

U.S. Department of Energy - EERE Commercialization & Deployment Team



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July 29, 2009

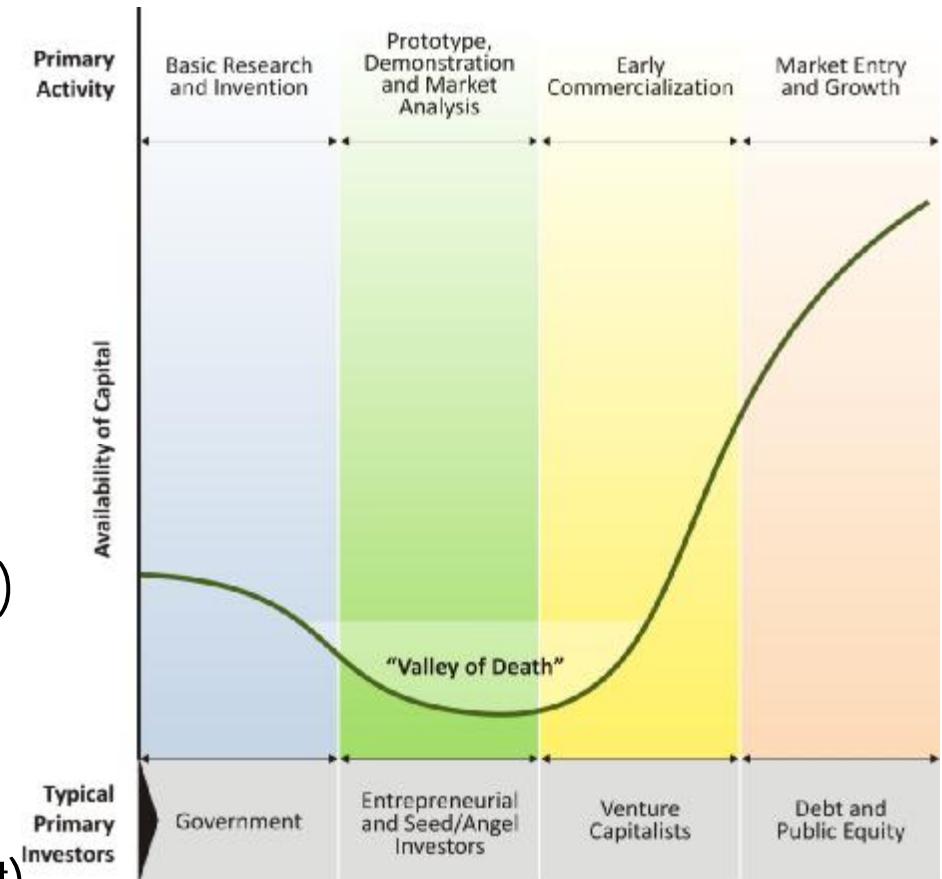
Commercialization & Deployment Mission



“Out of the Labs and into the Market”

Identify and implement opportunities to accelerate EERE technology commercialization and deployment

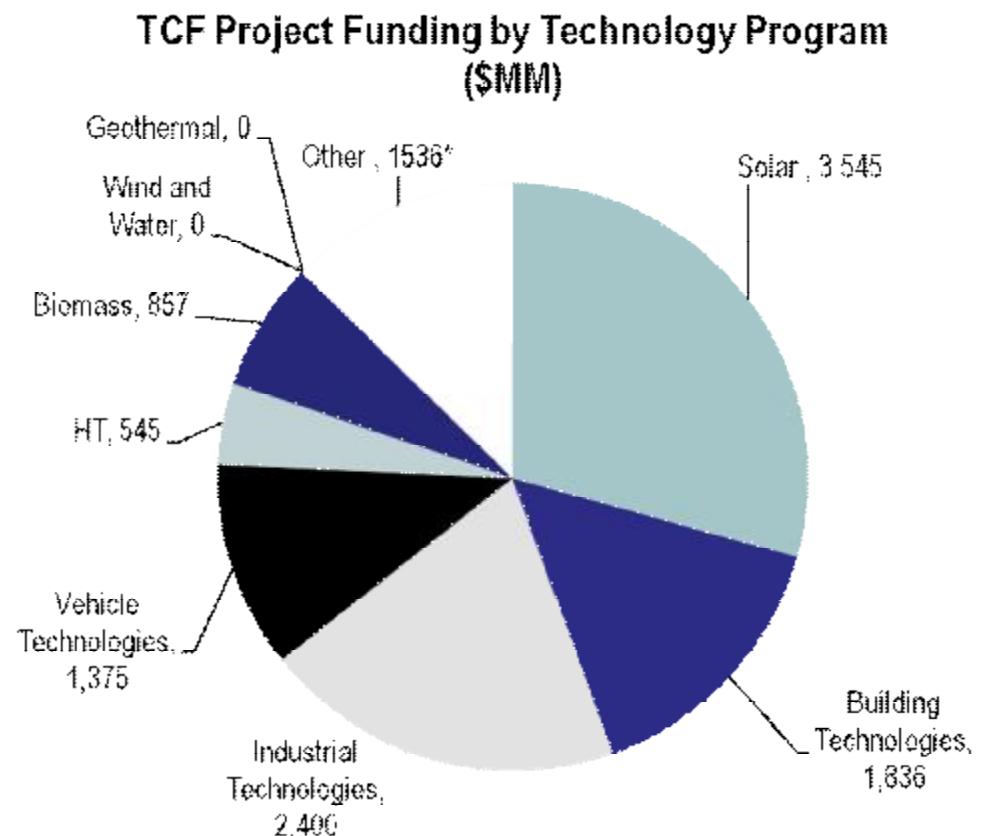
- Connect investors to technologies (Entrepreneur in Residence, Technology Showcase, Technology Portal)
- “Valley of Death” Funding (SBIR, Technology Commercialization Fund)
- Deployment and ARRA Initiatives (Advanced Technology Vehicle Manufacturing Loan program, Renewables Manufacturing tax credit)



Technology Commercialization Fund



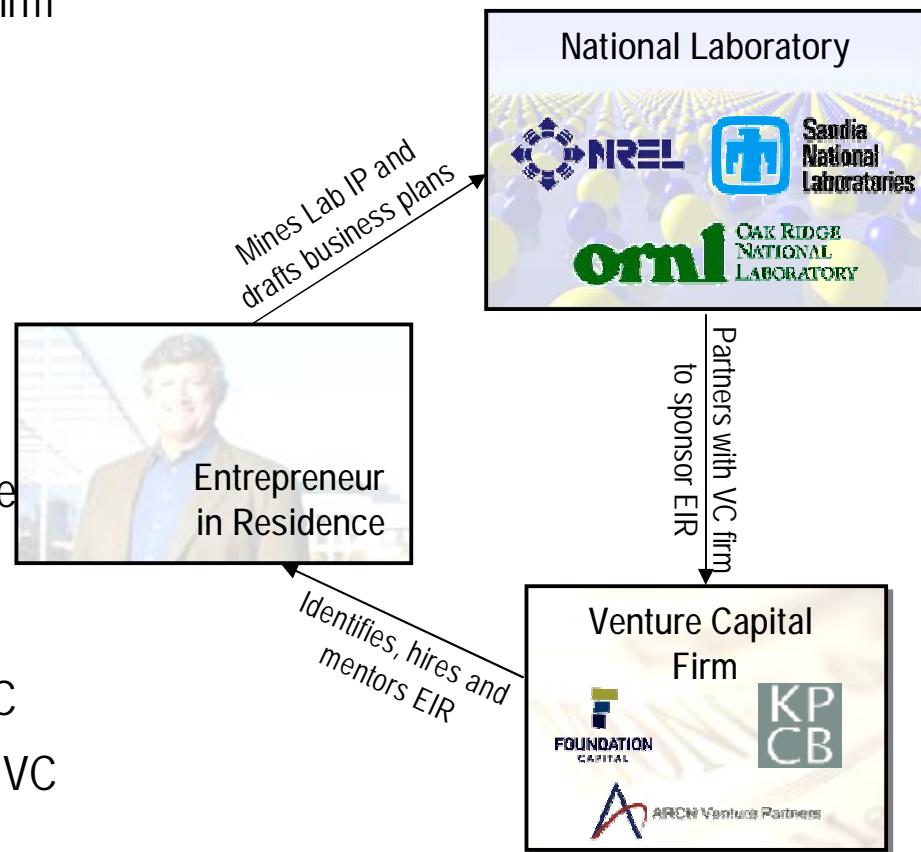
- Innovations struggle to find financing post-research and pre-venture capital funding
- TCF provides funding for lab technologies on the brink of commercialization
- Funds restricted to prototype development, demonstration and deployment – not further scientific research
- 50/50 industry-matched funds required to participate proves market interest
- DOE TCF funding typically ranges from \$100,000 to \$250,000 per technology
- In 2007 and 2008 fund size determined by 0.9% of EERE Applied R&D spend
- Over \$14m of funding awarded to 8 National Labs over past two years



DOE's Entrepreneur in Residence program connects leading scientific and business talent



- § EERE Competitively selects Venture Capital Firm
- § Venture Capital Firm hires entrepreneurs
- § EERE provides small matching-funds and full access to laboratory (\$50-100K)
- § Pre-Negotiated standard equity share license agreement (Stanford Model)
- § 3 EIRs in 2008 - Pilot
 - § One lab – one entrepreneur – one venture capital EERE model
- § 6 EIRs in 2009 – Rollout & Emulation
 - § 4 EERE – 3 with single VCs, 1 multiple VC
 - § 2 Lab emulations – 1 ingle VC, 1 multiple VC



Technology Commercialization Showcase



- § Many EERE-funded technologies stall in the “commercialization valley of death” simply because the innovation has not been clearly communicated to the business community
- § Identified nearly 100 promising EERE technologies
- § Created simple, layman’s descriptions of the innovation opportunity
- § Invited prominent investors to a two-day conference showcasing technologies

DOE Technology Commercialization Showcase Case Study:
Low-cost carbon fiber: increases fuel economy 25%

Simple, layman's description of technology:

Impact:

- Problem: Carbon fiber, a lightweight replacement for structural steel, is currently too expensive for broad application (\$12-\$30/lb vs. \$3-\$8/lb)
- Description: ORNL has developed technologies to reduce the cost of carbon fiber production by utilizing:
 - Low cost feedstock (low-cost textiles and renewable lignin)
 - Advanced processing methods (thermo-chemical stabilization, rapid oxidation, and microwave-assisted plasma carbonization)
- Impact:
 - Automobile: Reduces vehicle mass by up to 40% which increases fuel economy up to 25%
 - Wind: Increases blade efficiency through superior properties
- IP Position: 3 patents issued, 5 patents filed, 7 invention disclosures
- Technology Status:
 - 4 processes reduced to practice:
 - Microwave-assisted plasma carbonization
 - Textile-based precursors
 - Thermo-chemical stabilization
 - Plasma oxidation
 - Time to availability: 3-5 years
 - Capital Needs: A 2.4MM lb/year carbon fiber plant is expected to cost \$1.6M-\$2.2M

Direct contact to Inventor

18

Sample of 75+ Firms Represented in 2007 & 2008



NGP
ENERGY TECHNOLOGY PARTNERS

MASSACHUSETTS
GREEN ENERGY FUND

@Ventures

MDV
MOHR DAVIDOW VENTURES

BATTELLE VENTURES

ROCKPORT
CAPITAL
PARTNERS

MATRIX
PARTNERS

Good Energies
POWERING THE WORLD

FLAGSHIP VENTURES

PINNACLE VENTURES

KP
CB

EERE Technology Portal

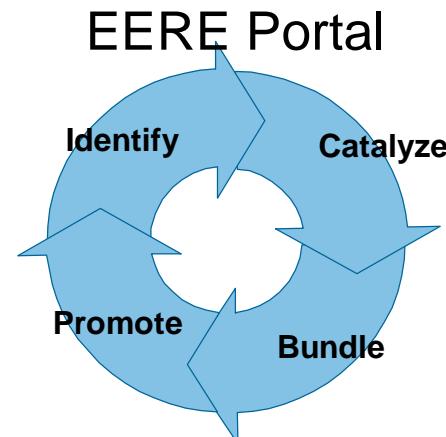


Promote technology ready for commercialization

- § Web-based system that provides listings of energy-relevant technologies
- § 1st Phase requires effort to get technologies written up and into the portal before the next phase can begin.
- § “One-stop shop” for technology seekers (companies, venture capitalists, etc.) to identify and bundle energy relevant technologies.



Collect and survey all program funded technologies



Synergizing disparate technologies into solutions

There is potential to scale, add additional features and expand scope of mission

EERE Commercialization Evolving



	Start up	Transition	Steady State
	Manual, small scale		Large scale, embedded
	A few labs		All technologies all labs
	Focus on VCs		All partners wanting to commercialize
Connect Investors and Technology	<ul style="list-style-type: none">• EIR• TCS	<ul style="list-style-type: none">• EIR at more labs and testing multiple VC model• TCS expanded, regional, larger audience, more participation from labs	<ul style="list-style-type: none">• Portal: all technologies from all labs transparent to all entrepreneurs and investors all the time

48C Manufacturing Credit



Program Summary

- Goal is to grow U.S. domestic manufacturing of renewable & efficiency technologies
- \$2.3bn for 30% tax credits of capital costs
- IRS as lead; EERE as subcontractor
- Program due 180 days after ARRA

Covered Technologies

Solar	CCS
Wind	Energy Conservation
Geothermal	Vehicle storage
Microturbines	Plug-in electric drive
Fuel cells	Other renewables
... and any other renewable property	
...or as determined by the Secretary	

Selection criteria

- Reasonable expectation of commercial viability
- Domestic job creation
- Potential for technological innovation & commercial deployment
- Net impact in avoiding or reducing GHG emission or avoiding or reducing air pollution
- Lowest leveled costs of generating, storing or reducing consumption of electricity
- Lowest leveled cost of reducing greenhouse gas emissions