



America's Energy Future: New solutions to  
fuel economic growth & prosperity

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*An Energy Technology Corporation to  
improve energy innovation*

May 18, 2011 Washington DC





## *The Innovation Pathway*

R&D → Demonstration → Deployment

- Conventional rationale for Gov't support: Private sector under investment R&D.

## *Four points:*

- R&D alone is insufficient
- Demonstration step is key (and has not been well done).
- Need **ENERGY TECHNOLOGY CORPORATION** - new quasi-public agency to implement technology demonstration projects.
- Subsidies for deployment more doubtful (and more expensive). Perhaps justified to compensate for market externality or market failure.



## *Purpose of technology demonstration*

- Provide information on technical performance, cost, environmental effects.
- Pioneer projects private sector will not undertake because of uncertainties.
- Examples: carbon sequestration, solar thermal power, grid, nuclear, biofuels.

**ETC responsibility for managing the selection and execution of technology demonstration projects.**

- **Independent board of directors**
- **One-time appropriation of resources \$60 billion.**
- **ETC would have flexible hiring authority**

The mechanisms for providing project assistance and contracting should be according to commercial practice and not government.



# Energy Technology Innovation

## *Three energy technology demonstration “epochs”*

- Early 1970s Direct ERDA/DOE project support.
- Late 1970s-Early 1980s Synthetic Fuels Corporation (SFC).
- 2009-2011 Recovery Act spending.

## Desirable attributes of technology demonstration projects.

How well did they do?

	DOE '70s	SFC	ARRA 2008
Explicit policy	Yes	Yes	No
Analytic support	No	Some	Some
Strong project mgmt.	No	Yes	No
Indirect assistance	No	Yes	Yes
Information Dissem.	No	No	No
Outside expertise	No	Yes	Some
Free of gov't regs.	No	Yes	No
Evaluation/ metrics	No	No	No

How much spending commitment?

\$10b

\$60b

\$43b



## *Options for technology demonstration*

- Clean Energy Deployment Admin. (Senate Eng. & Nat. Res Com)
- DOE funded industry consortia (e.g. EPRI)
- Clean Energy Banks (CAP)
- Industry investment boards (Romer)
- Do Nothing

## *Some interesting facts*

- No one knows how much is spent on energy innovation (fed + state direct outlays + tax expenditures).
- \$6 billion DOE 2012 R&D BA.
- \$17.1 billion ARRA technology demo commitments as of 1/1/11.
- 2010 Performers of DOE RD&D

- DOE national labs 43%
- Industry 20%
- Universities 8%
- States 5%

+ 22% for  
ARRA Energy  
Efficiency  
outlays



- **Absent demonstration, new technology languishes.**
- **Successful technology demonstration creates private sector options.**
- **ETC organization needed** to implement projects in credible and efficient manner.
- **Projects resolve uncertainty, create options**
- **Production targets should be avoided**
- **R&D retains priority – Not how much, but how:**
  - DOE lab role
  - New mechanism: ARPA-E Eng. Frontier Research Centers.
  - Relation to VC activity