative agreements are required to stay within the scope of what they originally applied to do. Deviations outside that can cause recompetes.

**Scope limitations.** Cooperative agreements generally limit activities to what the applicant originally proposed. If promising directions emerge that weren't defined in the original application, pursuing them requires formal scope modifications, assuming they're even permissible under the original award.

**End-of-year pressure cascading through organizations.** Federal fiscal year constraints create pressure to obligate funds before year-end. In consortia structures, this pressure cascades through the organization, creating artificial urgency that may not align with project needs. A September obligation deadline at DOE becomes an August deadline for the prime, which becomes a July deadline for subawardees.

**Administrative overhead consuming significant portions of funding.** Current hub structures lose substantial portions of funding to administrative costs. Estimates suggest as much as 35% of funding in some structures goes to administrative overhead rather than technical work. This is not primarily fraud or waste; it is the cost of managing complex arrangements through mechanisms not designed for them.

#### OT Opportunities

**Teaming flexibility and funding allocation.** OT can enable more flexible reallocation of funds among a shifting set of consortium members without the formal modification burden that cooperative agreements require. OT can support Special Purpose Entity (SPE) inclusion more easily than other mechanisms (see below). If one research direction proves more promising, resources can shift more readily.

**Reduced administrative layers.** Structuring consortia through OT can reduce the compliance layers that drive administrative overhead. The goal is not to eliminate accountability but to right-size it for the actual risks involved.

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24. [Regional Clean Hydrogen Hubs \(H2Hubs\), DOE OCED.](#)

25. [Manufacturing USA Institutes.](#)

## CASE STUDY: Gen III+ SMR Program

The Generation III+ Small Modular Reactor program illustrates how OT can enable program designs that would be difficult under traditional mechanisms. DOE originally structured this \$900 million initiative around a specific theory of change: the nuclear industry's challenge was not primarily technical development but commercial momentum—securing committed investments, building orderbooks, and assembling the partnerships needed for fleet-level deployment. The funding was explicitly catalytic rather than project-defining; DOE lacked sufficient resources to directly finance reactor construction, so the program aimed to use federal dollars to unlock private capital by de-risking the teaming and early development activities that precede major investment decisions.

OT authority enabled two features central to this approach. First, the solicitation could accommodate diverse partnership structures—teams of utilities, reactor vendors, constructors, and end-users/off-takers—without forcing these arrangements into standard federal award categories. Different teams could propose different configurations based on their specific commercial strategies. Second, the milestone-based OT structure provided flexibility around which activities would achieve federal funds within each project's overall structure.

As the solicitation stated, DOE anticipated that “implementation approaches will vary between projects,” working with performers after selection to tailor specific approaches. This flexibility would have been difficult to achieve under cooperative agreements, where substantial involvement provisions and standardized cost accounting create pressure toward uniform structures.

The program design reflected a deliberate choice about where OT flexibility mattered. DOE was less concerned with technical differentiation between reactor designs—these were established Gen III+ technologies, not experimental concepts—and more focused on financial risk management and partnership formation. The Tier 1 awards supported “first mover” teams committing to deploy initial plants while building multi-reactor orderbooks; Tier 2 addressed industry-wide gaps in licensing, supplier development, and site preparation. Neither tier fit the traditional R&D model where federal funds support technical work leading to specific deliverables. OT allowed the program to structure awards around commercial milestones and partnership formation—activities that matter for breaking the “stalemate” the solicitation identified but that map poorly onto standard federal assistance frameworks.

NOTE: This case study is based on the original OCED-NE release of this program, and may not reflect any changes made when re-released.<sup>26</sup>

## Key OT Considerations

Novel structures require careful attention to accountability precisely because they lack established frameworks:

**Governance clarity.** When multiple parties share responsibility, who is accountable for what? OT flexibility must coincide with clear governance structures that assign responsibility and enable oversight.

**Financial transparency.** Complex fund flows can obscure the use of money. Whatever flexibility OT provides on accounting standards, visibility into fund allocation remains essential.

**Exit provisions.** Novel structures may fail or need restructuring. How do projects handle failure? How do parties exit? DOE should establish standard provisions for termination and disposition even when other terms are flexible.

**Evaluation basis.** Without standard structures, it is difficult to evaluate whether novel approaches worked. Building evaluation criteria into the design enables learning from these experiments.

## Technical Assistance Consortia

A specific consortium type merits attention: technical assistance programs that provide support to multiple recipients through a central organization. Programs like TEAMER (Testing Expertise and Access for Marine Energy Research) coordinate access to testing facilities, technical expertise, and support services for companies that would have difficulty accessing these resources independently. These structures have encountered friction under cooperative agreements. Negotiation delays for facility access can undermine the program's purpose of providing rapid support. Questions arise about beneficiary eligibility and the flow of funds through the coordinating organization. An OT structure could pre-establish facility relationships and service terms, enabling faster response when companies need support.

## Special Purpose Entities

Some projects require new legal entities that don't fit standard awardee categories. Special purpose entities (SPEs) or similar structures may be needed to isolate project risk, enable specific financing structures, accommodate multiple investors with different interests, or create governance arrangements that don't fit existing organizational structures. Large deployment projects, in particular, often require SPE structures to satisfy lender requirements. Cooperative agreements and grants contemplate existing organizations as recipients. They assume the awardee has a track record, established financial systems, and ongoing operations. SPEs created specifically for a project have none of these. OT can accommodate SPE structures by allowing terms tailored to the specific entity type.<sup>26</sup>

## v. Demand-Side Mechanisms

A growing area involves demand-side approaches: programs that create and support markets to create revenue assurance and enable private financing rather than directly funding development and construction. Contracts-for-difference, advance market commitments, and offtake agreements don't fit neatly into financial assistance or procurement. Recent applications include the hydrogen demand-side initiative<sup>27</sup> associated with the Regional Clean Hydrogen Hubs.

### Why Standard Mechanisms Don't Fit:

- These are not financial assistance (grants and CAs support activities; demand-side mechanisms commit to purchasing results)
- These are not standard procurement (FAR acquires goods for government use; demand-side mechanisms create markets for policy objectives)

**Why OT May Fit:** OT's flexible middle ground can accommodate hybrid structures. It enables policy-aligned terms that procurement rules might complicate. Performance-based payment fits demand-side logic naturally. This type of program may have significant overlaps with the benefits and requirements outlined for consortia.

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26. [DOE-FOA-0003485: Generation III+ Small Modular Reactor Pathway to Deployment](#)

27. [DOE, "Department of Energy Selects Consortium to Bridge Early Demand for Hydrogen, Providing Market Certainty and Unlocking Private Sector Investment," January 2024.](#)

## vi. Institutes of Higher Education and Non-Profit Organizations

Universities and non-profits represent the clearest case where the use of OT often creates more problems than it solves.

**Why Universities Are Different:** Universities have typically built entire administrative infrastructures around 2 CFR 200 compliance, decades of investment in grants offices, cost accounting systems, and sponsored research administration. They receive funding from multiple agencies; the common framework enables systems that work across funders. OT introduces a different framework that doesn't integrate with this ecosystem. The flexibility that helps commercial partners often creates friction for universities.

**The Recurring Pattern:** The program office chooses OT, then selects a university. The sponsored research office reviews proposed terms. Questions begin: "Our systems aren't set up for this." Eventually, someone asks: "Why don't you just give us a grant?" Often, there is no good answer.

**The Principle:** Most university funding should remain financial assistance. When DOE uses OT with universities, it should address a clear need, such as highly-complex consortia, not default adoption.

The archetypes outlined above provide a framework to assess best-value and best-fit options for OT use, and to consider where specific terms or approaches could be used in a semi-standardized manner to provide real value and flexibility without creating undue burden or delays.

## B. The Standardization Paradox

A tension runs through this report: OT's value lies in flexibility, but effective execution requires consistency. The resolution lies in understanding that standardization is not binary.

**The Core Tension:** Flexibility at scale creates problems: trust erodes when companies don't know what to expect, evaluation becomes impossible when no two agreements are comparable, and bespoke negotiation hinders efficiency. These dynamics point toward structured flexibility—standardizing where possible while preserving flexibility where it matters.

Standardize Elements of OT at Appropriate Levels	
Agency	Cross-cutting policy positions on the seven issues (Section V.A)
Program	Prototypical frameworks (~80% complete templates with identified negotiable areas)
Project	Specific negotiations within guardrails

**Flexibility with Discipline:** Unlimited flexibility is not a capability; it is the absence of structure. Disciplined flexibility (knowing what you want to vary and why) delivers the benefits that undisciplined flexibility promises.

## C. Targeted Flexibility for High Value Opportunities

Other Transactions Authority is receiving significant attention as a potential solution to DOE’s program execution challenges. Before expanding its use, it is worth understanding how much of DOE’s funding portfolio would benefit from such a change. While OT provides genuine opportunities to improve certain programs and projects, overutilization could disrupt portions of the portfolio that function effectively under current mechanisms—or that would be better served by alternative approaches such as prizes. The data on DOE project funding from FY20-FY25 reveals a landscape where the vast majority of funding actions may not require OT flexibility at all, given our previous discussions around universities and non-profits.

The distribution of funding actions by recipient type illuminates where OT might—and might not—add value. Higher education institutions receive the largest share of project grants and cooperative agreements, and the vast majority of these awards do not need OT treatment (see Section III.A.vi). The exception may be consortia arrangements in which universities serve as lead entities for complex multi-party projects, but these represent a very small number of actions.

Similarly, there are only a handful of awards to state and local governments and non-profit organizations that are likely to benefit significantly from OT flexibility. Small businesses receive a substantial amount of funding actions, predominantly through the Small Business Innovation Research grant program. While grants and cooperative agreements may not always be the optimal mechanism for these recipients, not all would be well-served by OT either. Many early-stage small business awards might be better structured as prizes—paying for demonstrated achievement rather than reimbursing effort—while others may appropriately remain as grants or cooperative agreements. The for-profit sector, particularly for larger demonstration and deployment projects, represents the strongest opportunity for OT application.

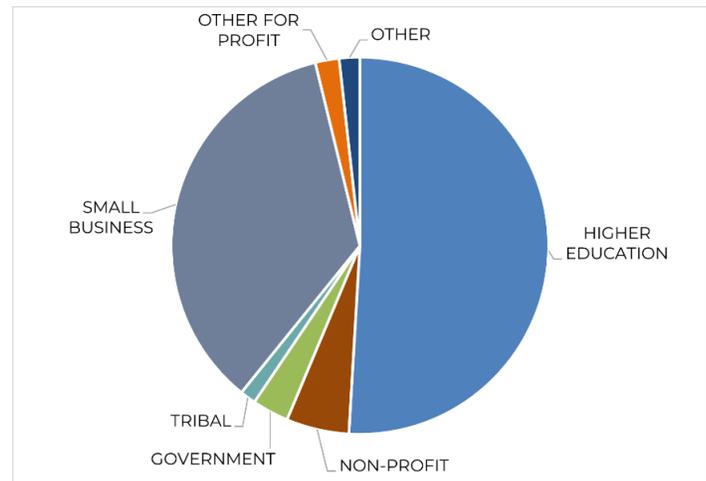


Figure 3.2. Distribution of New Project Funding Actions by Recipient Entity Type (FY20-FY25)<sup>1</sup>

predominantly through the Small Business Innovation Research grant program. While grants and cooperative agreements may not always be the optimal mechanism for these recipients, not all would be well-served by OT either. Many early-stage small business awards might be better structured as prizes—paying for demonstrated achievement rather than reimbursing effort—while others may appropriately remain as grants or cooperative agreements. The for-profit sector, particularly for larger demonstration and deployment projects, represents the strongest opportunity for OT application.

The size distribution of funding actions further narrows the realistic scope for OT expansion, at least in the near term. From FY20 to FY25, sixty percent of new project funding actions were below \$1 million, and ninety-two percent were below \$5 million. These smaller awards—the bread-and-butter of DOE’s research portfolio—generally flow smoothly through existing mechanisms and do not present the complex negotiation challenges that OT can address. The compelling case for OT lies in the remaining eight percent: larger cooperative agreements, typically above \$5 million, where the flexibility to negotiate customized IP arrangements, milestone-based payments, and tailored administrative requirements can meaningfully accelerate project execution. It is this relatively small number of high-value, complex projects—not the entire DOE funding portfolio—where OT’s benefits most clearly outweigh the additional negotiation burden it creates.

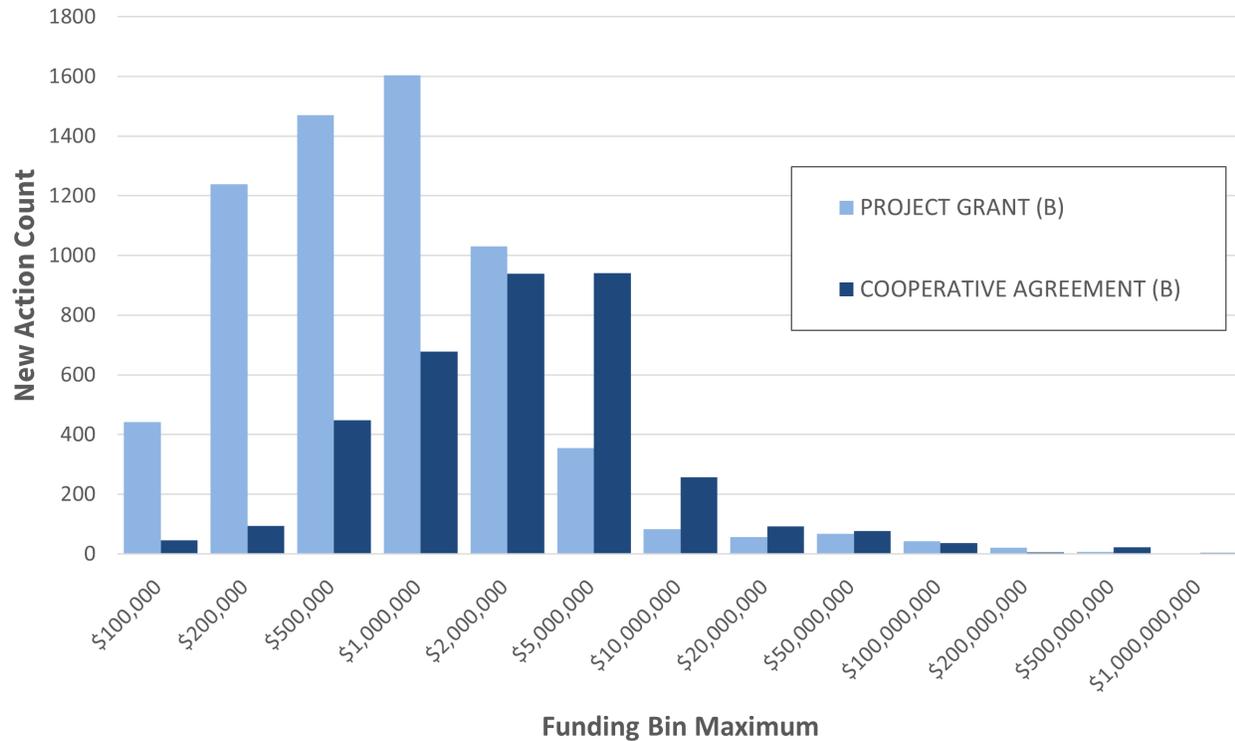


Figure 3.3. Distribution of Project Grant and Cooperative Agreement Sizes (FY20-FY25)<sup>28</sup> Data source: USASpending.gov. Note: All project grants above \$25 million in this dataset were made in FY24 or FY25 by two offices—GDO and MESC—and may not be representative of typical grant usage; some may be miscategorized in the data.)

## The Focused Pilot Approach

The preceding analysis suggests a strong utilization model for OT: as a strategic capability reserved for situations where it provides exceptional value, not a general replacement for existing mechanisms. Rather than spreading limited capacity across many programs, DOE should concentrate on OT use where it can demonstrate the most value. This means selecting one or two archetypes for systematic framework development, plus a small number of genuinely bespoke projects that don't fit any standard category. Consider a practical model for the near term:

**One archetype as primary focus.** Select a single archetype that shows strong alignment with OT opportunities and develop a generalized draft term sheet and governance approach. Socialize this with potential applicants and integrate the term sheet and negotiation approach into the solicitation. Run 8-12 awards through this framework, refining based on experience. Build institutional muscle memory that enables efficient execution.

**A second archetype in parallel.** Add a second archetype with a smaller initial portfolio of 3-5 awards. Test whether the early-stage framework elements translate or whether this archetype requires fundamentally different approaches.

**A handful of truly bespoke projects.** Reserve capacity for 2-4 projects per year that genuinely don't fit any framework—the unprecedented partnerships, the structures no one has tried before. Develop a process and framework

28. Data source: [USAspending.gov](https://www.usaspending.gov), U.S. Treasury.

to assess what projects truly fit this description. These receive intensive attention from DOE’s most experienced practitioners.

## Why This Works

**Concentration of expertise.** DOE expert practitioners focus on a manageable portfolio rather than being spread across dozens of programs. Depth beats breadth when building new capability.

**Framework refinement through repetition.** Running multiple awards through the same archetype framework reveals what works and what doesn’t. The tenth OT of a given archetype will execute faster than the first because institutional learning accumulates. This opens the door to broader utilization of OT across more or all projects in a given archetype.

**Quality demonstrations.** A portfolio of well-executed awards in defined categories demonstrates what the mechanism can achieve. Scattered successes across many contexts prove little; systematic success within an archetype builds the case for expansion.

**Selection discipline.** Limited slots force genuine evaluation. Programs must articulate why their project fits the selected archetype—or make a compelling case for bespoke treatment.

**Preserved flexibility for the exceptional.** The bespoke allocation ensures DOE can still respond to genuinely novel opportunities that don’t fit frameworks. But the default becomes structured approaches rather than unlimited negotiation.

## Matching Use to Capability

This model suits the current moment. DOE’s OT capacity is limited. Attempting to use OT too widely invites poor execution, negative perception, and reduced impact. Strategic concentration aligns use with actual capability, building the foundation for eventual expansion.

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## KEY TAKEAWAY

Five archetypes need five different approaches that reflect the key needs inherent in each. Early-stage R&D needs speed and minimal burden; mid-stage demonstrations need teaming flexibility; FOAK deployments need private financing compatibility; consortia need streamlined funding flows; demand-side mechanisms need hybrid structures. Universities generally need standard financial assistance. The standardization paradox resolves through “flexibility with discipline”: standardizing at the agency and program levels while preserving meaningful flexibility at the project level. During capacity building, strategic scarcity may serve DOE better than attempting mass adoption.

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Archetype	Primary Flexibility	When to Use OT	When to Avoid OT	Fit
<b>A</b> <b>Early-Stage R&amp;D (For-Profit)</b> <i>Seed-Series B</i>	<b>Cash flow;</b> <b>IP flexibility;</b> <b>Oversight burden</b>	Cash flow critical; IP must be VC-compatible; Light oversight at small scale	Early exploration → Grant and/or Prize DOE expertise valuable → CA	<b>MODERATE</b>
<b>B</b> <b>Mid-Stage Demo</b> <i>Scaling Proven Tech</i>	<b>Teaming;</b> <b>Cost accounting;</b> <b>Milestones</b>	Innovative teaming; Interactive selection; Commercial accounting (GAAP)	Execution risk dominates → CA Company prefers familiar → CA	<b>MODERATE</b>
<b>C</b> <b>FOAK Deployment</b> <i>First Commercial</i>	<b>Commercial speed;</b> <b>private financing;</b> <b>Project revenue</b>	Private financing required; Lender compatibility essential; Speed critical	No financing complexity → CA Single counterparty → CA	<b>STRONG</b>
<b>D</b> <b>Consortia &amp; Hubs</b> <i>Multi-Party</i>	<b>Team and commercial structure;</b> <b>Governance</b>	Evolving teams; Special Purpose Entity leads; Complex commercial relationships	Single performer → CA Stable membership → CA	<b>STRONG</b>
<b>E</b> <b>Demand-Side</b> <i>Market Creation</i>	<b>Performance-based payment;</b> <b>Market creation</b>	Neither FA nor procurement fits; Policy hooks beyond FAR; Performance-based	Outcome-based only → Prizes Design immature → wait	<b>STRONG</b>
<b>F</b> <b>University R&amp;D</b> <i>Academic Research</i>	<b>Rarely needed — edge cases only</b>	Novel multi-institution; Complex industry IP	Basic research → Grant Applied w/ DOE role → CA	<b>WEAK</b>

**OT ENABLES (All Archetypes)**

Milestone payments • Modified cost accounting  
 Flexible teaming • Negotiable IP terms

**UNIVERSAL RISKS**

Extended negotiations without frameworks  
 Bespoke terms • Inconsistent outcomes

Figure 3.4. Project Archetypes and Mechanism Fit

## SECTION IV: POLICY, CAPACITY, AND PROCESS CHALLENGES - OT AND BROADER CONSIDERATIONS

This section consolidates the cross-cutting policy issues that persist regardless of mechanism choice, the institutional capacity constraints that limit execution, and the conditions that would make OT work effectively.

### A. Seven Cross-Cutting Policy Questions

Seven significant policy issues recur across DOE programs and must be addressed regardless of the funding mechanism used. Each requires policy decisions from political leadership. Clear policy positions enable faster resolution across all mechanisms. Unresolved policy questions lead to negotiation delays and frustrations, disadvantage smaller companies and entrepreneurs, shift policy risk to career staff, and misattribute issues to the mechanism or program design rather than an upstream issue.

Below, we lay out the considerations underlying each issue, and why clear policy positions made at the agency level that apply across programs would enable faster resolution of these issues, and better execution of agreements, regardless of mechanism. Our aim is not to suggest the specific policy positions for each, but to raise awareness around the role they play.

#### 1. Intellectual Property Rights

The 7256(g) authority provides IP flexibility, but flexibility is not the same as a policy position. DOE must still decide: What government return does it expect from technologies developed with federal funding? What data is needed throughout the project for DOE to make ongoing investment decisions, measure impacts, quantify benefits, and/or show a return on investment to taxpayers? Under what circumstances should standard rights be modified? What is the acceptable range? How does this affect formal versus informal IP? What data rights should each party have?

Without a clear policy, there is no common starting point. Companies propose terms favorable to them; DOE staff lack the authority to accept or reject without escalation. The flexibility OT provides becomes a source of delay rather than enablement.

#### 2. Buy America / Build America<sup>29</sup>

Domestic content requirements are statutory, and OT provides no exemption to them. Waivers to requirements may be sought by companies,<sup>30</sup> but the questions of when waivers are appropriate, what criteria govern waiver decisions, and how to handle components where domestic sourcing is impractical persist regardless of the mechanism. Programs making ad hoc decisions create inconsistency and political exposure.

#### 3. Davis-Bacon Wage Requirements<sup>31</sup>

Davis-Bacon applicability can be unclear for activities that involve some construction-like elements but don't fit traditional construction categories. OT does not resolve this ambiguity—it simply moves the determination into a different agreement type. Inconsistent determinations create compliance risk.

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29. [Build America, Buy America, DOE.](#)

30. [Guidance on Submission of a DOE Project-Specific Buy America Requirement Waiver Request, DOE.](#)

31. [Davis-Bacon and Related Acts, DOL Wage and Hour Division, Department of Labor.](#)

## 4. NEPA<sup>32</sup> Compliance

National Environmental Policy Act (NEPA) review requirements apply to federal actions regardless of funding mechanism. OT-funded projects require the same NEPA compliance as cooperative agreements. Strategic approaches—categorical exclusions, programmatic assessments, parallel processing—can reduce the timeline impact, but they require coordination that individual programs cannot provide on their own.

## 5. Real Property

When federal funds support equipment acquisition or facility construction, questions arise about ownership and disposition.<sup>33</sup> These questions exist under any mechanism. OT allows flexibility in addressing the questions, but doesn't eliminate the need to address them.

## 6. Cost Sharing

What philosophy governs cost share requirements? What minimum percentages apply? What forms of cost share are acceptable? What evidence of cost share is needed? These policy questions persist regardless of the mechanism. While current OT regulations delineate a default cost structure<sup>34</sup>, OT generally allows flexibility but doesn't specify which structures are appropriate.

*Cost Sharing Deserves Special Attention. Section 988 of the Energy Policy Act of 2005 requires that DOE demonstration and commercial applications receive at least 50% of funding from non-federal sources. The concept of stretching the federal dollar is sound, but implementation creates compounding problems. Federal financial assistance rules require that where cost sharing is mandatory, agencies must use cost-reimbursement agreements.<sup>35</sup> This means non-federal cost share amounts must be accounted for as if they were federal dollars, requiring many companies to adapt or create new accounting systems to match federal standards. As Rick Dunn, one of the leading experts in innovative government programming has observed, government accounting rules have created a “monopsony” that significantly locks out all but the few who invest in government-approved accounting systems.<sup>36</sup> The result: tremendous resources wasted on both sides, ensuring non-federal cost share complies with government standards, shifting oversight focus from performance to compliance.*

## 7. Program Income

How should DOE treat revenue generated by funded projects? This question proved particularly complex in the Hydrogen Hubs program, leading to extended negotiations even though OT was available. The mechanism didn't resolve the underlying policy dispute about government participation in commercial success.

**The Leadership Imperative:** These are not contracting officer (CO) or general counsel / legal decisions. They are policy choices reflecting fundamental judgments about how DOE approaches federal funding. Pushing them into individual negotiations is unfair to career staff, leads to inconsistency across offices, increases risk exposure and possibly

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32. [National Environmental Policy Act \(NEPA\), EPA.](#)

33. [User's Guide to DOE's Property Interest in DOE Financial Assistance Awards, DOE.](#)

34. [2 CFR 930.125 “Cost Sharing.”](#)

35. [2 CFR 200.201 “Use of grants, cooperative agreements, fixed amount awards, and contracts.”](#)

36. Rick Dunn, *Other Transactions Guide*, Third Edition (June 2025).

personal liability, and is inefficient for everyone. This creates avoidable “plaque” in the OT system, leading to nonoptimal outcomes for DOE and awardees.

Based on our experience, clear policy positions established by leadership could reduce negotiation timelines by 50% or more.

## B. Institutional Capacity and Process Impediments

Beyond policy questions, certain process realities persist regardless of mechanism.

**The Right People, Not Just More Warrants:** Critics often frame the institutional capacity constraint as a shortage of warranted contracting officers with OT authority. This framing may be incomplete. The challenge extends beyond contracting officers to the full complement of oversight staff—grants management specialists, budget analysts, legal counsel, and compliance reviewers. Applying 2 CFR 200, ensuring compliance, and managing documentation: these are valuable skills for the mechanisms they were designed to support. But OT’s value lies in departing from those frameworks, and staff trained to apply rules may default to the rules they know, reintroducing the very constraints OT should avoid.

However, removing 2 CFR 200 constraints does not mean OT operates without rules or standards. OT execution still requires experienced staff who can structure sound agreements, identify risks, protect government interests, and ensure accountability for public funds. The skills are different—more commercial, more judgment-based, more attuned to deal structure—but they are no less demanding.

The Secretary’s authority under Section 7256(a) provides substantial flexibility to select staff to warrant for specific OT purposes. Identifying and/or recruiting senior experts with deep technical knowledge, commercial experience, and the judgment to balance risk and mission objectives could establish sufficient warranted capacity with reduced propensity to anchor on 2 CFR 200. These could come from the current contracting offices, as well as from senior program executives or from external to DOE. The key is to ensure that the people who best understand a project’s needs and risks are the people with the authority to agree to terms.

While this could break some of the restrictive ties to 2 CFR 200 experience, DOE cannot simply grant new authorities to a group of people pulled from within or outside the agency and expect effective execution. Building OT capacity requires developing staff who combine technical knowledge, commercial sophistication, and sufficient experience to exercise discretion well. It requires processes, procedures, and training to ensure consistency and thoroughness. This takes time regardless of organizational structure or where the signature authority sits.

**Non-negotiable Time for Comfort:** People making decisions about significant federal funds need time to get comfortable. This is not bureaucratic obstruction; it is reasonable caution with taxpayer money. New to OT staff will want GC to review the documentation, creating another bottleneck that pulls lawyers away from other issues. Risk management and confidence-building process steps, such as the risk assessment by the Research, Technology, and Economic Security (RTES) Office<sup>37</sup> will likely remain regardless of mechanism or other process changes.

**The Talent Drain:** Staff who develop OT expertise become valuable to the private sector. Companies that work with DOE on OTs have a strong incentive to hire people who understand the government side. DOE should anticipate significant attrition and train 2-3 times as many staff as it thinks it needs.

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37. [DOE Office of International Affairs: Research, Technology & Economic Security.](#)

**The Uncomfortable Truth:** Saying “we’re doing OT” does not automatically make anything faster. Speed comes from clear expectations, established processes, trained staff, and bounded negotiations, not from the choice of mechanism.

**What DOE Has Lacked:** Beyond the question of who should hold authority, DOE has lacked essential infrastructure: no starting templates, inconsistent approaches across offices, institutional memory shaped by TIA-era disappointments, and scarce staff who understand both technical substance and commercial realities—a combination that takes years to develop regardless of organizational structure.

## C. What Would Make OT Work

**Avoid Bespoke Negotiations:** Leverage the archetypes presented above for structured flexibility that accelerates and streamlines negotiations by setting clear expectations up front.

**The Selection-to-Award Gap:** When DOE publicly announces a selection, leverage shifts immediately. The company knows that DOE is committed and has an advantage in negotiations, as walking away would create political embarrassment. DOE should complete negotiations before any public announcement. Select more candidates than will receive awards, negotiate in parallel, walk away when a selectee is failing to meet timelines, and announce only after executing agreements.

**Opportunity Cost and Workload:** A CO managing cooperative agreements might handle 50-100 awards. The same officer managing OTs might handle 5-10. This disparity creates opportunity cost. Limited capacity should inform deployment: where does OT provide enough value to justify the workload?

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### KEY TAKEAWAY

Seven cross-cutting policy issues persist regardless of mechanism; they require leadership decisions, not contracting officer judgment calls. Process impediments (CO requirements, comfort time, talent drain) don’t disappear by saying “we’re doing OT.” The negotiation delay cascade creates frustrations misattributed to OT when the actual problems are upstream. To make OT work, try structured flexibility rather than fully bespoke negotiations, resolve policy issues at the agency level, build distributed capacity, and eliminate the selection-to-award gap by announcing agreements rather than selections.

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## SECTION V: HOW TO OPERATIONALIZE

This section translates analysis into action: mechanism selection frameworks, day-one policy decisions, prototypical framework development, capacity building, and process improvements.

### A. Start with Asking the Right Questions to Identify the Right Tool

The most important insight is not about OT execution; it is about intentional program design. Programs that start with “we’re going to use OT” often struggle. Programs that start with “what do we need to accomplish?” reach better outcomes. As Bent Flyvbjerg argues in *How Big Things Get Done*, effective project delivery requires “planning from the right”—starting with the end goal and working backward.<sup>38</sup>

Considerations for intentional program design:

- **What are you trying to accomplish, and why?** “Support energy innovation” is not specific enough. “Fund demonstration of novel refining approach for critical minerals at pilot scale through partnership with a Series C company needing government co-investment” is specific. Articulating the underlying reason increases the likelihood that final agreements will align with true objectives.
- **What terms are needed?** What performer type? What government involvement level? What payment structure? What IP arrangement? What oversight? These functional requirements should drive selection.
- **Can existing mechanisms work?** Can staff meet requirements with grants or CAs, potentially with accumulated plaque removed? Would a prize provide the right incentives and constraints to accomplish desired goals? If the barrier is plaque rather than statute, fixing cooperative agreements might be the solution.
- **If OT, which archetype?** If OT flexibility is genuinely needed, which of the five variants fits? If none fit, either the program is genuinely novel, or the analysis hasn’t identified actual needs.

Issue	Key Question	Sample Decision Format
IP Rights	What government return is expected from federally funded technologies?	Parameters by project type and funding level
Buy America	When are waivers appropriate? What criteria govern?	Pre-approved waiver categories with documented criteria
Davis-Bacon	How to determine applicability for activities in gray areas?	Presumptive categories + consultation process for edge cases
NEPA	What categorical exclusions are available? How to minimize timeline impact?	CatEx list by technology area + parallel processing guidance
Real Property	What ownership and disposition terms forms are acceptable?	Thresholds and frameworks by project size
Cost Sharing	What minimums by project type? What forms are acceptable?	Percentages by archetype; acceptable in-kind forms
Program Income	How to treat commercial revenue from funded projects?	Treatment options by award size with clear triggers

38. Bent Flyvbjerg and Dan Gardner, *How Big Things Get Done: The Surprising Factors That Determine the Fate of Every Project, from Home Renovations to Space Exploration and Everything In Between* (Currency, 2023).

## B. Day-One Policy Decisions

The single most important step DOE can take requires no new authority, no additional funding, no restructuring. It requires only decisions by political leadership on questions that their predecessors should have decided long ago.

**Why This Matters:** Establishing these positions matters for three reasons. It would narrow the scope of negotiations by half or more by eliminating fundamental policy debates from routine negotiations. It would accelerate all mechanisms, since these decisions benefit cooperative agreements as much as OTs. And it would allocate risk appropriately, with political appointees taking responsibility for policy while career staff focus on implementation within these defined parameters.

**The Seven Required Positions:** These are not contracting officer decisions. They are policy choices reflecting fundamental judgments about how DOE approaches federal funding. These can differ by OT variant, but DOE should clarify decisions at the start, and treat all awards within a single variant type the same.

**What “Day-One” Means:** A new administration committed to effective OT should establish these positions early, not after problems emerge. Do not delegate to working groups that report back in eighteen months. For existing leadership, “day-one” means now.

## C. Generalized OT Frameworks and Draft Term Sheets

With policy positions established, the next step is developing prototypical frameworks: standardized starting templates for each archetype (see Section IV).

**The Concept:** Five standard variants aligned to archetypes, each approximately 80% complete:

- Standard terms for most provisions
- Clearly identified negotiable areas
- Published with solicitations so applicants know what to expect

**What “80% Complete” Means:**

- Standard provisions (definitions, payment procedures, reporting formats, modification processes, dispute resolution, compliance provisions) can be identical across awards of a given type.
- Negotiable provisions (specific milestone definitions, IP terms within policy parameters, project-specific technical requirements, teaming arrangements) require project-specific attention.
- Benefits: The benefits compound. Negotiations move faster when they focus on the 20% that actually requires discussion. Companies gain clearer expectations because they know the terms before applying. Evaluation improves because common frameworks enable comparison across applications. Balkanization decreases as consistency develops across offices. And trust builds over time—predictable treatment creates industry confidence that encourages participation.

**The Legal Mechanism:** The NOFO specifies that applying constitutes acceptance of standard terms. Applicants with concerns submit red-lines to the standard terms as part of their applications. Contractual reasonableness becomes an evaluation factor.

**Development Process:**

- **Months 1-2:** Confirm policy positions, assemble existing agreements, and establish working groups
- **Months 3-4:** Draft frameworks, identify standard/negotiable provisions, legal review
- **Months 5-6:** Industry socialization, feedback incorporation, revision
- **Months 7-8:** Finalization, staff guidance, training
- **Months 9-12:** Pilot use, refinement based on experience

## D. Capacity Building and Knowledge Management

Policy and frameworks create conditions for effective execution. But conditions are insufficient without the people, training, and institutional memory to execute.

**Beyond Single Points of Failure:** DOE's current OT capacity is thin, concentrated in a few individuals whose departure would cripple capability. The goal is distributed capacity: multiple warranted officers per major office, broad GC understanding of OTs, technical staff awareness and comfort negotiating projects within political appointee-defined constraints, and sufficient depth that no single absence creates a crisis.

**Training Pipeline:** Becoming a capable OT practitioner in contracting, legal, or program design roles takes years: 5-7 years from entry level, 2-3 years for experienced staff transitioning. Near-term capacity is fixed. This reality should inform deployment.

**DOD Talent Acquisition:** Recruiting experienced DOD practitioners can accelerate capability. Prioritize strategic hires for key positions, with the expectation that they mentor DOE staff and contribute to training programs. Using external expertise has been a successful strategy for DOE for building PIA capacity, in this case, leveraging Central Intelligence Agency expertise through detailed personnel.

**Train 2-3x Needed Capacity:** Account for attrition by training substantially more than currently needed. Some will leave; remaining capacity should suffice.

**Knowledge Management:** Document lessons from each negotiation and conduct regular retrospectives. Share findings across offices through forums and repositories, and feed learnings into framework refinement.

**Program Design Center:** a dedicated, centralized capability for designing and deploying effective funding mechanisms across DOE—not as a gatekeeper, but as a resource. Program offices would retain the technical strategy; the Center would provide tactical expertise on structuring solicitations, deploying innovative mechanisms, and navigating approval processes. This addresses a persistent problem: DOE's decentralized structure means that each office designs programs independently, often reinventing the wheel and failing to leverage lessons learned elsewhere. At the same

time, institutional knowledge walks out the door with every departure.

The Center would draft NOFOs, prize rules, and evaluation criteria in days rather than months. It would maintain deep expertise across grants, cooperative agreements, prizes, vouchers, and OTs—guiding when to use each mechanism and how to structure them. It would capture and maintain best practices, documenting what works and updating that knowledge as programs execute. And it would provide a safe space for innovation, helping offices design novel approaches with experts who understand both possibilities and constraints.

Critically, the Center would serve all mechanisms, not just OT—maintaining OT frameworks and streamlined cooperative agreement templates, supporting mechanism selection across the full toolkit, and conducting ongoing identification of accumulated requirements that could be removed. To ensure durability across administrations, the Center should be written into appropriations at a nominal level to cover personnel costs, with staffing that emphasizes breadth over narrow, deep expertise.

## E. Selection and Negotiation Process

**Integrated Process:** Effective OT selection and negotiation integrates terms discussions throughout rather than deferring to post-selection:

- **Pre-Solicitation:** Market intelligence, framework selection, draft agreement development
- **Solicitation:** NOFO with draft terms, applications including contractual positions
- **Evaluation:** Technical merit + contractual reasonableness, pre-selection interviews
- **Selection:** Internal only, over-select for negotiation (150% of target)
- **Negotiation:** From framework, bounded scope, parallel tracks, willingness to walk away
- **Award:** Execute agreements, *then* announce

### Critical Practices:

- **Include Draft Agreement in NOFO.** 80-90% complete, with identified negotiable areas. Requires upfront investment; pays off in compressed timelines. For OT solicitations, this means the solicitation should ask for the information that populates the final agreement. If a proposal has merit and requires no changes, the OT should already be written. The government should be able to present a complete agreement on day one of negotiations. Where technical areas require negotiation or the proposer takes exception to terms, this approach bounds the areas for discussion rather than leaving all details open.
- **Score Contractual Reasonableness.** Applications should include positions on key terms. Evaluation criteria should include contractual reasonableness.

- **Pre-Selection Interviews Covering Terms.** Interview leading candidates about terms and technical approach. Include both technical and contracting personnel.
- **Don't Announce Selections; Announce Agreements.** Complete negotiations before any public announcement. Selection decisions remain internal. This preserves leverage throughout negotiation and allows DOE to lead on messaging if questions come from the Hill.
- **Select More Than You'll Fund.** If expecting 10 awards, select 10 for immediate negotiation and 5 as alternates. Communicate this to candidates. This creates a credible argument that DOE can walk away if the parties cannot quickly finalize an agreement.

### Integrated Best Practice Approach

1. Before NOFO: Develop draft agreement, establish positions, complete legal review
2. In NOFO: Include draft terms, specify evaluation includes contractual factors, indicate selection is contingent
3. During evaluation: Assess technical and contractual positions, conduct interviews
4. During negotiation: Negotiate from framework, maintain alternatives, be willing to walk away
5. At announcement: Announce only executed agreements

## F. Award Administration

Under OT, certain things change: cost accounting requirements can be waived in favor of commercial standards, payment structures can shift to milestone-based, fixed-amount, or custom arrangements, and reporting can be tailored rather than following standard formats. But critical elements do not change regardless of mechanism—oversight needs persist, government return expectations remain, and performance monitoring matters just as much.

While this document has focused largely on OT award terms, post-award administration is just as important. Great care should be taken when negotiating these provisions.

**Capitalization as Key Variable:** Whether OT administrative flexibility serves its purpose depends heavily on performer capitalization. Well-capitalized companies can absorb government processing delays. Under-capitalized companies cannot; the same delay can force furloughs or threaten survival.

**The Processing Imperative:** OT payment flexibility is only valuable if the government can process payments quickly. Streamlined milestone certification, expedited payment processing, and clear communication about timing all matter as much as agreement structure.

**Long-Term Relationship Opportunity:** OT can enable provisions that extend beyond the standard period of performance, including extended monitoring of commercial outcomes, ongoing reporting of sales or licensing revenue, and flexible relationship continuation. For projects where long-term outcomes matter, these provisions must be negotiated upfront, but can maintain appropriate relationships beyond the standard award lifecycle.

## G. Parallel Effort: Removing Plaque

Improving OT execution is only half the solution. The other half is cleaning up cooperative agreements.

**Why This Matters for OT:** If much of OT's enthusiasm is a reaction against CA plaque, cleaning up CAs reduces inappropriate OT demand. Programs that currently seek OT to escape accumulated burden might find streamlined CAs meet their needs. Removing unnecessary work could also free up DOE staff capacity to help with OT.

### The Zero-Plaque Exercise:

1. Document everything currently required
2. Trace each requirement to authority (statutory, regulatory, DOE policy, accumulated practice)
3. Evaluate policy-based requirements for continued justification
4. Identify the baseline: statute + regulation + justified policy
5. Document the gap (removable plaque)

The Program Design Center described in Section V.D could effectively support this effort. Expected findings: reporting beyond regulatory minimums, documentation exceeding requirements, review layers added without assessment, template provisions without current purpose, restrictive interpretations codified as rules. In many cases, 20-30% of the current burden may lack a clear legal basis.

**Why Parallel, Not Sequential:** Pursuing OT improvement and cooperative agreement cleanup in parallel rather than sequentially makes sense for several reasons. The infrastructure is shared—policy clarity and templates benefit all mechanisms. Cooperative agreement benefits would be immediate, and CAs will remain the majority of awards. Credibility requires attention to both, since focusing only on OT while ignoring CA problems suggests a preference for mechanisms over effective execution. And improving cooperative agreements ensures OT gets focused where it genuinely adds value rather than serving as an escape route.

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## KEY TAKEAWAY

Operationalizing OT requires six elements: (1) Starting with the right tool through disciplined mechanism selection; (2) Day-one policy decisions on seven cross-cutting issues; (3) Prototypical frameworks providing 80% standard terms; (4) Capacity building creating distributed expertise; (5) Integrated selection and negotiation processes that preserve leverage; and (6) Parallel effort to remove plaque from existing mechanisms. A Program Design Center should own ongoing improvement across all mechanisms.

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## SECTION VI: RECOMMENDATIONS

This section distills the report's analysis into actionable recommendations for four audiences.

### For DOE Leadership

#### Immediate (First 100 Days)

**Establish policy positions on seven cross-cutting issues.** This is the highest-impact action available. Clear positions on IP, Buy America, Davis-Bacon, NEPA, real property, cost sharing, and program income would reduce negotiation timelines by half or more while appropriately allocating policy risk to political leadership. Requires no new authority or funding; only willingness to decide and clear dissemination of those decisions.

**Identify 2-3 pilot archetypes for framework development.** Rather than comprehensive development immediately, select initial focus areas based on program needs. Likely candidates: early-stage R&D (high demand), consortia structures (significant efficiency opportunity), plus one based on program office priorities.

**Assess and expand warranting capacity.** Conduct an immediate assessment: How many warranted OT officers? Where are they located? What backup depth? How long would it take to train more? What is the projected attrition of trained staff? Use assessment to identify critical gaps and prioritize expansion toward distributed capability.

**Create GC-MA-Program coordination structure.** Establish coordination among General Counsel, contracting function, and program offices through standing meetings, designated liaisons, or a formal coordination body. Establish funding mechanism design center. Create dedicated function for framework maintenance, training, and cross-office coordination.

#### Near-Term (6-12 Months)

**Develop prototypical frameworks for pilot archetypes.** Draft frameworks, conduct legal review, socialize with industry, incorporate feedback, and prepare for pilot deployment. Target completion within 6-8 months.

**Launch comprehensive OT training.** Cover legal foundations, negotiation techniques, archetype considerations, and framework use. Consider prioritizing DOD talent acquisition for key positions.

**Establish lessons-learned system.** Implement systematic knowledge capture through structured documentation, regular retrospectives, and cross-office sharing forums.

**Formalize Program Design Center.** Establish function with dedicated staff for framework maintenance, training, knowledge management, and cross-office coordination.

#### Medium-Term (1-2 Years)

**Implement frameworks across programs.** Refine based on pilot experience, expand to additional programs, and develop additional archetypes as capacity grows.

**Build case for 7256(g) reauthorization.** The authority expires 2030. Proactively build the case for permanent reauthorization rather than waiting until it expires.

## For Congress

**Avoid blanket mandates.** Don't require OT use through "shall" language. Mandating OT without capacity produces poor outcomes. Use "DOE may use Other Transactions" to enable without mandating. Tool selection should remain with DOE based on program needs.

**Focus on outcomes, not mechanisms.** Oversight should address whether programs achieve objectives (technology advancement, commercial deployment, efficient use of taxpayer funds), not the choice of mechanisms.

**Reauthorize 7256(g) in perpetuity.** The 2030 sunset creates uncertainty around IP treatment. Permanent reauthorization provides stable authority, enables long-term planning, and confirms Congressional support.

**Fund capacity building.** Building OT capability requires investment in training, staff (knowledge and number), and systems. Encouraging OT use while starving capacity building produces the worst outcome. Consider providing direction to develop and promulgate best practices around OT and innovative funding mechanisms more broadly.

**Understand implementation reality.** Negotiation burden is real. Capacity building takes years. Pressure for immediate transformation will produce problems; patience for deliberate development will produce results.

## For DOE Practitioners

**Use the selection framework.** Before defaulting to OT, work through the analysis: What are you accomplishing? What terms are needed? Can existing mechanisms and processes work? If OT, which archetype? Don't start with "let's do OT"; start with program needs. While each investment area and program has unique features, there are broad areas of commonality, and bespoke approaches should be the exception rather than the rule.

**Know why you're using OT.** If you cannot articulate specific flexibility needs beyond "general flexibility" or "escape bureaucracy," reconsider whether OT is the right choice.

**Start with frameworks.** When available, begin from established frameworks rather than blank sheets. If frameworks don't exist for your archetype, consider contributing to development.

**Document and share.** Every negotiation teaches something. Document lessons, share with colleagues, contribute to institutional knowledge.

**Pursue development.** Seek training and warranting opportunities. Mentor others. The Department needs more capable practitioners; your development contributes to institutional capacity.

## For Private Sector

**Understand the spectrum.** One OT does not equal another. Different offices have different approaches. Different archetypes have different frameworks. Ask about the specific approach before assuming prior experience transfers.

**Ask questions early.** Before investing significant effort, understand what terms DOE is offering. Review draft agreements in NOFOs carefully. Early clarity prevents later disappointment.

**Approach negotiations realistically.** The era of blank-sheet negotiation should be ending. As DOE develops frameworks, standard terms will be standard, accepted by applying, not negotiated from scratch. Understand what's negotiable and what isn't.

**Build trust.** Companies approaching negotiations collaboratively (seeking workable arrangements rather than maximum extraction) build relationships benefiting future engagement. Reputation matters.

**Small companies: assess capitalization implications.** Payment timing under OT is not guaranteed to be fast. Government processes take time. Before committing, assess whether your capitalization can sustain realistic timelines.

## SECTION VII: CONCLUSION

### A More Complete Conversation

This report began with a problem: the discourse around Other Transactions at DOE has become disconnected from implementation reality. A subset of advocates promote OT as a solution to challenges it cannot solve, while the actual requirements for effective OT use receive insufficient attention. The result is a gap between expectations and outcomes that serves no one.

We have tried to offer something different: a practitioner's view of what OT can and cannot accomplish, grounded in direct experience with the complexities of federal program execution. The picture that emerges is more nuanced than either OT skeptics or enthusiasts typically acknowledge.

### What We've Learned

OT is valuable in specific contexts. For early-stage companies that need cash flow flexibility and IP arrangements compatible with venture financing. For first-of-a-kind deployments integrating complex private financing structures. For consortia and hubs struggling under administrative overhead designed for simpler arrangements. For novel structures that do not fit existing templates. In these contexts, OT provides genuine value that other mechanisms cannot match.

OT is not a universal solution. For universities whose administrative systems are optimized for standard financial assistance, OT creates friction without corresponding benefit. For projects where cooperative agreement oversight adds value and existing staff expertise is well-matched to the work, switching mechanisms offers little advantage. For situations where “flexibility” would be constrained by necessary risk management, OT adds complexity without delivering on its promise. The enthusiasm for using OT everywhere produces worse outcomes than the discipline of using it strategically.

Seven cross-cutting policy questions need attention. Intellectual property, Buy America, Davis-Bacon, NEPA, real property, cost sharing, and program income—these issues persist in every significant award. OT changes where, not if, these questions are negotiated. Without clear policy positions from leadership, every negotiation relitigates fundamental questions, extending timelines and shifting policy risk inappropriately to career staff. Resolving these questions would accelerate execution across all mechanisms, not just OT.

Implementation capacity is the binding constraint—but capacity means more than warrants. DOE already has OT authority. The binding constraints are institutional: unclear policy positions, absence of standardized frameworks, and balkanization across offices. The challenge extends beyond contracting officers to the full complement of oversight staff trained in compliance frameworks that OT is designed to depart from. But the solution is not simply to issue more warrants or conduct more training in existing approaches. It may require rethinking who holds authority—potentially empowering senior program executives to drive substantive negotiations rather than routing all decisions through compliance-focused staff. At the same time, removing 2 CFR 200 constraints does not mean OT operates without standards. Building OT capacity requires developing staff who combine technical knowledge, commercial sophistication, and sound judgment. This takes years regardless of organizational structure.

Consistency and trust enable faster execution. The standardization paradox runs throughout this analysis: OT's value lies in flexibility, but effective execution requires structure. The resolution is achieved both through deliberate design—prototypical frameworks that are substantially complete before negotiation begins, with bounded areas for project-

specific discussion. Companies that know what to expect engage more readily. Staff working within established parameters move faster. The discipline of structure produces the speed that undisciplined flexibility promises but cannot deliver.

DOE already operates with flexibility in parts of its portfolio. The Management and Operating contracts governing national laboratories provide inherent flexibility that mirrors some of what OT seeks to achieve. Understanding how that flexibility functions—and why it does not translate directly to extramural funding—can inform realistic expectations for OT with external partners.

Different projects need different approaches. The five archetypes we have described—early-stage R&D, mid-stage demonstration, first-of-a-kind deployment, consortia and novel structures, and demand-side mechanisms—have genuinely different needs. A single OT approach serves none of them well. Matching mechanism to project characteristics, matching OT variant to archetype, matching risk tolerance to investment scale: these judgments determine whether OT deployment succeeds.

Nothing is the panacea. Anyone who claims to have found the single solution to federal program execution challenges has not spent enough time actually executing programs. Every mechanism has limitations. Every approach creates trade-offs. OT is a valuable addition to DOE's toolkit. It is not a replacement for the hard work of effective program design and execution.

## **The Path Forward**

This report is a starting point, not a conclusion. The analysis reflects our experience and perspective; others will see things differently. The recommendations require adaptation to circumstances we cannot fully anticipate. The frameworks we have proposed need testing and refinement through actual use.

But the direction is clear. DOE can build effective OT capability—not overnight, not through enthusiasm alone, but through sustained effort. The elements are known: policy clarity from leadership on the seven cross-cutting issues, prototypical frameworks for common archetypes, a Program Design Center to maintain institutional knowledge and provide support across offices, capacity building that develops staff with the right combination of skills, processes that integrate terms discussions throughout selection, and parallel improvement of existing mechanisms including systematic removal of accumulated plaque.

A leadership moment. For administration officials, OT presents both opportunity and risk. The opportunity is to build sustainable capability that serves DOE's mission across administrations. The risk is pursuing visible OT expansion without the institutional foundation that makes it work, producing failures that would discredit the tool and set back the cause of effective federal partnerships for years.

A model for others. If DOE gets this right, the approach could inform other agencies grappling with similar questions. The framework of archetypes and variants, the emphasis on structured flexibility, the integration of mechanism improvement with plaque removal, the focus on who holds authority and how decisions actually get made: these concepts translate beyond DOE's specific context. Success would demonstrate what deliberate institutional investment can achieve; failure would reinforce skepticism about OT that extends well beyond this agency.

An ongoing conversation. We hope this report contributes to a more grounded discourse about OT at DOE. The binary framing—OT good, cooperative agreements bad, or vice versa—serves no one. The question is not which mechanism to prefer but how to build capability across the full toolkit, deploying each where it serves best.

## Final Thought

Success is not measured by the number of OTs that DOE executes. It is not measured by how quickly the department moves away from cooperative agreements. It is not measured by whether DOE adopts the latest mechanism innovation.

Success is measured by outcomes: technologies advanced, companies strengthened, partnerships formed, taxpayer investments stewarded responsibly. The mechanism is instrumental—a means to these ends, not an end in itself. The goal is the right tool, used effectively, for each situation. If this report helps DOE move toward that goal—building capability where it is needed, exercising discipline where it is warranted, achieving the outcomes that justify public investment in energy innovation—it will have served its purpose.

The conversation about how to get there should continue. We look forward to being part of it.

# APPENDIX A: Glossary of Terms

## Acronyms and Initialisms

ARPA-E — Advanced Research Projects Agency-Energy. DOE office funding high-risk, high-reward energy technology research.

CA — Cooperative Agreement. A type of financial assistance with substantial federal involvement. See full definition under Technical Terms.

CFR — Code of Federal Regulations. The codification of federal regulatory rules. 2 CFR 200 governs federal financial assistance.

CHIPS — Creating Helpful Incentives to Produce Semiconductors (CHIPS and Science Act). Recent legislation with significant OT deployment for semiconductor manufacturing.

CO — Contracting Officer. Federal official with authority to enter into, administer, and terminate contracts or agreements on behalf of the government.

DOD — Department of Defense. Federal department with the most mature OT capability; frequent reference point for DOE.

DOE — Department of Energy.

FAR — Federal Acquisition Regulation. The principal set of rules governing federal procurement contracts.

FERC — Federal Energy Regulatory Commission. Independent agency regulating interstate transmission of electricity, natural gas, and oil.

FOAK — First-of-a-Kind. Refers to the first commercial-scale deployment of a technology, as distinct from demonstration or pilot projects.

GAAP — Generally Accepted Accounting Principles. Standard commercial accounting framework; OT can allow acceptance of GAAP in lieu of federal cost accounting requirements.

GC — General Counsel. DOE's legal office; plays key role in OT policy and review.

IG — Inspector General. Independent oversight office; IG reports document OT implementation challenges at various agencies.

IP — Intellectual Property. Patents, trade secrets, and other proprietary rights; a key cross-cutting issue in OT negotiations.

MA — Office of Management. DOE office with contracting authority; sometimes referenced alongside GC and program offices.

NASA — National Aeronautics and Space Administration. Agency whose Space Act authority served as model for DOE’s organic OT authority.

NEPA — National Environmental Policy Act. Requires environmental review for federal actions; a cross-cutting issue that OT cannot eliminate.

NOFO— Notice of Funding Opportunity. The solicitation document through which DOE announces available funding and application requirements.

OCED — Office of Clean Energy Demonstrations. DOE office managing large demonstration and deployment programs.

OT — Other Transaction. An agreement that is neither a procurement contract nor a grant nor cooperative agreement. See full definition under Technical Terms.

PIA — Partnership Intermediary Agreement. A funding mechanism with equity-like features for large deployment projects.

PPA — Power Purchase Agreement. Contract to buy electricity from a generator; referenced in Kairos/TVA context.

R&D — Research and Development.

SETO — Solar Energy Technologies Office. Previous name for the DOE program office responsible for solar energy technologies; referenced for milestone-based OT programs with early-stage companies.

SMR — Small Modular Reactor. A class of nuclear reactor designs; referenced in Gen 3 Plus SMR program case study.

SPE — Special Purpose Entity. A legal entity created for a specific project or purpose.

TIA — Technology Investment Agreement. DOE’s earlier OT framework from the 2000s; its problems created lasting institutional skepticism.

TRL — Technology Readiness Level. Widely used as a metric for technical maturity.

TVA — Tennessee Valley Authority. Federal utility; referenced as site partner in Kairos case study.

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## Technical Terms

7256(a) — Section of the DOE Organization Act of 1977 authorizing the Secretary to enter into agreements “of any kind” necessary to carry out DOE’s mission. This “organic authority” does not sunset and provides durable OT foundation.

7256(g) — Section of the Energy Policy Act of 2005 providing explicit OT authority with specific IP flexibility provisions. Sunsets in 2030 unless reauthorized.

**Archetype** — In this report, one of five distinct project types with different OT needs: early-stage R&D, mid-stage demonstration, FOAK deployment, consortia/novel structures, and demand-side mechanisms.

**Bayh-Dole Act** — Federal law (35 U.S.C. §§ 200-212) establishing default IP rights for inventions made with federal financial assistance funding. Generally allows recipients to retain title while granting government license rights.

**Bespoke** — Custom-designed for a specific situation. Used to describe negotiations where every term is negotiable, leading to unique agreements that are difficult to administer consistently.

**Buy America** — Requirements that federally funded projects use domestically produced materials. A cross-cutting issue that persists regardless of funding mechanism.

**Capitalization** — The amount of funding a company has raised and has available. Determines whether companies can absorb government processing delays; a key factor in whether OT payment structures actually help.

**Categorical Exclusion (CatEx)** — A class of actions that a federal agency has determined do not individually or cumulatively have significant environmental effects and therefore do not require environmental assessment or environmental impact statement under NEPA.

**Compliance Risk** — Risk of waste, fraud, or abuse in the use of federal funds. One of three risk dimensions discussed; lends itself to audits and checklists.

**Cooperative Agreement** — A type of federal financial assistance used when substantial federal involvement is anticipated during project performance. Governed by 2 CFR 200. Distinguished from grants (minimal involvement) and procurement contracts (government acquiring something for its own use).

**Cost Accounting Standards** — Federal requirements for how costs are calculated and allocated. OT can waive standard requirements (2 CFR 200 Subpart E) and accept commercial accounting standards instead.

**Cost Share/Cost Sharing** — The portion of project costs borne by the recipient rather than the federal government. A cross-cutting policy issue requiring DOE positions on minimums and acceptable forms.

**Cross-cutting Issues** — Policy questions that must be addressed in every significant award regardless of mechanism: IP, Buy America, Davis-Bacon, NEPA, real property, cost sharing, and program income.

**Davis-Bacon Act** — Federal law requiring payment of prevailing wages on federally funded construction projects. A cross-cutting issue whose applicability can be ambiguous.

**Execution Risk** — Risk that projects are not delivered on time, within scope, or according to plan. One of three risk dimensions; can be monitored through milestones and reporting.

**Financial Assistance** — Federal funding provided to support a public purpose (grants and cooperative agreements), as distinguished from procurement (acquiring goods/services for government use).

**Grant** — A type of federal financial assistance with minimal federal involvement during performance. Appropriate when the government’s interest is enabling activity without directing it.

**Impact Risk** — Risk that projects, even if completed properly and compliantly, fail to achieve their intended effect on the energy system. Harder to measure than compliance or execution risk; requires consideration of external market and technology evolution.

**Milestone-based Payment** — Payment structure where funds are disbursed upon achievement of defined technical or programmatic milestones, rather than reimbursement of incurred costs. Can improve cash flow for performers but depends on government processing speed.

**Offtake Agreement** — A commitment to purchase output (e.g., electricity, hydrogen, products) from a project over time. Can support project financing by providing revenue certainty.

**Organic Authority** — Statutory authority derived from an agency’s foundational legislation rather than specific programmatic authorization. DOE’s 7256(a) authority derives from the 1977 DOE Organization Act.

**Other Transaction (OT)** — A legal instrument for federal funding that is neither a procurement contract, grant, nor cooperative agreement. Defined by what it is not; enables flexibility in terms that standard mechanisms do not permit.

**Plaque** — Accumulated requirements beyond statutory or regulatory minimums that burden federal awards. Includes conservative legal interpretations codified as rules, template provisions added without systematic review, and NOFO boilerplate treated as immutable. Analogous to arterial plaque—buildup that impedes flow.

**Pre-selection Discussions** — Discussions with applicants about terms and positions before final selection decisions, enabled by OT process flexibility. Can improve alignment and reduce post-selection negotiation time.

**Procurement Contract** — Federal agreement used when the government is acquiring goods or services for its own use. Governed by FAR. Distinguished from financial assistance.

**Program Income** — Revenue generated by federally funded activities (e.g., sales, licensing). A cross-cutting policy issue requiring DOE positions on treatment.

**Project Finance** — Financing structure where lenders look primarily to project cash flows and assets for repayment, rather than the sponsor’s balance sheet. Common in energy infrastructure; creates specific requirements for federal funding terms.

**Prototypical Framework** — In this report, a standardized starting template for a specific OT archetype that is approximately 80% complete, with identified negotiable areas. Designed to provide consistency while preserving meaningful flexibility.

**Real Property** — Land and buildings. A cross-cutting issue when federal funds are used for facilities; requires positions on ownership and disposition.

**Reimbursement** — Payment structure where the government pays for costs after they are incurred. Standard for cooperative agreements; can create cash flow challenges for under-capitalized performers.

**Series A/B/C** — Stages of venture capital financing. Series A typically follows seed funding; Series B and C represent subsequent rounds at increasing valuations. Used in the report to characterize company maturity.

**Substantial Involvement** — The defining characteristic of cooperative agreements under 31 U.S.C. § 6305; anticipates active federal participation in project performance through technical guidance, milestone reviews, or collaborative problem-solving.

**Sunset** — Expiration of statutory authority on a specified date. DOE's 7256(g) authority sunsets in 2030 unless reauthorized.

**Tax Equity** — A financing structure where investors receive tax benefits (credits, depreciation) in exchange for capital investment. Common in renewable energy projects, creates specific structuring requirements.

**Warrant/Warranted** — Official authorization for a contracting officer to obligate the government in agreements up to specified dollar amounts. "Warranted OT officers" have specific authority to execute Other Transactions; DOE has historically had very few of them.

## APPENDIX B: Lessons From Other Agencies

The U.S. Department of Energy is not the first federal agency to grapple with the use of flexible contracting authorities for technology development and commercialization. Other agencies—most notably the U.S. Department of Defense, NASA, and the CHIPS Program Office in the U.S. Department of Commerce—have accumulated decades of collective experience with Other Transaction authority. Their experiences offer instructive lessons for DOE, though direct comparison requires attention to context. What works in defense acquisition or space exploration may need adaptation for energy technology deployment, and what appears to be success from outside often obscures more nuanced implementation realities.

### The Department of Defense: The Dominant Model

When DOE practitioners discuss OT, they typically reference DOD. With decades of experience and hundreds of OT-experienced staff, DOD has the most mature federal OT capability. The argument follows: DOD succeeds with OT, so DOE should do more.

This comparison obscures important differences.

**Scale and depth.** DOD's capability developed over decades with substantial investment in personnel, training, and institutional infrastructure. According to Congressional Research Service analysis, roughly half of DOD's OT obligations are awarded through consortia structures, reflecting an established ecosystem of relationships and processes. Between 2011 and 2014, DOE executed fewer than 20 OT agreements in total, while DOD executed thousands annually through established consortia and acquisition pathways. When DOE began reinvigorating OT authority in 2022, only one or two staff department-wide held warrants to execute OT agreements. DOE cannot replicate this institutional depth overnight. Importing DOD approaches risks importing visible practices without the invisible institutional foundation that makes them work.

**Commercial dynamics.** DOD's traditional base consists of large defense contractors with extensive federal experience selling to a single customer: the federal government. These contractors understand federal acquisition culture, maintain dedicated government compliance functions, and have built business models around long-term defense relationships. DOE's applied energy programs work with fundamentally different performers—startups, cleantech ventures, utilities, project developers—who have limited federal experience and must simultaneously serve the broader private sector. Their business models depend on commercial viability, private financing, and market-based revenues in ways that defense contractors do not. The cost accounting standards and audit requirements that defense contractors accept as ordinary business costs may fundamentally conflict with how venture-backed startups or project finance structures operate.

**IG reports reveal problems.** DOD's experience has not been uniformly positive. Inspector General audits have repeatedly identified significant implementation problems. A 2021 DOD IG audit found that contracting personnel failed to properly track OTs awarded through consortia in federal procurement data systems. Auditors identified inadequate competition, insufficient documentation of award rationale, and inconsistent application of approval requirements. The audit detailed failures to report OT use to Congress in a timely manner, ensure projects were approved at consistent authority levels, and verify that acquisition officers were fully trained on OT procedures.

**Consortium management presents particular challenges.** The Government Accountability Office has expressed concern that DOD lacks adequate data regarding consortia awards and has no systematic approach for tracking them. Consortium management organizations operate with limited oversight, and their fee structures are not consistently

negotiated. Security of information shared with consortia has been questioned, as DOD relies on consortium managers to vet their own members rather than requiring direct government verification. These findings demonstrate that OT authority does not automatically produce effective outcomes—DOD has succeeded in many applications while struggling in others.

**What to Learn:** Value of standardized templates and infrastructure; consortium structures for aggregating demand and providing ongoing engagement with nontraditional performers; training pipeline development through Defense Acquisition University; lessons from IG findings about what can go wrong.

**What to Avoid:** Assuming DOE can replicate scale quickly; ignoring different commercial dynamics; importing practices without corresponding institutional support in training, staffing, templates, and approval processes.

## NASA: The Space Act Model

NASA's flexible agreements through Space Act authority helped create the commercial space industry. The Space Act served as a model for DOE's 7256(a) organic authority, and NASA's experience offers the most directly relevant lessons for DOE's energy technology demonstration and deployment mission.

**The COTS Model.** The Commercial Orbital Transportation Services program, initiated in 2006, represents a landmark in federal use of milestone-based, fixed-price agreements. For approximately \$800 million in total federal investment, NASA obtained two new medium-class launch vehicles and two automated cargo spacecraft—a fraction of what a traditional cost-plus acquisition would have required to achieve comparable capability.

COTS was structured through Space Act Agreements rather than traditional procurement contracts. Winners received milestone-based payments tied to demonstrated technical achievements rather than cost reimbursement. SpaceX was awarded up to \$278 million (later expanded to \$396 million with additional milestones), while Orbital Sciences received approximately \$288 million after being selected in a second round.

The payment structure created powerful incentives for efficiency. Companies bore the financial risk of milestone completion—if they failed to meet technical requirements, they received no payment. This stood in stark contrast to cost-plus arrangements, where contractors are compensated regardless of efficiency or timeline performance.

**Critical success factors.** Several features contributed to COTS success that are applicable to DOE's demonstration programs.

The program required significant private investment alongside federal funding. SpaceX invested approximately \$454 million of private capital, and Orbital invested roughly \$590 million. This cost-sharing requirement ensured that performers had a genuine financial commitment to the project's success beyond federal payments. It also demonstrated commercial viability potential—companies that could attract private capital were more likely to develop commercially sustainable capabilities.

The milestone-based payment structure provided an exit valve for underperforming projects. When Rocketplane Kistler failed to meet milestones and secure required private financing, NASA terminated its agreement after disbursing only \$32.1 million of the potential \$207 million award. This protected taxpayer funds while freeing resources for reallocation to other promising performers.

The program used Space Act Agreements specifically to attract nontraditional performers. Traditional contractors were

accustomed to federal acquisition regulations and cost-plus structures. Companies like SpaceX operated on commercial business models incompatible with federal requirements. The flexibility of Space Act Agreements allowed NASA to structure terms that commercial companies could accept while still achieving public purposes.

**The SpaceX example.** The 2006 agreement established IP terms that became a reference point: the company retained substantial commercial rights while NASA received what it needed. This enabled SpaceX to attract private investment while delivering on NASA objectives.

The lesson is nuanced: the agreement worked because it was thoughtfully designed for specific purposes, not a template applied indiscriminately. NASA invested significant effort in structuring milestones that were technically meaningful yet achievable, payment amounts that provided meaningful incentive without eliminating private risk, and IP arrangements that balanced commercial needs against government interests.

## CHIPS Program Office: Building From Scratch

The CHIPS Program Office within the U.S. Department of Commerce offers particularly relevant lessons because it faced many of the same challenges DOE confronts: building OT capability essentially from scratch, working with sophisticated commercial companies rather than traditional government contractors, and executing large-scale industrial policy in compressed timeframes.

The starting point. In 2022, the CHIPS Program Office faced an unprecedented task: stand up a \$39 billion initiative with no existing team, no established processes, and no strategy. Within months, the office needed to design an application process, develop evaluation criteria, negotiate complex agreements with the world's most sophisticated semiconductor companies, and begin deploying funds.

The program's leadership came largely from outside traditional government acquisition backgrounds. This private sector orientation shaped the office's approach—thinking in terms of deal structure, risk allocation, and milestone-based accountability rather than traditional grant administration.

Using Other Transaction Authority. The CHIPS money functioned primarily as grants in economic substance—federal funds provided to offset cost disadvantages that made domestic semiconductor manufacturing uncompetitive with Asia. However, the program legally operated under Other Transaction Authority, which provided substantially more flexibility than traditional grant structures.

This flexibility proved essential for structuring agreements with global semiconductor manufacturers. Traditional cooperative agreements would have imposed requirements around cost accounting, auditing, and property that were incompatible with how companies like TSMC, Intel, and Samsung operated. The OT framework allowed the CHIPS office to negotiate bespoke terms tailored to each company's circumstances while maintaining appropriate accountability mechanisms.

Key lessons include<sup>39</sup>:

- Investment in upfront policy clarity before solicitations—rather than allowing each negotiation to relitigate fundamental questions, the CHIPS office established clear positions on issues like upside sharing, milestone structures, and workforce commitments before engaging with applicants. This front-loading of policy

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39. [Mike Schmidt, "Eight Legal Challenges CHIPS Navigated," \*Factory Settings\*, January 2026.](#)

decisions accelerated later negotiations and created consistency across awards.

- Attention to how terms interact with private financing—agreement terms must work not just for the recipient company but for its investors and lenders. Terms that create uncertainty about milestone achievement, impose requirements conflicting with corporate governance structures, or retain government property interests in ways that complicate financing will deter the very investment the program seeks to catalyze.
- Recognition that flexibility must be structured—the office chose to design a structured application process with evaluation criteria and rolling review rather than immediately negotiating directly with Intel and TSMC. This approach provided defensibility against claims of favoritism but required a significant upfront investment in process design.
- Acknowledgment that implementation challenges are real, regardless of mechanism—cross-cutting statutory requirements created complexity in every negotiation. Questions about Buy America, labor standards, environmental review, and national security restrictions had to be resolved in each agreement. The experience of explaining the Fly America Act to TSMC executives during billion-dollar negotiations illustrates how routine federal requirements can complicate commercial relationships.

## Synthesis and Key Takeaways

### Common Fallacies

- “DOD does it, so we should.” DOD’s context differs from that of DOE. Defense acquisition serves a single customer through contractors whose business models assume federal work. DOE seeks to catalyze commercial markets in which federal purchases constitute a minority of eventual demand. The performer base, financing structures, and market dynamics differ in ways that affect which agreement approaches work.
- One-size-fits-all transferability. Approaches working at one agency may not transfer given different statutory authorities, organizational capabilities, performer ecosystems, and mission requirements.
- Ignoring failures. Agencies using OT successfully also fail occasionally. Selective attention to success stories creates unrealistic expectations. Understanding what has not worked is as important as understanding what has.
- Assuming speed is inherent. Speed comes from investment in personnel capacity, pre-negotiated templates, clear policy positions that do not require case-by-case resolution, and organizational structures enabling rapid decision-making—not from mechanism selection alone.

### DOE’s Unique Position

- Dual statutory authorities (7256(a) and 7256(g)) create options but also complexity, requiring clarity about which applies in which circumstances and why.
- Energy and industrial sector dynamics differ from defense or aerospace projects, which require private financing, must achieve commercial viability in competitive markets, and involve infrastructure operating for decades.

- Mission mix from basic science through deployment requires varied approaches; no single contracting mechanism is optimal across DOE's full scope.
- The university's role is larger than at most other agencies with OT authority; universities generally do not benefit from OT flexibility and may be better served by standard financial assistance mechanisms.
- Political environment attracts scrutiny that shapes implementation choices and may counsel appropriate accountability mechanisms even when maximum flexibility is legally available.