



U.S. DEPARTMENT OF
ENERGY



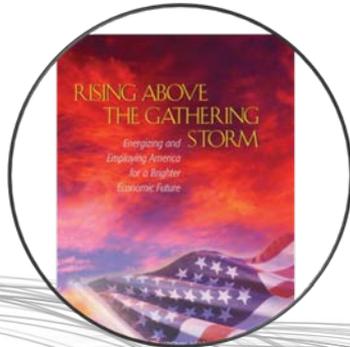
Introduction to ARPA-E

Dane Boysen, Program Director
Advanced Research Projects Agency - Energy
U.S. Department of Energy

2012 Emerging Ideas Workshops
March 26-30, Washington DC

History of ARPA-E

2006
*Rising Above the
Gathering Storm*
(National Academies)



2007
America
COMPETES Act

2009
American
Recovery &
Reinvestment Act
(\$400M)



2011
FY2011 Budget
(\$180M)



Arun Majumdar
1st Director

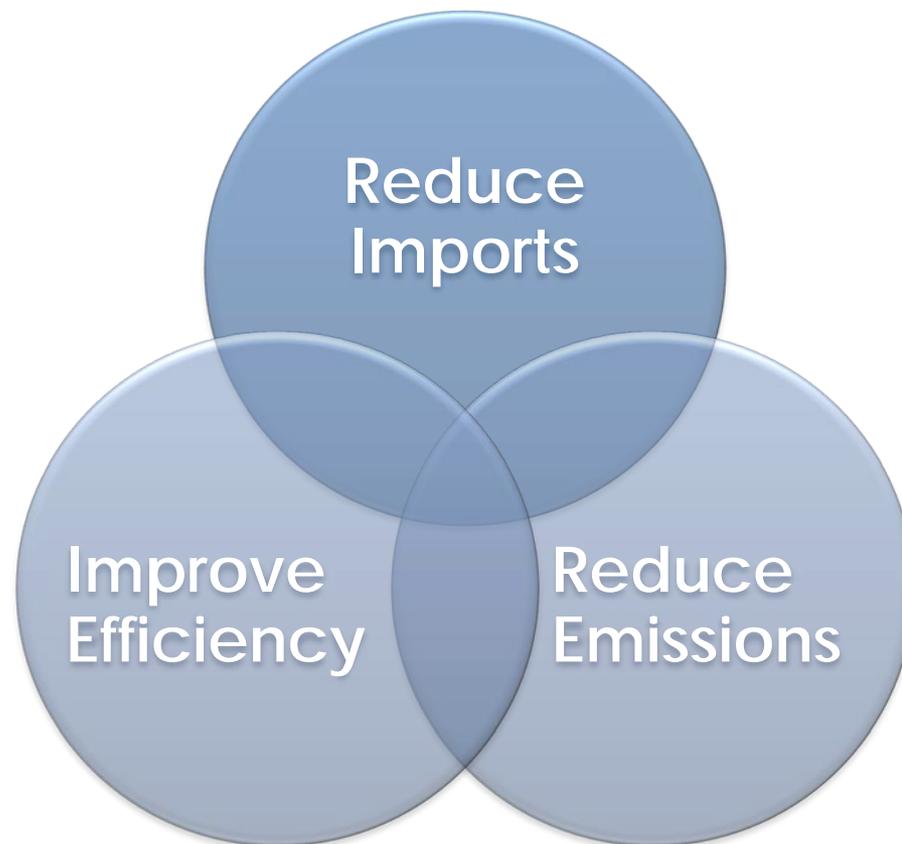
2012
FY2012 Budget
(\$275M)

The ARPA-E Mission

Overcome high-risk technological barriers
to development of energy technologies

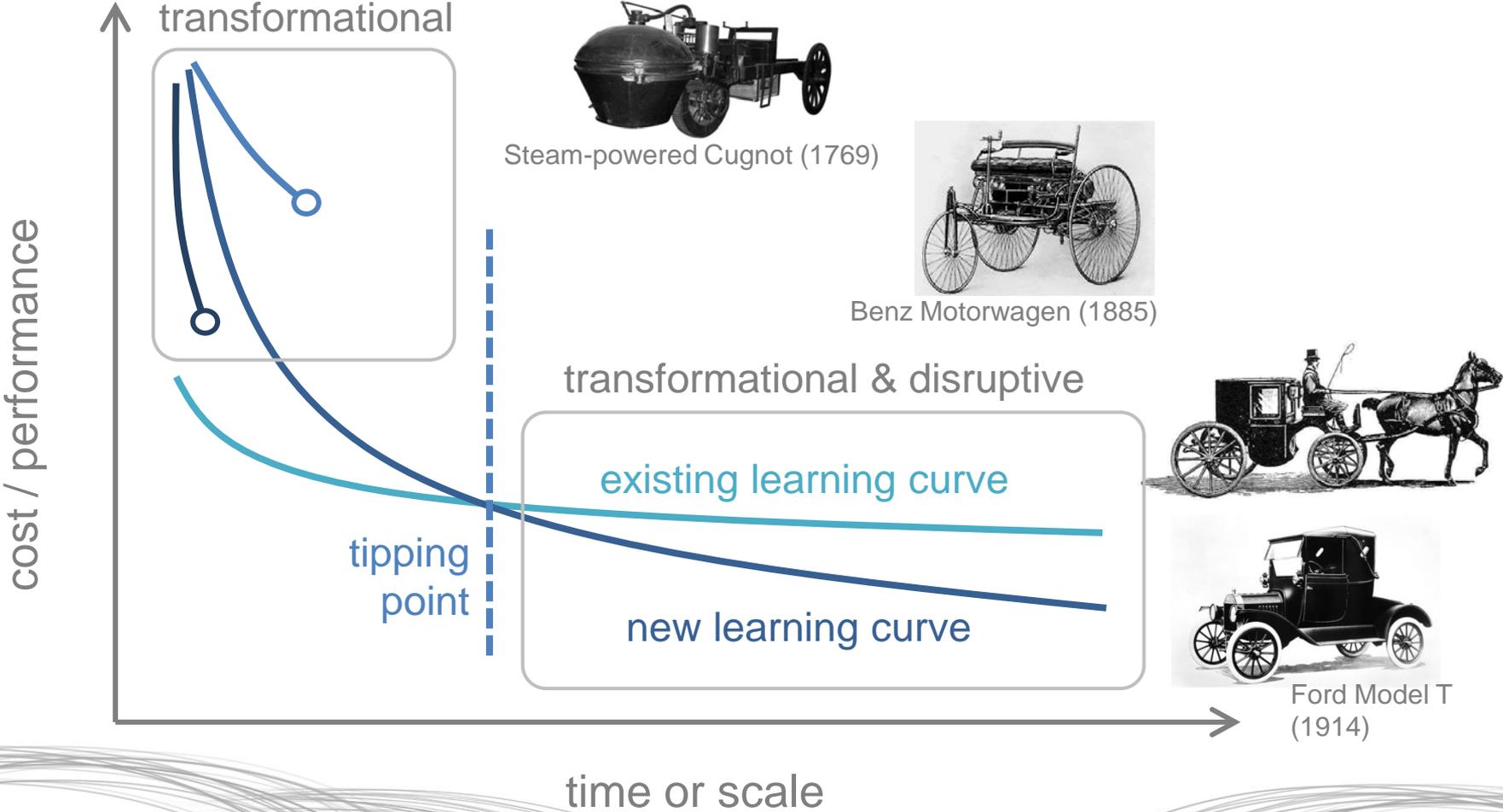
Ensure America's

- National security
- Economic security
- Energy security
- Technological lead



The ARPA-E Approach

Transformational & disruptive technologies
that lead to new learning curves



The ARPA-E Approach

- We fund solutions
 - ▶ that lead to new learning curves
 - ▶ to create new markets
 - ▶ to displace old technologies
 - ▶ too risky for the private sector
- We do not fund
 - ▶ specific technologies
 - ▶ science for science-sake
 - ▶ incremental advances



The ARPA-E Team

2009



Eric Toone

2009



Dave Danielson

2010



Rajeev Ram

2010



Mark Johnson

2010



Jonathan Burbaum

2010



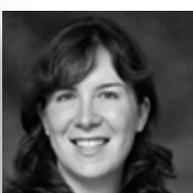
Ravi Prasher

2011



Dane Boysen

2011



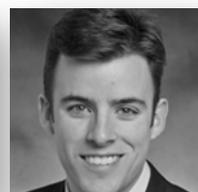
Karma Sawyer

2010



Nick Cizek

2010



Robert Conrado

2011



Asegun Henry

2012



Tim Heidel

The ARPA-E Process

Concept-to-Contracts: 6-8 months



What makes an ARPA-E program?

1. Impact

- ▶ High impact on ARPA-E mission areas
- ▶ Credible path to market
- ▶ Large commercial application



2. Transform

- ▶ Challenges what is possible
- ▶ Disrupts existing learning curves
- ▶ Leaps beyond today's technologies



3. Bridge

- ▶ Translate science into breakthrough technology
- ▶ Not researched or funded elsewhere
- ▶ Catalyzes new interest and investment

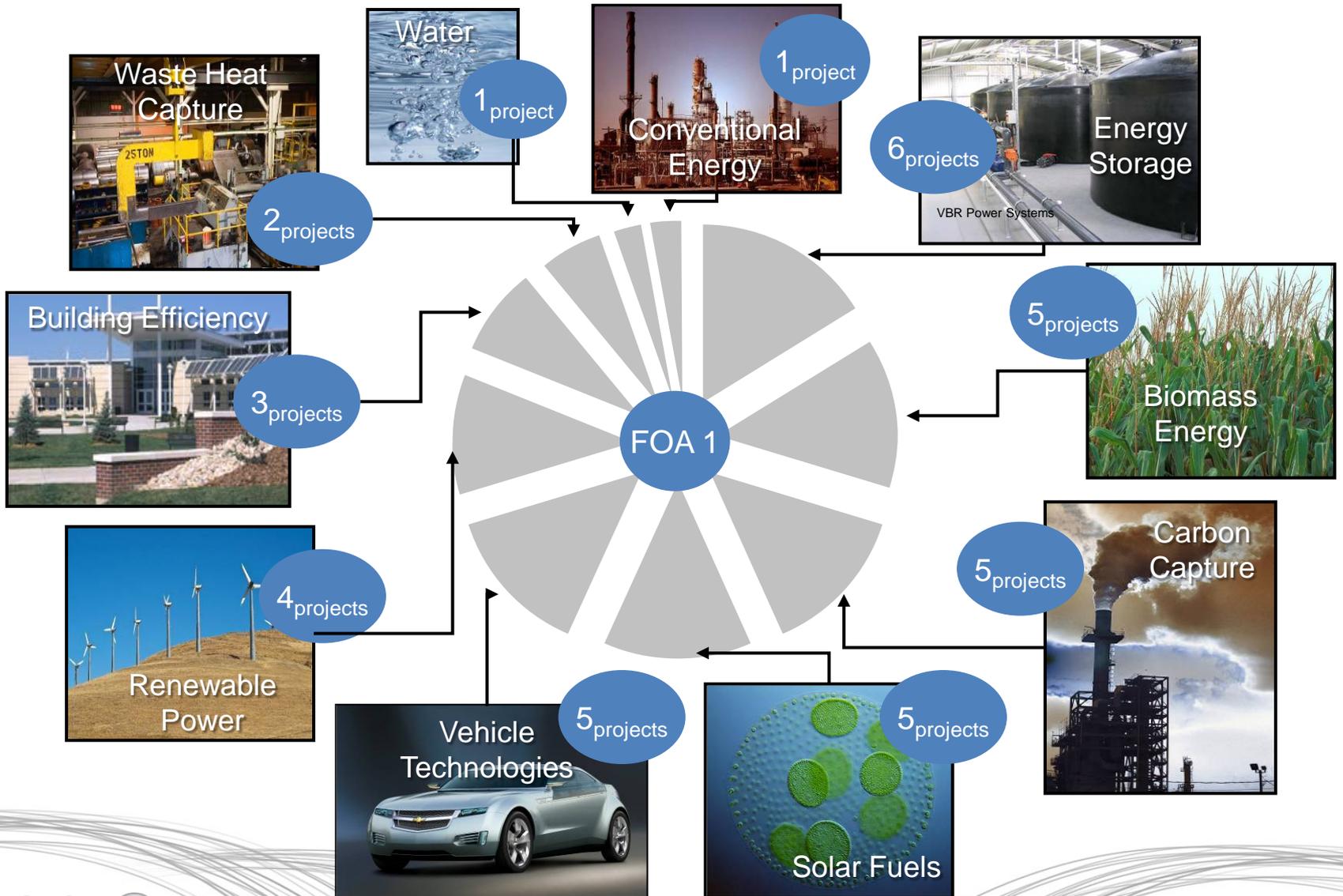


4. Team

- ▶ Best-in-class people
- ▶ Cross-disciplinary skill sets
- ▶ Translation oriented



First Open FOA -10 Technology Areas



Currently 11 Focused Programs

Transportation

Electrofuels



BEEST



PETRO



End-Use Efficiency

HEATS



BEETIT

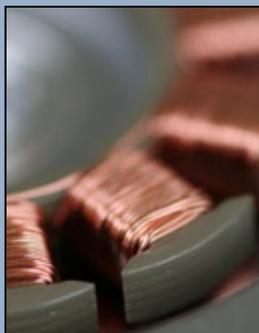


Stationary Power

IMPACCT



ADEPT



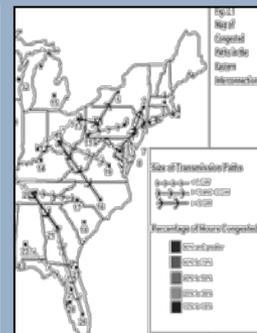
GRIDS



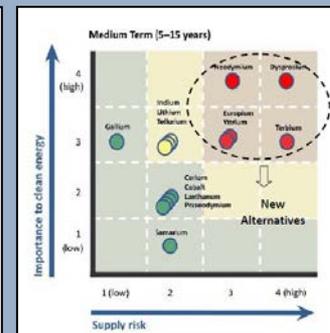
Solar ADEPT



GENI



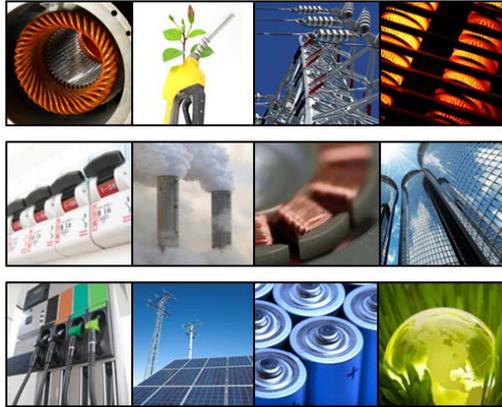
REACT



2012 Emerging Ideas Workshops

Day	Emerging Ideas Workshop	Location
Mar 26	PHOTON High-efficiency, high-concentration PV	L'Enfant Plaza
Mar 27	TOPHAT High-temperature topping cycles	Virginia Square
Mar 27	MICROBES New bioreactors for algae and Electrofuels	L'Enfant Plaza
Mar 28	RACE Fast charging of EV batteries	L'Enfant Plaza
Mar 28	ICEPOP No or Low-Water Power Plant Cooling	L'Enfant Plaza
Mar 29	SNIFFER Remote methane detection	L'Enfant Plaza
Mar 30	PROPHET Advanced forecasting of wind/solar	Virginia Square

Distinction: Emerging Ideas Workshops vs. Typical ARPA-E Workshops/FOAs



Typical Workshop/FOA

- Thematically related topics
- Workshops: 50-100 people
- Each with individual program
- Program funding is \$30-40 million
- Consists of 10-20 projects



Emerging Ideas Workshops

- Funding amount/mechanism undetermined
- Workshops: 10-40 people
- Ideas across areas compete with each other
- Best topics may go into a combined solicitation
- Best proposals of any topic are selected
- Topics may lead to a larger future program

2012 Funding Information

Funding Opportunity Announcement (FOA)

- Methane Opportunities for Vehicular Energy (**MOVE**) – **closed March 26**
- Open FOA Opportunity Announcement (**OPEN FOA**)

Announcement of Teaming Partner List

- Advanced Management and Protection of Energy-storage Devices (**AMPED**)

Request for Information (RFI)

- Electrofuels Phase II