
Technology Commercialization Showcase 2008

DOE Initiatives



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Agenda



- Loan Guarantee Program
- Entrepreneur in Residence Program
- Technology Commercialization Fund

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DOE Loan Guarantee Program



- 1) Program Objectives
- 2) Historical Timeline
- 3) Types of Projects Eligible for a Federal Loan Guarantee
- 4) Legislation and Final Rule
- 5) Application Review, Underwriting and Due Diligence Process
- 6) FY 2007-FY 2009 Guarantee Authority
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- 9) Additional Information

DOE Loan Guarantee Program



Program Objectives

Issue loan guarantees to eligible projects that:

- Avoid, reduce or sequester anthropogenic emissions of greenhouse gases or air pollutants
- Employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued
- Can be deployed commercially
 - Beyond the research and development, pilot and demonstration stages
- Provide a reasonable prospect for repayment



DOE Loan Guarantee Program



Historical Timeline

August 2005	Energy Policy Act of 2005 is enacted, including Title XVII: Incentives for Innovative Technologies , providing the basis of the Loan Guarantee Program
August 2006	First solicitation issued inviting interested parties to submit pre-applications that meet the Title XVII statutory requirements
February 2007	Congress provides DOE with up to \$4.0 billion in loan guarantee authority
May 2007	DOE issues a Notice of Proposed Rulemaking
August 2007	Director, Loan Guarantee Program hired
October 2007	DOE issues Final Regulations for Loan Guarantee Program
October 2007	Sixteen pre-applicants from August 2006 solicitation invited to submit full application
December 2007	Congress provides \$38.5 billion in additional loan guarantee authority expiring September 30, 2009
June 2008	FY 2008 Solicitations for \$30.5 billion released for applications \$10.0 billion for energy efficiency, renewable energy and advanced transmission and distribution technologies. \$18.5 billion for advanced nuclear power facilities \$2.0 billion for advanced nuclear facilities for the “front-end” of the nuclear fuel cycle
Late-summer 2008	\$8.0 billion for coal-based power generation, industrial gasification facilities, carbon capture and sequestration and advanced coal gasification



Types of Projects Eligible for a Federal Loan Guarantee

Title XVII identifies ten discrete categories of projects that are eligible for a loan guarantee, including:

1. Renewable energy systems
2. Advanced fossil energy technology, including coal gasification meeting certain statutory requirements
3. Hydrogen fuel cell technology for residential, industrial, or transportation applications
4. Advanced nuclear energy facilities
5. Carbon capture and sequestration practices and technologies, including agricultural and forestry practices that store and sequester carbon
6. Efficient electrical generation, transmission, and distribution technologies
7. Efficient end-use energy technologies
8. Production facilities for fuel efficient vehicles, including hybrid and advanced diesel vehicles
9. Pollution control equipment
10. Refineries, meaning facilities at which crude oil is refined into gasoline



Legislation and Final Rule

Title XVII and the final regulations identify the financial parameters for each project application

- The Secretary must determine that there is a “reasonable prospect” of repayment before a loan guarantee is issued
- A guarantee shall not exceed 80 percent of total project costs
- In the event of default, the Secretary will have a superior lien on all project assets, pledged as collateral
- The Secretary must charge and collect fees sufficient to cover applicable administrative expenses
- The borrower will pay at the time of closing a “credit subsidy” for the cost associated with a default on its obligation
- Applicants may apply for a 100% guarantee of the debt instrument from DOE funded by the Federal Financing Bank (FFB)
- Guarantees for less than 100% of the loan amount must be funded by an eligible lender other than the FFB (e.g., a private lender)
- The guaranteed portion of a loan may be “stripped” from the non-guaranteed portion, except in cases where the guarantee exceeds 90% of the loan amount
- Projects must be sited in the U.S. or its territories, but may have foreign investors/project sponsors. Technology may have previously been employed overseas

DOE Loan Guarantee Program



Application Review, Underwriting and Due Diligence Process

Application

Solicitation -The Loan Guarantee Program issues a solicitation outlining the necessary content of the applications

As part of the application, Applicants submit required items set forth in Part 609.6 of the Final Rule and the Solicitation. Some major Items include:

- | | | |
|----------------------|-----------------------|------------------|
| -Project Description | -Environmental Report | -Application Fee |
| -Financial Pro Forma | -Engineering Report | -O&M Plan |

Technical and Financial Review – DOE conducts a financial and technical review of applications and identifies those projects which should be selected to begin negotiation and undergo comprehensive underwriting process.

Underwriting and Due Diligence Process

Legal Review

Technical Review

Financial Review

Environmental Analysis

Credit Subsidy Cost - will be paid by the project sponsor at closing. The Credit Subsidy offsets the risk associated with the project. Every effort will be made to provide project sponsors, no later than at the time a Term Sheet is provided, a preliminary credit subsidy estimate for the desired loan guarantee.

DOE Loan Guarantee Program



FY 2007 – FY 2009 Guarantee Authority

FY2007 Loan Guarantee Authority	FY2008 Loan Guarantee Authority	FY2009 (requested) Loan Guarantee Authority
\$4.0 billion	\$38.5 billion (expires by end of FY2009)	
	<p style="text-align: center;"><u>Breakdown</u></p> <p>\$18.5 billion for advanced nuclear power facilities</p> <p>\$2.0 billion for “front end” nuclear fuel cycle facilities</p> <p>\$10.0 billion for energy efficiency renewable energy and advanced transmission and distribution technologies</p> <p>\$6.0 billion for coal based power generation, industrial gasification and carbon capture and sequestration</p> <p>\$2.0 billion for advanced coal gasification</p>	No new loan guarantee authority was requested for FY2009



Project Sponsors Invited to Submit Full Applications from First Solicitation

ADVANCED FOSSIL ENERGY PROJECTS

- Mesaba Energy Project
- Mississippi Power Company
- TX Energy, LLC

INDUSTRIAL ENERGY EFFICIENCY PROJECTS

- GR Silicate Nano Fibers and Carbonates
- Sage Electrochromics

SOLAR ENERGY PROJECTS

- Luz II
- Solyndra, Inc.

ELECTRICITY DELIVERY AND ENERGY RELIABILITY PROJECT

- Beacon Power

HYDROGEN PROJECT

- Bridgeport Fuel Cell Park, LLC

ALTERNATIVE FUEL VEHICLES PROJECT

- Tesla Motors

BIOMASS PROJECTS

- Alico, Inc.
- Blue Fire Ethanol, Inc.
- Choren USA
- Endicott Biofuels, LLC
- Iogen Biorefinery Partners, LLC
- POET, LLC



Steps to Obtaining a Loan Guarantee

1. Applicant responds to a solicitation with the submission of a Full Application. Applicant submits Application Fee.
2. DOE commences a technical and financial evaluation of each application and selects projects to begin negotiation.
3. For those applications selected for negotiation, DOE commences an underwriting and due diligence process which includes a comprehensive legal, technical, financial, market and environmental analysis of the project.
4. DOE issues term sheet setting forth the material terms and conditions of a definitive loan guarantee agreement.
5. Execution of a conditional commitment, preparation of the loan guarantee agreement, project documents prepared and associated financing arranged. Applicant pays Facility Fee at time of conditional commitment.
6. Final approval by the Secretary of Energy. Applicant pays credit subsidy cost at closing.
7. Loan guarantee agreement is executed

DOE Loan Guarantee Program



Additional Information

Loan Guarantee Program Office Website

<http://www.lgprogram.energy.gov>

2005 Energy Policy Act

<http://www.lgprogram.energy.gov/EPAof2005.pdf>

Loan Guarantee Final Rule

<http://www.lgprogram.energy.gov/lgfinalrule.pdf>

FY 2008 Energy Efficiency Renewable Energy and Advanced Transmission and Distribution Solicitation

<http://www.lgprogram.energy.gov/RenSol7-11-08Amend1.pdf>

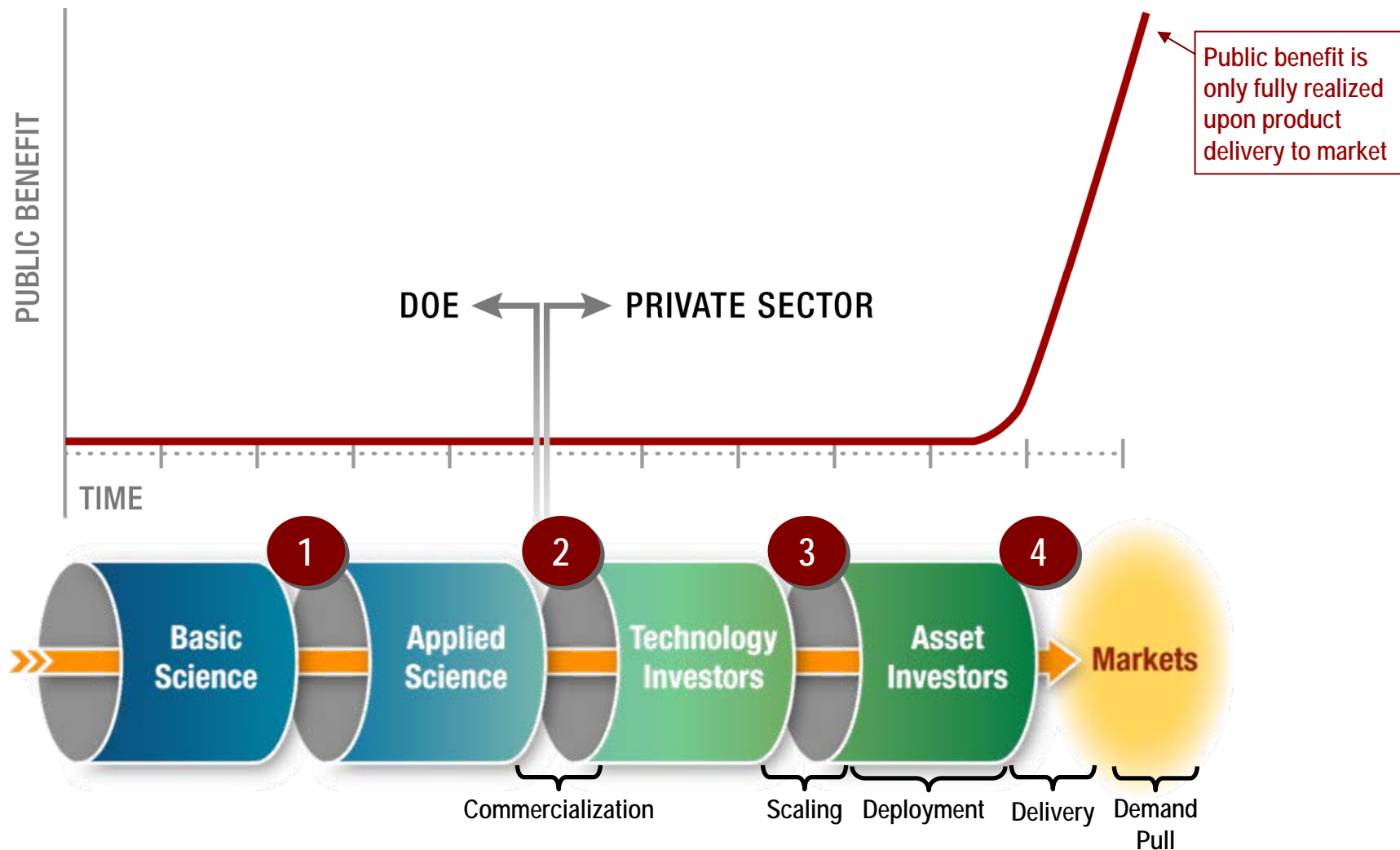
Solicitation Update Subscription: Send email to lgprogram@hq.doe.gov

Agenda



- Loan Guarantee Program
- **Entrepreneur in Residence Program**
- Technology Commercialization Fund

A technological innovation must overcome four challenging transitions before reaching the market.



EERE Commercialization Bridges are designed to overcome four primary gaps



Talent

- DOE traditionally hires scientists – not businessmen
- Commercializing technologies requires both technical & business skill sets

Information

- Communication is a fundamental prerequisite of commercialization
- Technical language fails to resonate with the business community

Capital

- Competition is stiff for venture capital funding
- VCs more likely to fund business plans and prototypes than research papers

Strategy

- The Commercialization Valley of Death is not unique to national laboratories
- Best practices have been developed to foster a culture of innovation

Built off a proven venture capital model, the Entrepreneur in Residence (EIR) program forms the primary plank of the **TALENT BRIDGE**

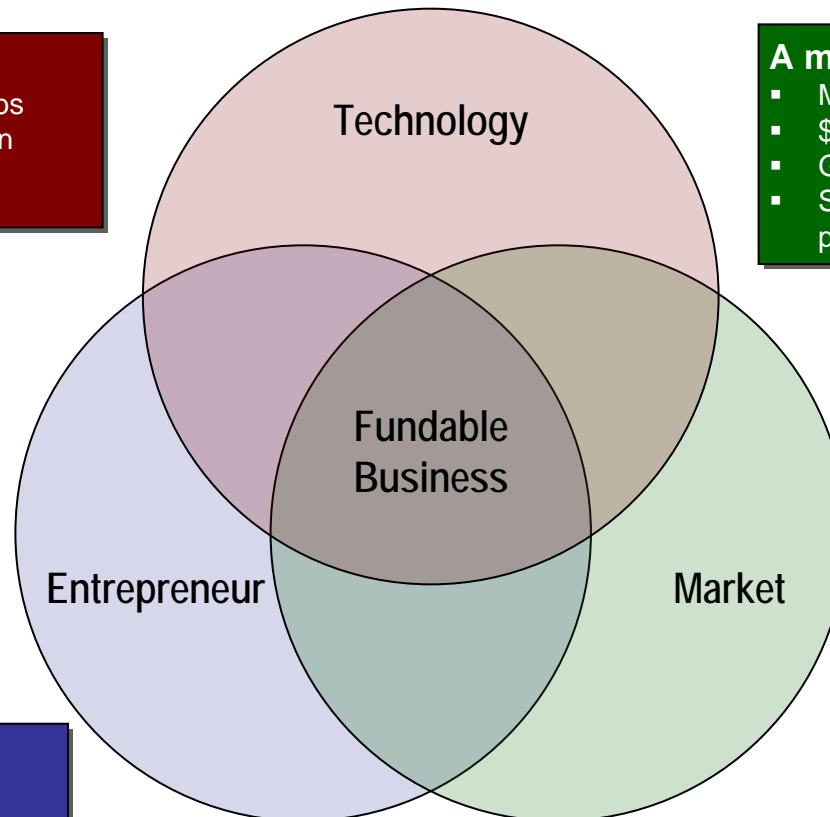


A technology that works

- Readily available at national labs
- Under-deployed due to focus on scientific research

A market ripe to sell into

- Market ready for clean energy
- \$100+ oil, \$12 natural gas, \$4 gasoline
- Global climate change
- Sufficient degree of policy predictability



An entrepreneur who can execute

- Build business plan
- Assemble management team
- Raise capital

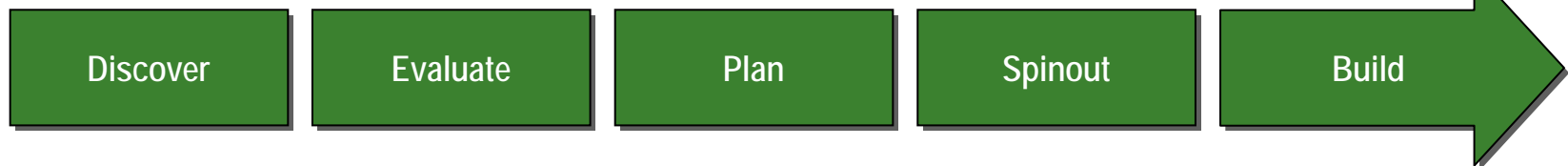
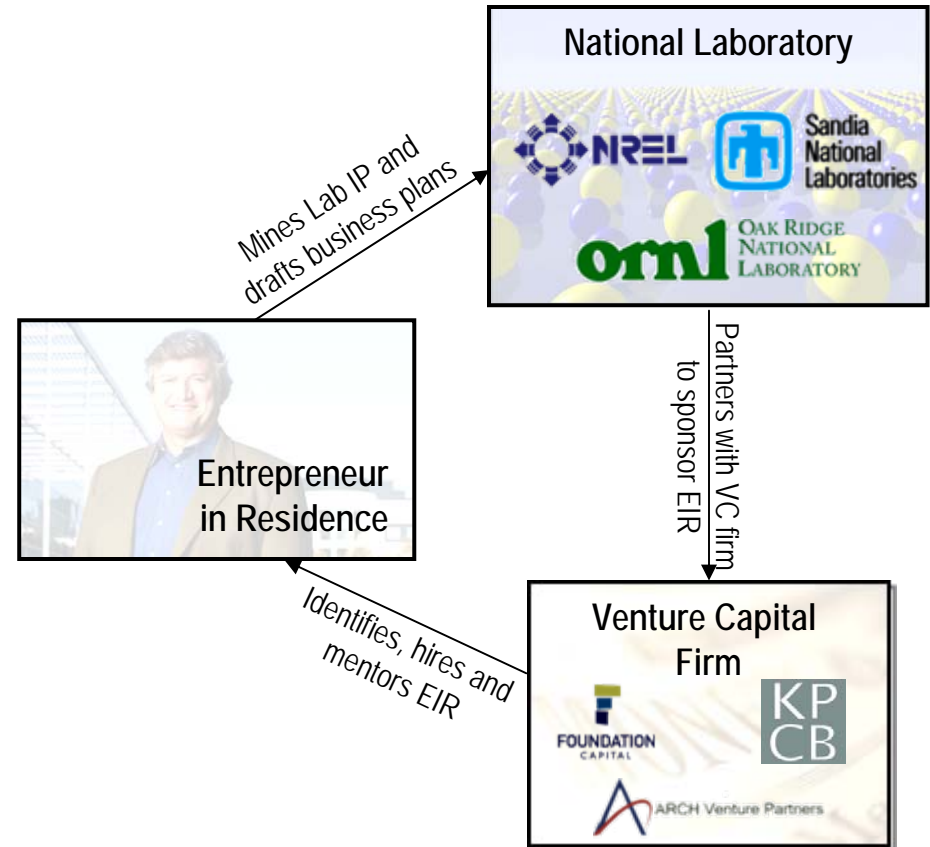
Venture Capitalists favor experienced entrepreneurs
with a track record of identifying promising technologies and building markets

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



Structure

- DOE partnership with Venture Capital Firm
- EERE provides \$100k matching-funds and full access to laboratory
- Venture Capital Firm identifies, hires and mentors EIRs
- Pre-Negotiated standard equity share license agreement



Tailored for entrepreneurs and small businesses, the Equity Share License agreement forms a primary plank of the **STRATEGY BRIDGE**



	Traditional License	Equity Share License
Laboratory Benefit	<ul style="list-style-type: none"> ➤ Up-front license fee ➤ Royalties 	<ul style="list-style-type: none"> ➤ Equity share of company, royalties or combination
Points of Negotiation	<ul style="list-style-type: none"> ➤ All terms 	<ul style="list-style-type: none"> ➤ Percent equity share
Length of Contract	<ul style="list-style-type: none"> ➤ 30 pages 	<ul style="list-style-type: none"> ➤ 17 pages
Private Sector Preference	<ul style="list-style-type: none"> ➤ Large companies with cash on hand 	<ul style="list-style-type: none"> ➤ Small businesses on tight budgets ➤ Entrepreneurial ventures



Built off the Stanford license, the Equity Share License has been pre-negotiated with venture capital general counsels, national laboratory general counsels and DOE general counsel

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- Entrepreneur in Residence Program
- **Technology Commercialization Fund**

Filling the gap between R&D and venture capital funding, the Technology Commercialization Fund forms the primary plank of the **CAPITAL BRIDGE**



Need

- Innovations struggle to find financing post-research and pre-venture capital funding as described by the “Commercialization Valley of Death”

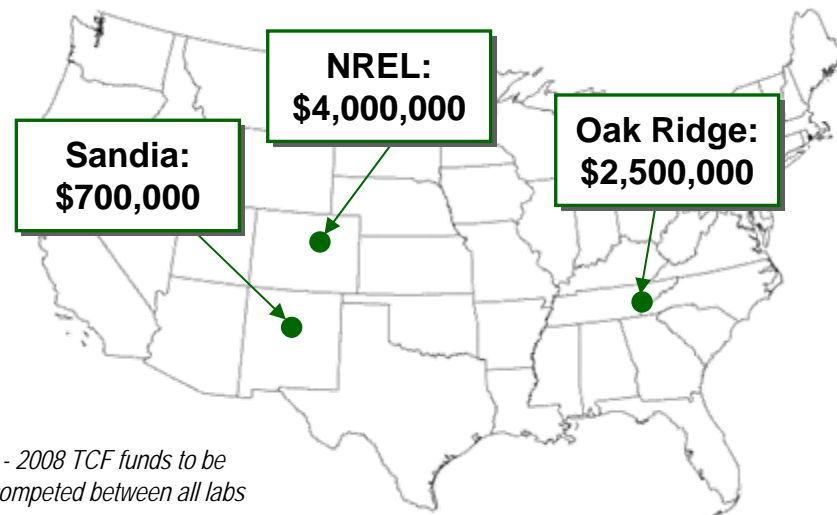
Structure

- 50-50 industry matched funds required to participate
- Funds restricted to prototype development, demonstration and deployment – not further scientific research Designed to complement angel investment or early stage corporate product development

Decision criteria

- Potential market opportunity
- Likelihood of commercial success
- Management team
- DOE priorities
- Private sector partners

FY07* Technology Commercialization Fund



** - 2008 TCF funds to be competed between all labs*

The Technology Commercialization Fund is a carrot to attract private sector partners to examine the national laboratories' intellectual property portfolio