Office of Technology Transitions
Proposed Appropriation Language

For Department of Energy expenses in carrying out the activities of the Office of Technology Transitions, $21,558,000, to remain available until September 30, 2028: Provided, that of such amount, $13,183,00 shall be available until September 30, 2024, for program direction.

Explanation of Change

No change. In FY 2023, funding for the Office of Technology Transitions is being requested in a separate appropriation from Departmental Administration to increase transparency and reflect the multi-year nature of program requirements.

Office of Technology Transitions
Overview

The mission of the Office of Technology Transitions (OTT) is to expand the commercial and public impact of the research investments of the DOE. OTT enhances the public return on investment from DOE's technology portfolio, including the National Laboratories, through a suite of outcome-oriented activities that will enable climate change mitigation, job creation, innovation hub development, and commercialization of energy technology. Internally, OTT works to fill gaps in the research, development, demonstration, and deployment (RDD&D) continuum, providing specialized tools, training, analysis, and programs to improve the successful transition of technology from proof of concept to prototype to demonstration. OTT also supports enabling policies for, tracks the impact of, and shares success stories from the Department's commercialization and partnering activities. Externally, OTT supports development of a robust ecosystem for energy entrepreneurs and technology start-ups and seeds public-private partnerships with a diverse set of actors, including state, local and tribal entities; industry, financial, and other market players; as well as academia, non-profits, and philanthropic entities. Fundamentally, OTT supports mechanisms to make the Department's research, development and demonstration (RD&D) more deployment-ready. OTT's FY 2023 budget targets and prioritizes impact in the following areas:

- Place-based approaches to commercializing innovation, which enables catalytic ecosystems that align federal funding with incubators, private companies, National Laboratories, universities, state and local officials, investors, and non-profits.
- Entrepreneurial training and workforce development programs for Lab researchers and students, which enable the current and future workforce to convert innovation into real-world outcomes.
- Access to and searchability of DOE's intellectual property, laboratory experts, and facilities, which enables direct public-private engagement leading to partnerships.
- Support for DOE crosscutting priorities through market and commercialization pathways analysis, which enable market-informed program design and industry engagement.
- Policy coordination to expand use of funding mechanisms in DOE program design and that reduce barriers in conducting business with the DOE National Laboratories and other federal, quasi-governmental, and non-federal entities.
- Convening of and outreach to decision-makers (e.g., C-suite in private companies) to identify opportunities for partnerships to commercialize DOE technologies.

Highlights of the FY 2023 Budget Request
The Department requests $21,558,000 for OTT in FY 2023. This level of funding will allow OTT to implement statutory authorities under the Energy Act of 2020, make targeted investments to enhance Departmental commercialization outcomes, and fully fund an ongoing regional clusters program focused on incubators and accelerators. This includes increases for strategic mission areas including market and commercialization pathways analysis and staffing increases to support an expanded program and outreach portfolio.

Future Years Energy Program (FYEP)

($K)

	FY 2023 Request	FY 2024	FY 2025	FY 2026	FY 2027
Office of Technology Transitions	21,558	22,000	23,000	24,000	25,000

Outyear Priorities and Assumptions
In the FY 2012 Consolidated Appropriations Act (P.L. 112-74), Congress directed the Department to include a future-years energy program (FYEP) in subsequent requests that reflects the proposed appropriations for five years. This FYEP shows outyear funding for each account for FY 2024 - FY 2027. The outyear funding levels use the growth rates in outyear account

totals published in the FY 2023 President's Budget for both the 050 and non-050 accounts. Actual future budget request levels will be determined as part of the annual budget process.

OTT priorities in the outyears include the following:

- Targeted investments to improve the commercial impact of DOE RDD&D investments and enhance Departmental commercialization outcomes.
- Execution of commercialization programs and other technology transfer activities.
- Focused market and commercialization pathways analysis and policy coordination to inform program design and industry engagement.
- Partnership development to improve awareness of partnership opportunities and to leverage the capabilities of DOE and its National Laboratories.

Technology Transitions
Funding ($K)

	FY 2021 Enacted	FY 2022 Annualized CR	FY 2023 Request	FY 2023 Request vs FY 2021 Enacted ($)	FY 2023 Request vs FY 2021 Enacted (%)
Washington Headquarters					
Salaries and Benefits	3,863	3,863	5,424	+1,561	+40%
Travel	300	300	500	+200	+67%
Support Services	4,251	4,251	6,304	+2,053	+48%
Other Related Expenses	850	850	955	+105	+12%
Total, Program Direction	**9,264**	**9,264**	**13,183**	**+3,919**	**+42%**
Total FTEs	**22**	**22**	**30***	**+8**	**+36%**
Support Services					
Management Support Services	3,951	3,951	4,804	+853	+22%
Market and Commercialization Pathways Analysis	300	300	1,500	+1,200	+400%
Total, Support Services	**4,251**	**4,251**	**6,304**	**+2,053**	**+48%**
Other Related Expenses					
Working Capital Fund (WCF)	570	570	570	0	0%
Other	280	280	385	+105	+38%
Total, Other Related Expenses	**850**	**850**	**955**	**+105**	**+12%**
Programs					
Commercialization Activities	3,375	3,375	3,375	0	0%
Energy Program for Innovation Clusters (EPIC)	5,000	5,000	5,000	0	0%
Total, Programs	**8,375**	**8,375**	**8,375**	**0**	**0%**
Total, Office of Technology Transitions	**17,639**	**17,639**	**21,558**	**+3,919**	**+22%**

Authorizations:
Public Law 109–58, "Energy Policy Act of 2005," Title V
15 U.S. Code § 3708(b and c) - Administrative arrangements – Corporation & Administrative authorization
15 U.S. Code § 3710(a) - Utilization of Federal Technology
42 U.S. Code § 2121(a) - Authority of Commission
42 U.S. Code § 16391(e) - Establishes the Energy Technology Commercialization Fund
Public Law 116-68 Consolidated Appropriations Act 2021 – reference "Energy Act 2020" Title IX

*FTE Request was presented as 39 in the FY 2023 Budget Appendix but reduced to 30 due to late adjustments in the OTT FY 2023 Request.

Program Direction

Program Direction fully funds federal salaries and benefits, official travel, training, DOE Working Capital Fund, Energy Information Technology (IT) Services, associated support services contracts, and all program implementation expenses to execute the OTT mission, comply with the Energy Act of 2020 and coordinate commercialization activities with the Department, including the National Laboratories. This funding supports a communications team, market and commercialization pathways analysis function, third-party evaluation efforts, policy efforts, annual data collection and reporting, targeted stakeholder outreach and partnering efforts, and oversight and management of all programmatic activities, including the Technology Commercialization Fund (TCF), Energy Program for Innovation Clusters (EPIC), Lab Partnering Service (LPS), Energy I-Corps (EIC), the Energy Technology University Prize (ETUP), the OTT Summer Entrepreneurship Intern Program, and other commercialization programs and activities.

Communicating Successes - Stakeholder engagement is assisted by a clear understanding of the capabilities, possibilities, and impact of the National Laboratories and the broader DOE RDD&D investment portfolio. OTT regularly amplifies success stories from across the DOE complex and develops communications content to showcase the DOE innovation story. A subset of success stories is reported to Congress annually to meet statutory requirements. OTT's communications bring to life the impacts that the DOE and the National Laboratories have had on companies, industries, the Nation, and the world, underscoring the potential for further external partnerships. FY 2023 funding supports continued communications support at a sustained level.

Data Collection and Reporting - OTT gathers, verifies, and validates unclassified technology transfer partnership and metrics data for all 17 DOE National Laboratories and four production facilities on an annual basis. This effort supports annual statutory reporting on National Laboratory utilization and provides unique visibility into the commercial impact of DOE's investments in the National Laboratories and Facilities and the breadth of beneficiaries and partners across the Nation. FY 2023 funding supports data collection and reporting at a sustained level.

Summer Internship Program – OTT will continue its Summer Entrepreneurship Program for approximately 20 undergraduate students. This paid internship program will benefit a diverse cohort of participants by enhancing their education and training in technology commercialization-related fields and increasing their future marketability in these disciplines. In addition, participants will gain deep insight into the federal government's role in the creation and implementation of policies that will affect energy technology development and commercialization. Participants will also contribute to OTT mission-related research activities under the guidance of National Laboratories technology transfer and commercialization specialists and OTT staff. The Budget will sustain this program in FY 2023.

Market & Commercialization Pathways Analysis - OTT will continue to expand its market and commercialization pathways analytical capabilities to illuminate technology market trends and drivers and enable transitions of technology across the RDD&D continuum. OTT analysis helps illuminate market structures and commercial-adoption risk and helps identify commercialization opportunities for energy technologies. OTT facilitates the development and use of market analysis content, methodologies, and data services across DOE offices in both the Under Secretary for Science and Innovation (S4) and Under Secretary for Infrastructure (S3), as well as convening the National Laboratory community to promote market awareness and information sharing around resources and methodologies to enhance commercialization opportunities for DOE technologies. OTT focuses its analytical efforts on crosscutting and strategic topics and identifies and pursues technology commercialization opportunities based on these insights. OTT's market and commercialization pathways analysis complements the Department's analytical efforts to maximize the impact of DOE programs and funding.

One example of this effort is the report on Competitiveness and Commercialization of Energy Technologies that OTT produced in support of the Department's response to Executive Order 14017 on America's Supply Chains. This report provides a clear framework to identify commercialization opportunities for US-developed technologies, support US leadership in clean energy sectors, and pursue national economic, climate, and security goals. Another example is commercialization pathways and risk analytics in support of Office of Clean Energy Demonstrations (OCED) portfolio planning activities, which illustrate a collaborative relationship emerging between OCED and OTT that is rooted in the Infrastructure Investment and Jobs Act. This supplements ongoing work to accelerate technology commercialization

activities in high-priority crosscutting efforts, such as the Energy Storage Grand Challenge. These analytical products are representative of the value OTT is adding with targeted funding through its market and commercialization analysis function.

In FY 2023, OTT will continue to build out its market and supply chain analytical capability to amplify market intelligence in several crosscutting areas to accelerate the commercialization of DOE-developed technologies. Energy storage, critical materials, and the hydrogen economy are examples of high-priority topic areas that OTT will provide analytical support to.

Partnership Development - Since FY 2016, OTT has supported a high-impact outreach function to expand DOE's network of potential partners. The initial focus of these efforts was to better engage market participants, such as corporations, startups, venture capitalists, and private equity firms. Starting in FY 2019, OTT expanded this function to support increased and more substantive market-informed outreach, including to non-traditional entities, such as foundations, family offices, incubators, and accelerators, as well as non-commercial state, local, and other federal entities. The objective always is to increase awareness of the opportunities for partnership with, and to leverage the capabilities of the DOE and its National Laboratories. By working with a diverse group of capital providers and market actors with various investment time horizons, risk appetites, organizational structures, and constituencies, OTT is well-positioned to identify effective ways to help maximize the impact of the Department's RDD&D investments.

One example of OTT's outreach efforts is the Innovation*X*Lab Summit series. These are non-technical events that target industry executives and decision-makers, investors, and National Laboratory stakeholders for a two-way exchange of information and ideas, with the goals of:

- Catalyzing public-private and public-public partnerships;
- Engaging the private sector to better understand industry's technical needs, risk appetite, and investment criteria; and
- Informing DOE RDD&D planning to increase commercialization possibilities.

To date, OTT has sponsored seven Innovation*X*Lab Summits covering Energy Storage, Grid Modernization, Advanced Manufacturing, Artificial Intelligence, Biomanufacturing, Carbon Utilization, and Quantum Information Science and Technology, with an Arctic-focused event planned for May 2022. These events – both in-person and virtual – have included thousands of attendees and over a thousand unique Lab-Industry connections made.

FY 2023 funding will maintain planned staffing levels for strategic partnership development.

Policy Coordination and Prize Authority - OTT will continue its leadership role in coordinating commercialization policies and mechanisms across DOE and across the Federal Government. Within DOE, OTT oversees the implementation of national technology transfer and commercialization authorities and the policy priorities of the Administration and convenes the Technology Transfer Policy Board comprising DOE program office representatives and the Technology Transfer Working Group comprising National Laboratory tech transfer and commercialization professionals and DOE site office representatives. Externally, OTT coordinates with other federal agencies through the Interagency Working Group on Technology Transfer and the Federal Laboratory Consortium for Technology Transfer. Additionally, OTT serves as co-chair of and participates in the Lab-to-Market subcommittee of the Office of Science and Technology Policy's National Science and Technology Council. These activities provide an opportunity for OTT to gain insights on best practices and program designs that can be shared across the Federal Government and considered for implementation at DOE.

In FY 2023 OTT continues efforts to implement Energy Act 2020 guidance on use of prize authority as a prize center of excellence that will enable wider and more effective Departmental use of prizes by S3 and S4 programs. OTT will also work to deliver other required and ongoing Congressional evaluation and reporting requirements and recently has been leading agency efforts to explore potential use of an expanded set of partnering mechanisms and authorities, to include re-authorized Other Transaction Authority (OTA).

FY 2023 funding will support continued engagement by OTT staff with stakeholders on streamlining central policies and procedures, thus simplifying, and enabling private sector access to the capabilities and resources of the DOE National Laboratory enterprise. OTT will continue to assess, document, and disseminate best practices, including those related to

use of prize authorities, and to update the DOE Technology Transfer Execution Plan in accordance with statutory requirements.

Program Management – Funding supports HQ oversight and management of all programmatic activities, including the Technology Commercialization Fund (TCF), EnergyTech University Prize (ETUP), Energy Program for Innovation Clusters (EPIC), Lab Partnering Service (LPS), Energy I-Corps (EIC), Laboratory Technical Assistance Programs, Summer Entrepreneurship Intern Program, and other commercialization activities that support OTT's mission. This includes the costs of both federal and contractor staff engaged directly in or in support of program management and implementation activities. FY 2023 funding will support increased program management in line with the expanding OTT portfolio of high-impact program activity.

Office of Technology Transitions
Program Direction
Activities and Explanation of Changes

FY 2021 Enacted	FY 2023 Request	Explanation of Changes FY 2021 Enacted vs FY 2023 Request
Program Direction $9,264,000	**$13,183,000**	**+$3,919,000**
Salaries and Benefits $3,863,000	**$5,424,031**	**+$1,561,031**
Funding supports about 22 FTEs responsible for managing OTT's commercialization portfolio and providing essential operations support. This includes management of all OTT programs, office operational support, and staff focus on creating public-private partnership opportunities and conducting market and commercialization analyses.	Funding will support an increase (+8) to 30 FTEs to support growth in the OTT commercialization portfolio. New staff will support expanded program management and implementation requirements and critical operations support.	Supports FTE increase and 2.7% cost-of-living increase in civilian salaries, FERS increase and supplemental funds for performance awards in FY 2023.
Travel $300,000	**$500,000**	**+$200,000**
Funding supports travel requirements associated with DOE's commercialization portfolio, such as OTT engagement with the National Laboratories at the bi-annual Technology Transfer Working Group meetings, information gathering from Principal Investigators, outreach at industry events and conferences, and OTT participation in National Laboratory events. In the absence of in-person events for much of FY 2021, OTT has supported virtual event expenses requiring technology platforms and services.	OTT's expanding awardee portfolio will benefit from rigorous and active project management involving elevated travel. More regular in-person industry outreach and event participation should resume, including significant stakeholder engagement efforts by the Chief Commercialization Officer.	Supports expanded travel requirements for more active project management of an expanding grant portfolio, as well as expanded National Laboratory engagement around catalytic activities.
Support Services $4,251,000	**$6,303,969**	**+$2,052,969**
Funding supports contractor support associated with management of OTT's programs portfolio, all communications support, access to tools and information for more informed industry engagement, market and supply chain analysis, developing guidance and policies, implementing the Administration's technology transfer and commercialization priorities and best practices, and conducting other required data collection, verification, validation and reporting.	Funding will support program implementation activities – including those performed by the National Laboratories - associated with management and stewardship of OTT commercialization programs, all communications support, access to tools and information for more informed industry engagement, market and supply chain analysis, developing guidance and policies, implementing the Administration's technology transfer and commercialization priorities and best practices, and conducting other required data collection, verification, validation and reporting.	Increase in funding reflects expansion of existing activities as well as a different business model that would shift program implementation costs from Program-to-Program Direction, including those performed by the National Laboratories, as well as funding all direct mission activities performed by contractors with Program Direction.
Other Related Expenses $850,000	**$955,000**	**+$105,000**

FY 2021 Enacted	FY 2023 Request	Explanation of Changes FY 2021 Enacted vs FY 2023 Request
Funding will support the business costs associated with the DOE's Working Capital Fund (office space, phones, utilities, etc.); Energy IT Services (IT equipment and support); specialized software licensing; EGov- costs; security investigations; and staff development and training to maintain and enhance work related skills and capabilities.	Continuation of activities in FY 2023.	Increase driven by increasing staff size.

Office of Technology Transitions
Programs

Description:

In addition to the work of federal and HQ contractor employees funded through Program Direction, OTT requests $8.4 million in Programs funding to support Commercialization Activities and continue the successful regional incubator and accelerator program. The Budget requests a period of availability of five years for OTT's program funding.

Commercialization Activities:

Energy I-Corps - Energy I-Corps (EIC) is an eight-week training program pairing National Laboratory scientists and engineers with industry mentors to define the value proposition for the National Laboratory-based technology that they are developing. It directly addresses the OTT authorization language to "encourage students, energy researchers, and national laboratory employees to develop entrepreneurial skillsets and engage in entrepreneurial opportunities." Central to the program is a requirement to conduct extensive customer discovery interviews to deepen understanding of the market and other opportunities for a particular DOE-sponsored technology. This program fosters an entrepreneurial workforce and creates a cohort of DOE National Laboratory market-oriented researchers that have been immersed in an intense program of commercialization training centered on customer outreach and partnership with the private sector. Since the program's inception in 2015, 165 teams from 12 National Laboratories have conducted 11,500 interviews and worked with many industry sectors to discover the commercial impact of technologies they have developed at the National Laboratories. Because of the teams' participation in the program, these technologies have reached a point of commercial viability that has attracted over $110 million in follow-on funding from both federal and private sources and 13 new companies have been launched. Additionally, over 70 licenses of DOE-funded technologies have been executed as a result of the Energy I-Corps program.

OTT funding primarily supports curriculum development and delivery of the training of the Energy I-Corps program, while participating DOE programs opt in by funding the cost of the participating researchers' time to complete the program. OTT will also directly fund promising project teams that may not align well with any one office's priorities, such as crosscutting topic teams. OTT also supports follow-on training opportunities for some of the most promising EIC program graduates.

Lab Partnering Service (LPS) - OTT's LPS meets our Energy Act 2020 mandate to: "Establish a Lab Partnering Service Pilot Program to provide services that encourage and support partnerships between the National Laboratories and public and private sector entities, and to improve communication of research, development, demonstration, and commercial application projects and opportunities at the National Laboratories to potential partners through the development of a website and the provision of services, in collaboration with relevant external entities, and to identify and develop metrics regarding the effectiveness of such partnerships."

The Lab Partnering Service (LPS) provides information to small businesses; corporate entities; State, local and Tribal officials; investors and other external stakeholders interested in advancing energy innovation and connecting with leading DOE National Laboratory assets. Specifically, LPS facilitates access to National Laboratory expertise, technologies, facilities, and success stories. LPS streamlines access to unique capabilities that were previously difficult for investors, innovators, and others to find because the capabilities are distributed across the National Laboratory enterprise and presented primarily for the scientific community. In FY 2023, OTT will focus on tracking impact and driving traffic to LPS, as well as continuing to maintain and update LPS content, especially in fields of high commercial relevance. OTT will expand virtual outreach efforts designed to maximize public use of the platform and further integrate LPS with existing National Laboratory tools and capabilities, expanding its reach. LPS will continue to upgrade and modernize the state-of-the-art patent visualization available via the Visual Patent Service (VPS.)

Technology Commercialization Fund (TCF) - In FY 2023, OTT will continue to implement the TCF, authorized in section 1001 of the Energy Policy Act of 2005 with updated flexibility provided in section 9003 of the Energy Act of 2020. OTT has taken a more strategic view on implementation of the TCF by shaping an innovative program design structure that creates efficiencies and increases impact by forming crosscutting collaborations among RDD&D organizations and DOE National

Laboratories. DOE's new, collaboratively developed approach offered program offices three options for deciding how to obligate their FY 2022 TCF funding:

1. Technology-Specific Commercialization CRADAs: Some DOE program offices opted to continue soliciting collaborative technology-specific partnerships between DOE labs and private sector companies in a similar manner to previous years' iterations of the TCF. OTT has worked with program offices that selected this option to ensure a focus on commercialization is maintained and other TCF requirements are incorporated.
2. Technology-Specific Commercialization Programs: DOE program offices were given the opportunity to develop their own proposed use of TCF funding that meets the statutory requirements of the TCF. These proposed activities can leverage or expand existing technology-specific commercialization programs or create new ones.
3. Core Laboratory Infrastructure for Commercialization: Eight DOE program offices worked with OTT to develop a multiple program office joint lab call that combines available TCF funding to address core barriers and known gaps impeding DOE laboratory commercialization. These proposed activities will help address and fix systemic challenges, barriers, gaps, and root causes so that DOE is more effective at driving commercialization of promising energy technologies in the future.

Moving forward, OTT and all DOE program offices expect to learn from the FY 2022 approach and will incorporate lessons learned into future fiscal year TCF approaches and lab calls. The goal for all TCF lab calls and resulting projects or programs, as set forth in TCF's authorizing statute, will continue to be "promoting promising energy technologies for commercial purposes."

EnergyTech University Prize – The EnergyTech University Prize (ETUP) is a university student competition to successfully identify a promising energy technology, assess its market potential, and create a business plan for commercialization. ETUP aims to cultivate the next generation of energy innovators while accelerating the transfer of energy technologies to the market. The prize seeks to attract the talented students of today and help them develop into the engineers, policymakers, entrepreneurs, market analysts, and project developers of tomorrow. Multidisciplinary student teams develop and present a business plan that leverages national laboratory-developed or other high-potential energy technologies. The prize is a high-leverage program sponsored by OTT, and multiple DOE RDD&D offices provide additional bonus funding.

Other Commercialization Activities – OTT continuously assesses the spectrum of commercialization activities across the Department and seeks to seed gap-filling programs and activities with small, targeted investments. Areas of opportunity in FY 2023 may include revisiting mechanisms for small businesses to better engage National Laboratories (such as technical assistance and vouchers) and directly funding catalytic Lab commercialization programs.

Regional Incubator and Accelerator Program

Energy Program for Innovation Clusters (EPIC) – EPIC is a competitive funding program for incubators supporting energy innovation clusters. OTT requests that $5M continue to be directed to this important area. The funds have been used to implement a multi-pronged strategy involving grants and prizes supporting a portfolio of impactful and geographically diverse incubators focusing on developing strong innovation clusters, connections, and support for energy-related technology and entrepreneurship.

Technology Transitions
Programs

Activities and Explanation of Changes

FY 2021 Enacted	FY 2023 Request	Explanation of Changes FY 2021 Enacted vs FY 2023 Request
Program Support $8,375,000	**$8,375,000**	**$0**
Commercialization Activities $3,375,000	**$3,375,000**	**$0**
Funding supports execution of the Technology Commercialization Fund, Energy I-Corps Program, Technical Assistance Programs, the Lab Partnering Service, and targeted seed investments for new high-impact, gap-filling commercialization programs.	Continuation of activities in FY 2023.	No change.
Energy Program for Innovation Clusters $5,000,000	**$5,000,000**	**$0**
Funding supports the Energy Program for Innovation Clusters initiative, including prizes, grants, and other competitive offerings.	Continuation of activities in FY 2023.	No change.