



**SOLAR ENERGY
TECHNOLOGIES OFFICE**
U.S. Department Of Energy

PORTFOLIO REVIEW

2018



SOLAR ENERGY
TECHNOLOGIES OFFICE
U.S. Department Of Energy

2018 SETO Portfolio Review

Technology to Market Subprogram

SETO Portfolio Review
February, 2018

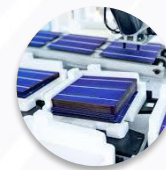
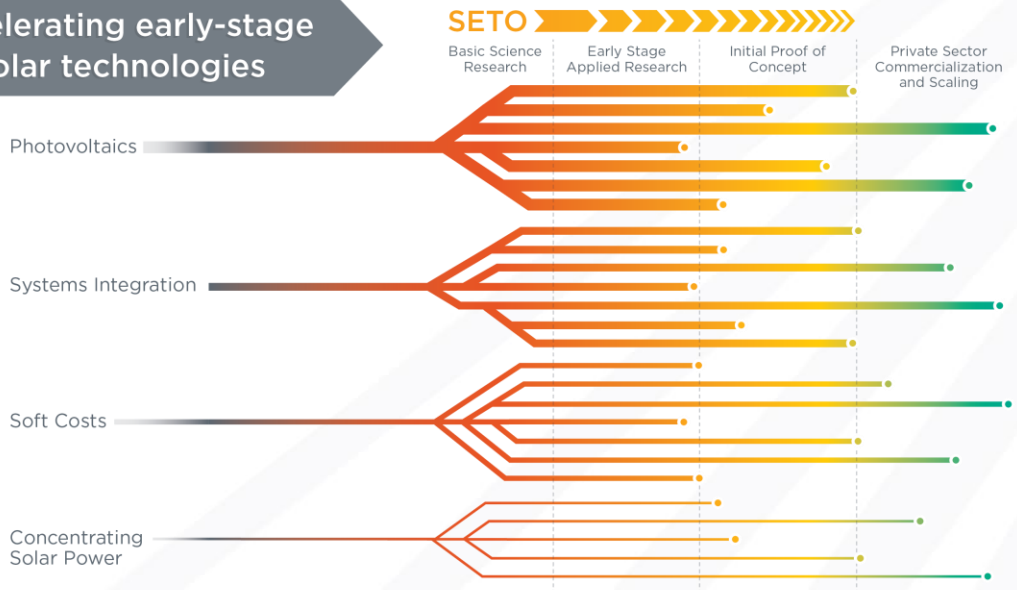
Garrett Nilsen, Program Manager

energy.gov/solar-office

What is SETO Technology to Market (T2M)?

Accelerating early-stage solar technologies

PROJECT CATEGORY



FOAs
(T2M, Incubator, SolarMat, SBIR, Innovative Pathways)



Lab Work
(Cost Analysis, Small Business Vouchers, Technology Commercialization Fund)

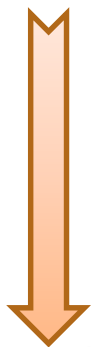


Industry Consortia
(PVMI)

T2M Project Approach

Promote activities that amplify the impact of R&D projects and enable technology transformations from prototypes to real-world, viable solutions.

Research & Development



Market relevant and self-sustaining technology

Plan

T2M road-mapping

IP strategy

Product-market fit

Path to scale

Validate

Competition

Standards

Analysis

External feedback

Engage

Diversity

Partnerships

Follow-on funding

Customer discovery

T2M Funding Opportunity Basics

For Profit
Team Lead

Periods of
performance
12-36 Months

20 - 50%
Cost Share

Awards
range
~\$500k -
\$5M

Historic Opportunities

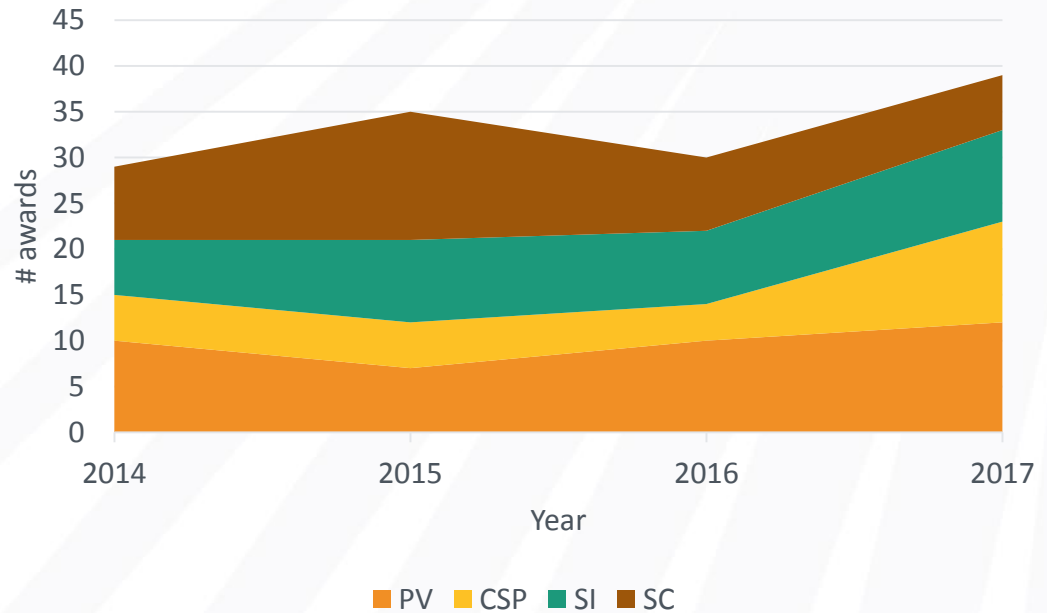
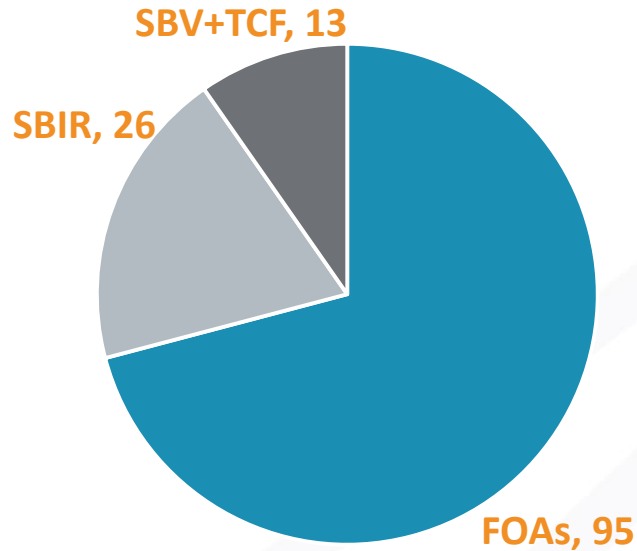
- Incubator
- SolarMat
(Solar Manufacturing)
- SUNPATH
(Manufacture Scaling)

OPEN to solutions addressing at least one of the following goals:

- Achieve the office cost targets
- Expand domestic solar manufacturing and supply chain
- Expand the domestic solar market
- Enable the integration of hundreds of GW of solar on the nation's grid

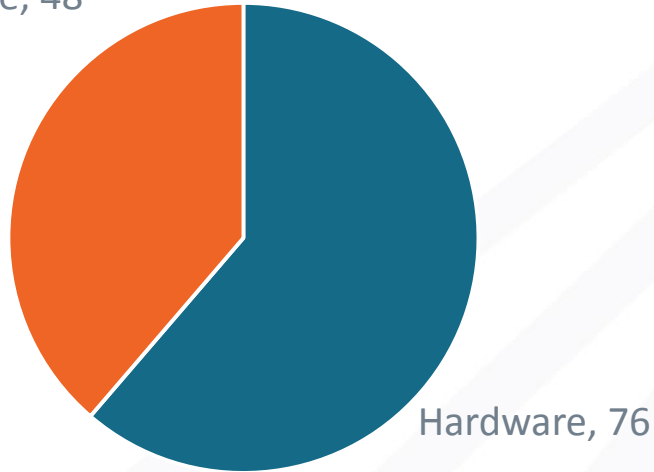


T2M Portfolio Breakdown (# of Awards)

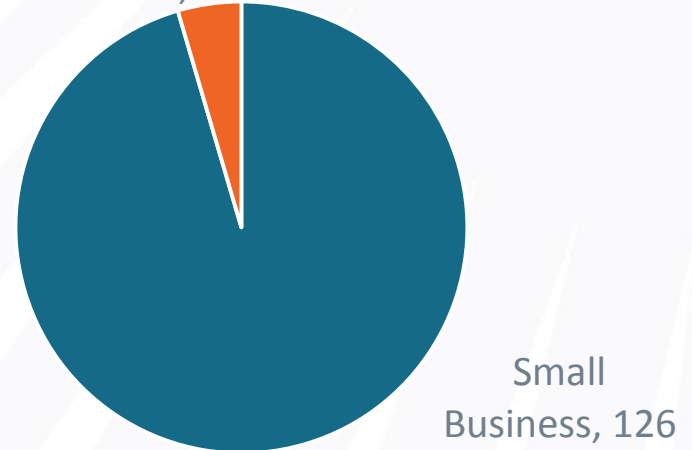


T2M Portfolio Breakdown (since 2014)

Software, 48



Large Business, 6



Market-Focused Management: Prove It!!

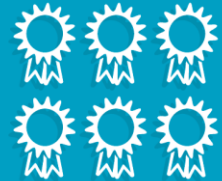
- What would a potential user/customer want?
How do you know?
 - **Prove it!**
- What is your competition costs? What will they be when you get to market? How are you determining your costs?
 - **Prove It!**
- What will investors need to finance your product? How much data is needed? How will your costs be confirmed?
 - **Prove It!**
- Can you make this repeatedly? What kind of deviation do you have between runs? Will end users accept it?
 - **Prove It!**
- Feedback on product specifications from 10 potential off takers
- Leverage NREL expertise to review/develop/revisit cost models
- Bankability: Off taker product requirements/end user financing needs
- Provide 20 cells of 20% efficiency with one wafer coming from each lot of 20 wafers based on a number provided by DOE

Private Sector Taking Innovation to Market (since 2007)

152
Small
Businesses



202
Awards



Over
\$248M
Invested



Nearly
\$6.3B of
Follow on Funding



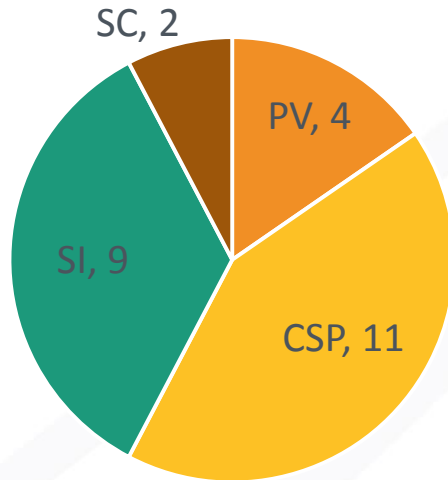
25x
Investment
Multiplier



SBIR/STTR

Recognize small businesses for rapid innovation & commercialization, and having a more diverse workforce than large companies, universities, and government. Increase the speed of commercialization

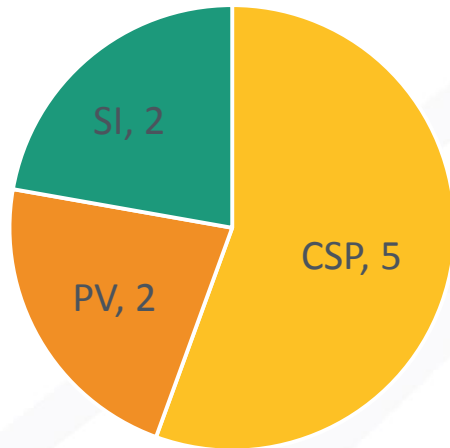
- No cost-share. Program structured into two phases
- DOE-level program
- 3.65% of the office R&D budget



SMALL BUSINESS VOUCHER PILOT:

Small businesses apply to work with the National Laboratories on modeling, evaluation, validation, and technology development.

- 20% cost share required
- EERE-level program
- 9 projects funded in 3 program rounds (since 2016)



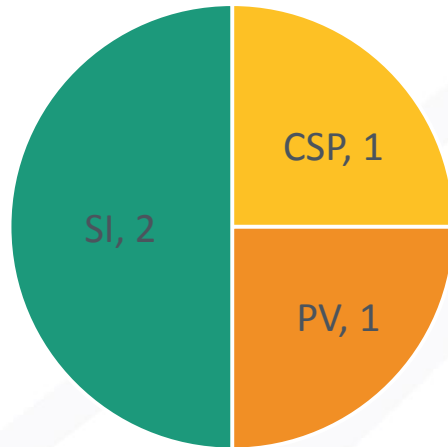
**Sandia
National
Laboratories**

Renewable Power Conversion, Inc.
Advanced Functionality Testing of Modular PV Inverter

TECHNOLOGY COMMERCIALIZATION FUND:

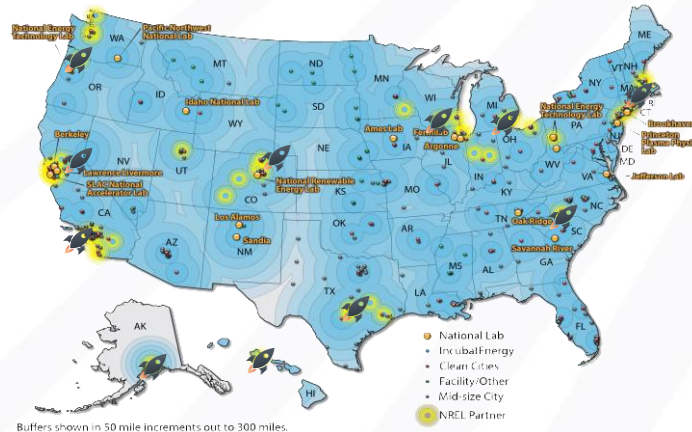
National Laboratory projects to mature and commercialize lab-developed energy-relevant technologies and products.

- 50% cost share required, industry partners required for 2nd tier projects
- DOE-level program
- 4 projects funded in 2 program rounds (since 2016)



Innovative Pathways

- *Innovative Pathways aims to research and develop new mechanisms that could **change HOW innovative energy technologies reach the market***
- 11 funded projects will pilot and test new approaches to:
 1. Lower barriers to innovator-corporate partnerships
 2. Spur new investment in early-stage energy innovation



American-Made Challenges: Solar Prize

A more effective way of accelerating technologies to commercial relevance

**Industry, crowd sourced
ideation**



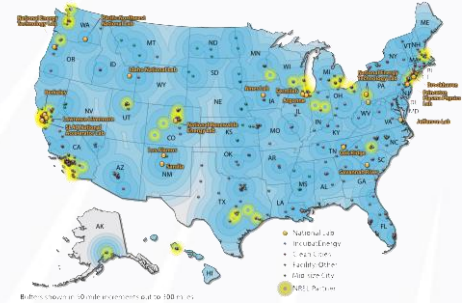
Rapid development

Prizes issued on the
order of months



U.S. DEPARTMENT OF ENERGY

Activated national networks



Hardware Focus

USA Made!

Technology to Market Staff



Andrew Dawson



Kyle Fricker, PhD



Rachelle Ihly, PhD
Fellow



Victor Kane



Sarah Machin



Jeremey
Mikrut



Emanuele
Pecora, PhD
Fellow



Manav
Sheoran, PhD

Michele Boyd
(not pictured)



David Walter



Dan Stricker

Technology To Market Review Agenda

	SUBPROGRAM PARALLEL SESSIONS	
11:00AM– 12:00PM	Awardees: Proceed to relevant subprogram room	
1:00PM– 2:00PM	Reviewers: Washington 5 <u>CONCENTRATING SOLAR THERMAL POWER</u> Technology to Market: Hardware Innovations in Concentrating Solar Thermal Power Andrew Dawson, Solar Energy Technologies Office (Moderator) Evelina Vogli, LiquidMetal Group Holdings, Inc. Tim Held, Echogen Power Systems, DE Hank Price, Solar Dynamics LLC	Washington Rooms 1-4
2:00PM– 3:00PM	<u>SOFT COSTS</u> Technology to Market: Innovations in Soft Cost Reductions Kyle Fricker, Solar Energy Technologies Office (Moderator) Brad Bowery, Pace Avenue Ed Albanese, KryptonCloud Emily Fritze, Powerhouse Chris Barrett, ProjectEconomics Benjamin Gaddy, Clean Energy Trust	Virginia Suite

	SUBPROGRAM PARALLEL SESSIONS	
11:00AM– 12:00PM	<u>PHOTOVOLTAICS</u> TECHNOLOGY TO MARKET: HARDWARE INNOVATIONS IN PHOTOVOLTAICS Manav Sheoran, Solar Energy Technologies Office Quick Talks from Technology to Market Awardees	Maryland Suite
1:00PM– 2:00PM	<u>SYSTEMS INTEGRATION</u> Technology to Market: Innovations in Systems Integration Technology Dave Walter, Solar Energy Technologies Office (Moderator) Jackie Hines, Sensanna John Powers, Extensible Energy Suzanne Russo, Pecan Street	Delaware Suite
2:00pm– 3:00pm	Technology to Market -Proceed to relevant subprogram room	Room of Your Choice