

U.S. DEPARTMENT OF
ENERGY

Office of
**ENERGY EFFICIENCY &
RENEWABLE ENERGY**

Prizes: Leveraging the National Laboratories

National Academies Meeting

December 6, 2019



National Labs – Key Building Blocks for Prizes

PROVIDE EXPERTISE

Leverage technical expertise to formulate, execute, and evaluate prizes.

USE TECHNICAL ASSETS

Open access to testing capabilities through vouchers and prizes.

BUILD RELATIONSHIPS

Enhance relationships between the National Labs, innovation ecosystem, and a broad range of entrepreneurs.

TRANSITION R&D

Transition technologies and findings from labs into market through prizes.

Strengthening Links with National Labs & Prizes

Expand Capabilities as Prize Administrators

- Working under Annual Operating Plans (AOP), have the National Labs serve as Prize Administrator, to lead technical, communications, and execution strategy in close coordination with DOE Offices.
- Execute subcontracts with critical innovation ecosystem partners, including through use of normal authorities and ACT Agreements, and serve other agencies.

Leverage Assets and Expertise to Accelerate and Advance Innovation

- Creative use of AOPs and CRADAs to support incubation, testing, and other expertise available at the labs both during the stages of prizes to advance solutions, and continue to deepen relationships through CRADAs as nonfinancial prizes for winners.

Advance Research and Understanding through Development of Prizes

- Build on R&D and technoeconomic analysis at National Labs in both the creation and execution of prizes. Use as a mechanism for knowledge transfer, and a strong mechanism for tech transfer.



History of Prizes with DOE & National Labs

National Clean Energy Business Plan Competition/Cleantech University Prize (2011 – 2017)

- o *Lab Role:* NREL provided technical assistance as a nonfinancial prize to winner of the national competition.

SunShot Catalyst (2014 – 2016)

- o *Lab Role* NREL served as the prize administrator for Catalyst, helping to manage the prize, distribute cash prizes, and organize demo days for the purposes of the prize. First instance of serving as a prize administrator.

Wave Energy Prize (2015– 2017)

- o *Lab Role:* NREL, Sandia, PNNL all served as technical support on the prize, but were not the administrator.

America's Next Top Innovator (2012)

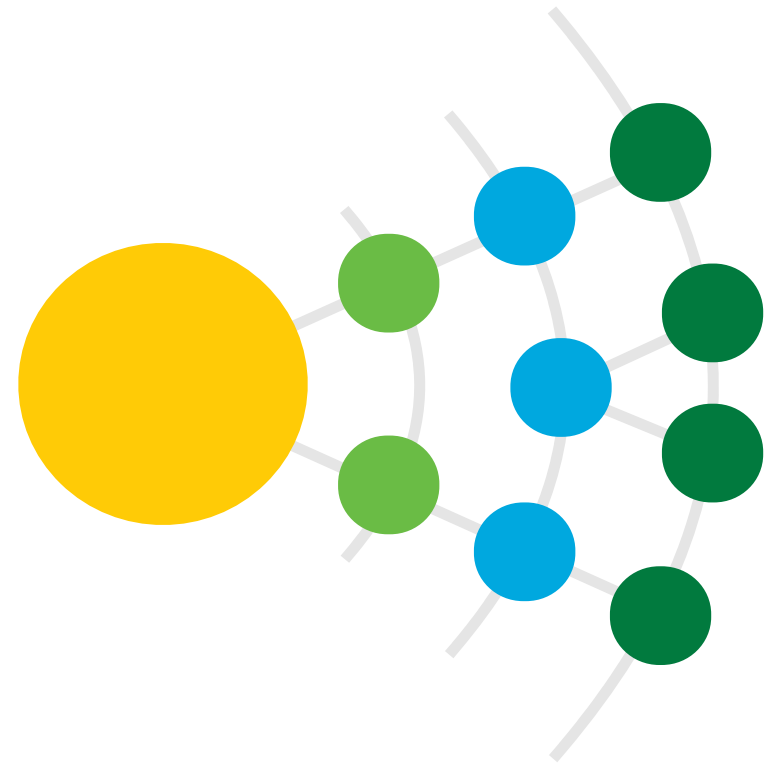
- o *Lab Role:* Sought to publicize IP portfolio available for entrepreneurs to commercialize.

Various Models of Labs and Prizes



American Made Challenge Platform

- The National Renewable Energy Laboratory (NREL) is the Prize Administrator for the American-Made Challenges. NREL works closely with the U.S. Department of Energy to administer the challenges, maintain the website platform, assist in building the network, and pay prize money to the winning teams.
- NREL, other national laboratories, and members of the American-Made Network serve as key technical partners working directly with teams to validate, build, and test competitor products and solutions.
- The DOE can leverage Secretary Perry's authorization of [Agreements for Commercializing Technology](#) (ACT) for national laboratories (announced on November 13, 2017) which enables flexible and facile financial arrangements between industry and national labs.



FAST: Lab Analysis, CRADAs as Support, and CRADAs as Prizes

FAST COMMISSIONING PRIZE

- The FAST Commissioning for Pumped Storage Hydropower Prize is a \$950,000 prize competition, seeking solutions to address commissioning time, cost and risk for PSH.
- Finalists received vouchers for up to 50 hours of support from July 2019 to October 2019 from one or more of the four DOE national laboratories supporting FAST to prepare for a pitch contest.
- The prize culminated in October at a live pitch contest, which resulted in up to 4 winners that split \$150k in cash and \$400k in CRADA support – good for a year with the lab of their choosing.



Role of Labs

- **ANALYSIS:** Develop baseline analysis on time and risk for PSH commissioning, and use that baseline to inform the rules of the prize.
- **INCUBATION:** Leverage the expertise of the labs to support incubation of solutions pre-pitch contest.
 - Included creation of new light form CRADA piloted at all four labs for technical assistance, which will be used in prizes going forward.
- **EXPOSURE:** Deepen relationships between new entities and the labs to advance technologies and analysis.

Waves to Water: Building on R&D and Leading Prize

WAVES TO WATER

The Waves to Water Prize is a \$2.5M prize competition aimed at developing wave-powered, small-scale desalination systems that can provide potable water in disaster relief and remote communities.



ANALYSIS LED: NREL develops foundational technoeconomic analysis, demonstrating feasibility and competitiveness of desal.

ADMINISTRATION & EVALUATION: NREL leads prize administration, deeply engaged on rules, and with other labs serve as reviewers.

AWARDING & POST PRIZE: NREL works directly with the open water test site, help DOE to evaluate post-prize maturation options.

Ocean Observing Prize: Customer Discovery, Technical Assets, and Partnership Building

DISCOVER COMPETITION

Propose your novel idea

- 90 days
- \$125,000 Cash Prize Pool
- Up to 11 winners



Unmanned Vehicles



Buoys, Floats and Tags



Ocean Communications & Underwater Navigation



Extreme Environments



Blue Sea Ideas

DEVELOP COMPETITION

DESIGN CONTEST

Develop plans and models

- 90 days
- Up to \$1 Million in awards

BUILD CONTEST

Develop and test a prototype

- 180 days
- Up to \$2 Million in awards

FUTURE CONTESTS

DESIGN CONTEST

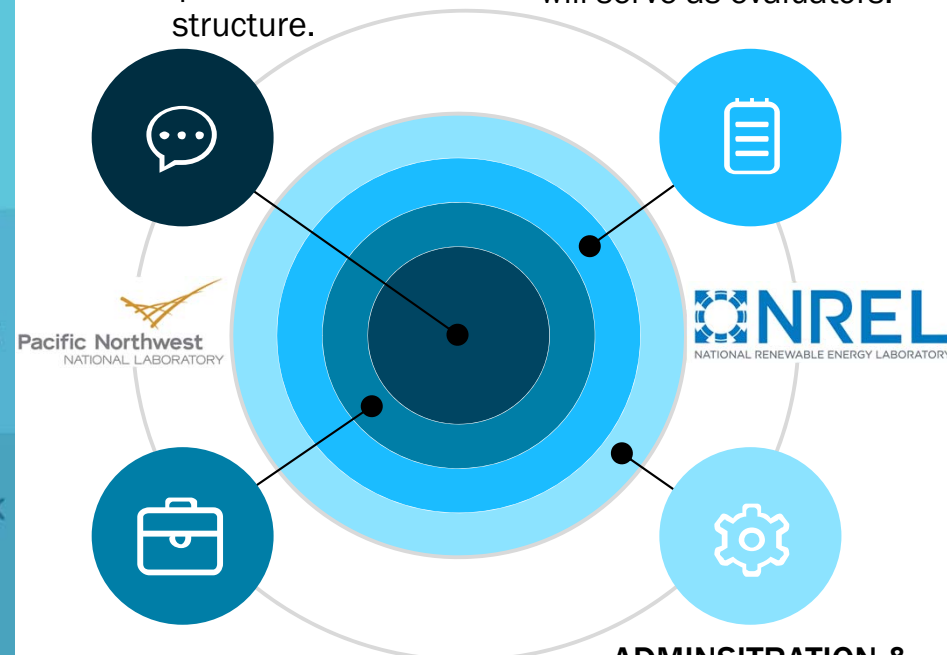
Develop plans and models

BUILD CONTEST

Develop and test a prototype

CUSTOMER DISCOVERY Labs conducted discovery to inform prize and structure.

RULES & STRUCTURE PNNL & NREL deeply involved in rules drafting and will serve as evaluators.



PARTNERSHIP BUILDING
Built relationships with other agencies to prepare, review and launch prize.

ADMINISTRATION & CONNECTORS Both labs will administer, build the ecosystem and test solutions.

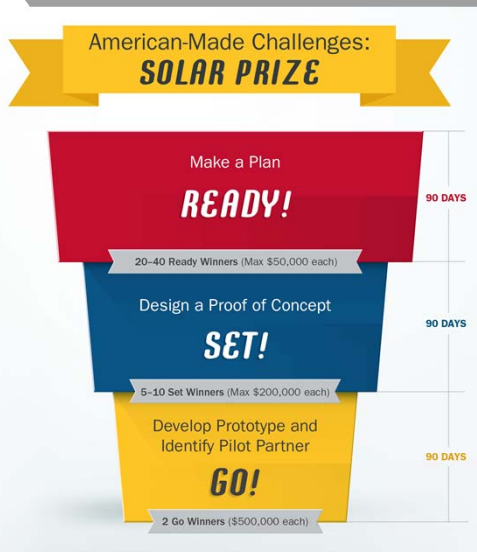
Solar Prize: Leveraging Vouchers for Prizes & Network Building



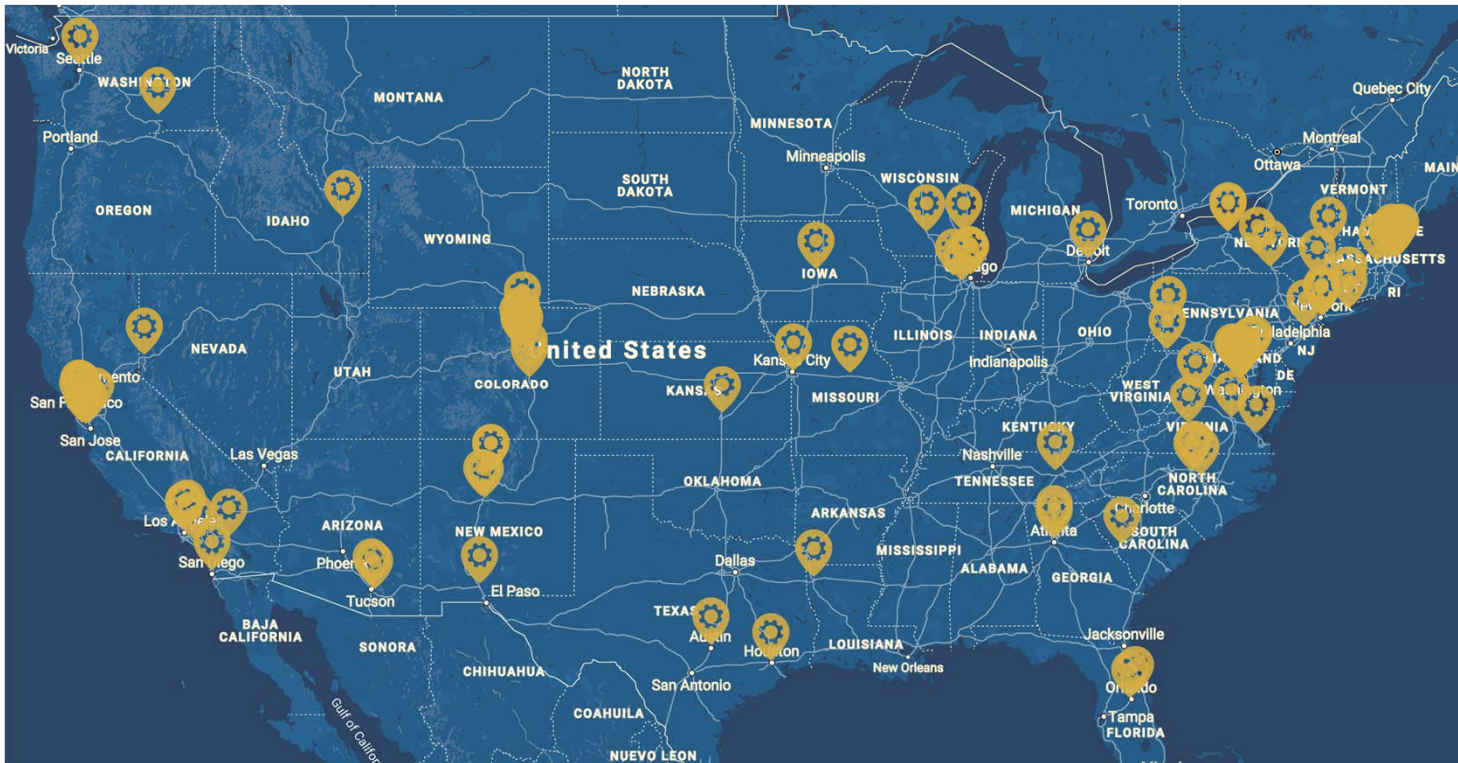
SOLAR PRIZE

Currently in its third round, the Solar Prize seeks to accelerate concepts in solar energy – ranging from soft costs, to PV hardware, to CSP solutions – to businesses with pilot partners.

Administered by NREL, the prize leverages connector organizations across the country – both as Power Connectors (partners through RFP process and under subcontract with the lab) and as Connectors (incentivized through pay for performance). National Labs serve as potential assets for voucher use by competitors.



American Made Network



DIRECT ACCESS TO RESOURCES AND EXPERTISE

The American-Made Network is designed to strengthen and scale critical connections to accelerate and sustain innovation.

Select challenges utilize this Network – which consists of the national labs, industry experts, and fabrication and manufacturing facilities – that are willing to help teams turn ideas into real-world products. These specific challenges will provide details about how to tap into the Network.

PARTNERSHIP POTENTIAL

- Deepen connections between National Labs and other ecosystem partners
- Provide technical and other services to entrepreneurs across multiple technology areas.

Future Potential of Prizes and Labs

“Menu” of Streamlined CRADA Options

- o Use contractual mechanisms like Master Scope of Work under M&O Contract to reduce the time to signing CRADAs that are vouchers for prizes.
- o Expand the potential use of CRADAs from technical expertise through leveraging testing facilities:
 - Types of CRADAs: Incubation (TAPA), Acceleration through Testing (SBV)
 - ❖ TAPA CRADA (used in FAST) for light assistance, Small Business Voucher (SBV) CRADA form for deeper technical work and longer agreements.

Use Prizes to Leverage IP Developed by Labs

- o Create prizes that incentivize private sector uptake of commercially available IP through the labs in prize structures.
- o Leverage learnings/relationships through prizes to advance IP that could be funded through TCF.