COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON ENERGY
U.S. HOUSE OF REPRESENTATIVES
HEARING CHARTER

From Lab to Market: Accelerating our Progress toward Economic Recovery and a Clean Energy Future
Friday, July 17, 2020
1:30 PM EST
Cisco Webex

PURPOSE

The purpose of this hearing is to examine technology transfer activities at the Department of Energy (DOE) and their potential contributions to economic recovery from the current COVID-19 pandemic. The hearing will focus on two bills. The first, the draft *Energizing Technology Transfer Act*, would authorize a series of activities for DOE to support and administer programs to accelerate the commercialization of clean energy and other technologies relevant to the mission of DOE, including those developed at the national laboratories, and to modernize the management and administration of demonstration projects and prize competitions, among other activities. The second, the *Increasing and Mobilizing Partnerships to Achieve Commercialization of Technologies (IMPACT) for Energy Act* (H.R. 3575) introduced by Rep. Ben Ray Luján, would authorize a non-profit foundation to "channel private sector investments that support efforts to create, develop, and commercialize innovative technologies that address energy challenges" in partnership with DOE and other relevant entities.

WITNESSES

- **Ms. Jetta Wong**, President, JLW Advising and Former Director, Office of Technology Transitions, U.S. Department of Energy
- **Ms. Jennifer States**, Director for Blue Economy, DNV GL and Project Director, Washington Maritime Blue
- **Ms. Farah Benahmed**, Climate and Energy Policy Advisor, Third Way
- **Dr. Emily Reichert**, Chief Executive Officer, Greentown Labs
- **Dr. Lee Cheatham**, Director of Technology Deployment and Outreach, Pacific Northwest National Laboratory

BACKGROUND

Investment in innovation is key to ensuring a strong economic recovery from crises like the ongoing COVID-19 pandemic.[1,2,3] Innovation is often measured in several intersecting ways. For example, the annual Bloomberg Innovation Index relies on a combination of factors to calculate a country's level of innovation, including patent activity, manufacturing output, and density of high-tech companies. While the United States has made significant investments in all of these areas, it ranked 9th globally on the Bloomberg Innovation Index in January 2020.[4]

Federal programs to improve U.S. innovation can take many forms. In April 2019, the National Institute on Standards and Technology published a report outlining existing barriers to and recommendations for improving American innovation and U.S. economic competitiveness. The recommendations included supporting entrepreneurship programs at federal R&D agencies, enhancing access to federal technologies, facilities, and resources, and expanding federal partnership mechanisms through non-profit foundations.[5] These and other technology transfer activities supported by federal agencies can help further the commercialization of research investments.

While federal investments in innovation are crucial for the commercialization of technologies in a variety of sectors, energy technologies face unique obstacles to successful commercialization. Such barriers include high up-front capital costs, long development times, and the need to displace incumbent technologies.[6] Therefore, federal programs dedicated to furthering the development of clean energy technologies are essential to securing a clean energy future.

DOE Office of Technology Transitions

The DOE Office of Technology Transitions (OTT), established in 2015, is DOE's primary investment in technology transfer activities. The mission of the office is "to expand the commercial impact of the Department of Energy's research and development portfolio to advance the economic, energy, and national security interests of the Nation".[7] In 2018, the Technology-to-Market program under the Office of Energy Efficiency and Renewable Energy was incorporated into OTT, making OTT the central office for all matters relating to technology transfer and commercialization at DOE.[8] In FY20, OTT received $14 million in appropriations.

DOE national laboratories are home to a wide range of innovative discoveries. OTT works with the national laboratories to support efforts to commercialize DOE RD&D investments by

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[1] https://www.mckinsey.com/industries/public-sector/our-insights/lessons-from-the-past-on-how-to-revive-the-us-economy-after-covid-19
[2] https://bipartisanpolicy.org/blog/for-a-robust-recovery-invest-in-innovation/
[3] https://www.mercatus.org/system/files/broughel-technological-innovation-mercatus-research-v1.pdf
[4] https://www.bloomberg.com/news/articles/2020-01-18/germany-breaks-korea-s-six-year-streak-as-most-innovative-nation
[5] https://www.nist.gov/unleashing-american-innovation/green-paper
[6] Anadon, Laura Diaz, Matthew Bunn, and Venkatesh Narayanamurti, eds. *Transforming U.S. Energy Innovation*. Cambridge, England: Cambridge University Press, July 2014.
[7] https://www.energy.gov/technologytransitions/mission
[8] https://www.energy.gov/eere/technology-to-market/home

administering several technology transfer programs including: Energy Innovation Corps, which provides entrepreneurial training to national laboratory employees seeking to commercialize their energy-related research;[9] the Technology Commercialization Fund, which awards funding to commercialize technologies developed at the National Laboratories;[10] and the Lab Partnering Service, which provides online and interpersonal services to facilitate information sharing about national laboratory resources, facilities, expertise, and Intellectual Property.[11]

Previously administered programs under the Technology-to-Market program include: the National Incubator Initiative for Clean Energy (NIICE), which fostered coordination and collaboration amongst U.S. clean energy technology incubators and is now overseen by the Electric Power Research Institute;[12] the Small Business Voucher Program, which enabled small businesses to have greater access to DOE national laboratory facilities and expertise;[13] and the Clean Technology University Prize Competition, which administered a university prize competition for clean energy technology business models.[14] Each of these existing and former programs are authorized in the draft *Energizing Technology Transfer Act*.

Non-profit Energy Foundation

Various groups, such as NIST,[15] the American Energy Innovation Council,[16] the Federal Laboratory Consortium,[17] and the Information Technology and Innovation Foundation (ITIF)[18] have recommended exploration of establishing a non-profit foundation to facilitate DOE interactions with private sector partners and accelerate energy technology commercialization. This recommendation follows the establishment of non-profit foundations at the National Institutes of Health[19] and the U.S. Department of Agriculture.[20] This Congress, Rep. Luján introduced the *Increasing and Mobilizing Partnerships to Achieve Commercialization of Technologies (IMPACT) for Energy Act* (H.R. 3575), which would establish a similar foundation model at DOE.

A recent report titled, *Mind the Gap: A Design for a New Energy Technology Commercialization Foundation*, published by ITIF examines the DOE foundation concept within H.R. 3575 and puts forward recommendations for structuring and managing such a foundation. Specifically, the report recommends the establishment of a non-profit Energy Technology Commercialization

[9] https://www.energy.gov/technologytransitions/energy-i-corps
[10] https://www.energy.gov/technologytransitions/articles/department-energy-releases-2020-technology-commercialization-fund
[11] https://labpartnering.org/
[12] https://www.energy.gov/eere/technology-to-market/national-incubator-initiative-clean-energy-niice-0
[13] https://www.energy.gov/eere/technology-to-market/small-business-vouchers
[14] https://www.energy.gov/eere/technology-to-market/cleantech-university-prize-cleantech
[15] https://www.nist.gov/unleashing-american-innovation/green-paper
[16] http://americanenergyinnovation.org/2020/02/energy-innovation-supporting-the-full-innovation-lifecycle/
[17] https://federallabs.org/t2-toolkit/t2-playbook
[18] Wong, Jetta. Hart, David. "Mind the Gap: A Design for a New Energy Technology Commercialization Foundation." Information Technology and Innovation Foundation. Published May 11, 2020. https://itif.org/publications/2020/05/11/mind-gap-design-new-energy-technology-commercialization-foundation
[19] https://fnih.org/
[20] https://www.usda.gov/media/press-releases/2014/07/23/usda-secretary-announces-creation-foundation-food-and-agricultural

Foundation to foster public-private collaboration and clean energy entrepreneurship through access to DOE resources and support for researchers to "more aggressively seek commercial applications for their discoveries." [19]

LEGISLATION

Draft Energizing Technology Transfer Act

The draft Energizing Technology Transfer Act authorizes a series of activities related to clean energy technology commercialization nationally and at the national laboratories and DOE management and administration of demonstration projects and prize competitions, among other activities.

Title I of the bill would authorize a series of programs to enhance commercialization of clean energy technologies across the nation. This includes authorization of regional clean energy innovation partnerships, clean energy technology incubators, university prize competitions, Energy Innovation Corps, and coordination functions.

Title II of the bill would authorize programs to support the commercialization of technologies developed at the national laboratories and facilitate partnerships with the national laboratories. This includes authorization of a Lab Partnering Service, a program to bring entrepreneurial researchers into the national laboratories,[21] a program to provide small businesses with greater access to national laboratory facilities and expertise,[22] entrepreneurial leave and consulting for national lab employees, improvements to the Technology Commercialization Fund (TCF),[23] and signature authority to national laboratory directors for agreements under $1 million.[24]

Title III of the bill would authorize programs to modernize activities at DOE pertaining to its management and funding of technology development and commercialization. This includes authorization of activities for OTT,[25] additional oversight for large-scale demonstration projects, streamlining for DOE prize competitions, an innovative milestone-based approach for carrying out demonstration projects, extension of DOE's other transaction authority, special hiring authority, and reporting requirements.

The draft bill authorizes appropriations on a program by program basis, for a total of $97.7 million per year for fiscal years 2021 through 2023, lowering to $94 million per year for fiscal years 2024 and 2025.

[21] Adapted from the *Leveraging our National Labs to Develop Tomorrow's Technology Leaders Act* (H.R. 5965) introduced by Rep. Luján
[22] Adapted from the *Promoting Small Business Innovation through Partnerships with National Labs Act of 2019* (H.R. 3574), introduced by Rep. Luján
[23] Adapted from the *Energy Technology Maturation Act of 2019* (H.R. 2495) introduced by Rep. Haaland
[24] Adapted from the *NIMBLE Act* (H.R. 5907) introduced by Rep. Hultgren in the 115th Congress
[25] Adapted from the *Technology Transitions Act of 2019* (S. 2688) introduced by Sen. Cassidy

Increasing and Mobilizing Partnerships to Achieve Commercialization of Technologies (IMPACT) for Energy Act (H.R. 3575)

H.R. 3575, the IMPACT for Energy Act, would establish a DOE affiliated non-profit foundation to engage with the private sector to raise funds and leverage expertise that supports the research, development, demonstration, and commercial application of innovative energy technologies. As a 501(c)(3) organization, the foundation authorized under the bill could also establish one or more for-profit subsidiaries to commercialize clean energy technologies and attract for-profit partners. The Act would further enable the foundation to make awards, facilitate public-private partnerships, organize events to share ideas and engage with the public, and support education and training of new researchers in carrying out its mission.