U.S. DEPARTMENT OF ENERGY

American Recovery and Reinvestment Act

Mike Mills

11th IPHE Steering Committee Meeting

Uluru, Australia

May 7, 2009

American Recovery & Reinvestment Act

Energy-Related Funding Includes:

- $16.8 B for Energy Efficiency and Renewable Energy
- $2.0 B for DOE Office of Science (including $400 M for the Advanced Research Projects Agency)
- $3.4 B for Fossil Energy R&D
- $4.5 B for Electricity Delivery & Energy Reliability (Smart Grid)
- $6.0 B for Loan Guarantee Program
- $5.6 B for GSA (includes high performance green federal buildings and fleets)
- $300 M for DoD Energy research, including fuel cells

$16.8 billion for Energy Efficiency & Renewable Energy

$2.5 B	**Research, development, demonstration and deployment ($1.2 B specified for biomass and geothermal; $50 M for IT efficiency—*$1.25 B in discretionary funds.*)**
$5.0 B	**Weatherization – Initial applications due MARCH 23; final applications due MAY 12**
$3.1 B	**State Energy Program – Closing MAY 13**
$3.2 B	**Energy Efficiency and Conservation Block Grants – State applications due MAY 26, all others due JUNE 25**
$400 M	**Transportation Electrification – Closing MAY 13**
$300 M	**Alternative Fueled Vehicles Pilot (Clean Cities) – Closing MAY 29**
$2.0 B	**Advanced Battery Manufacturing – Closing MAY 19**
$300 M	**Energy Efficient Appliance Rebate Program/EnergyStar**

Recovery Act — Other Opportunities for Fuel Cells

Opportunities for hydrogen & fuel cells are not limited to EERE Recovery Act funds.

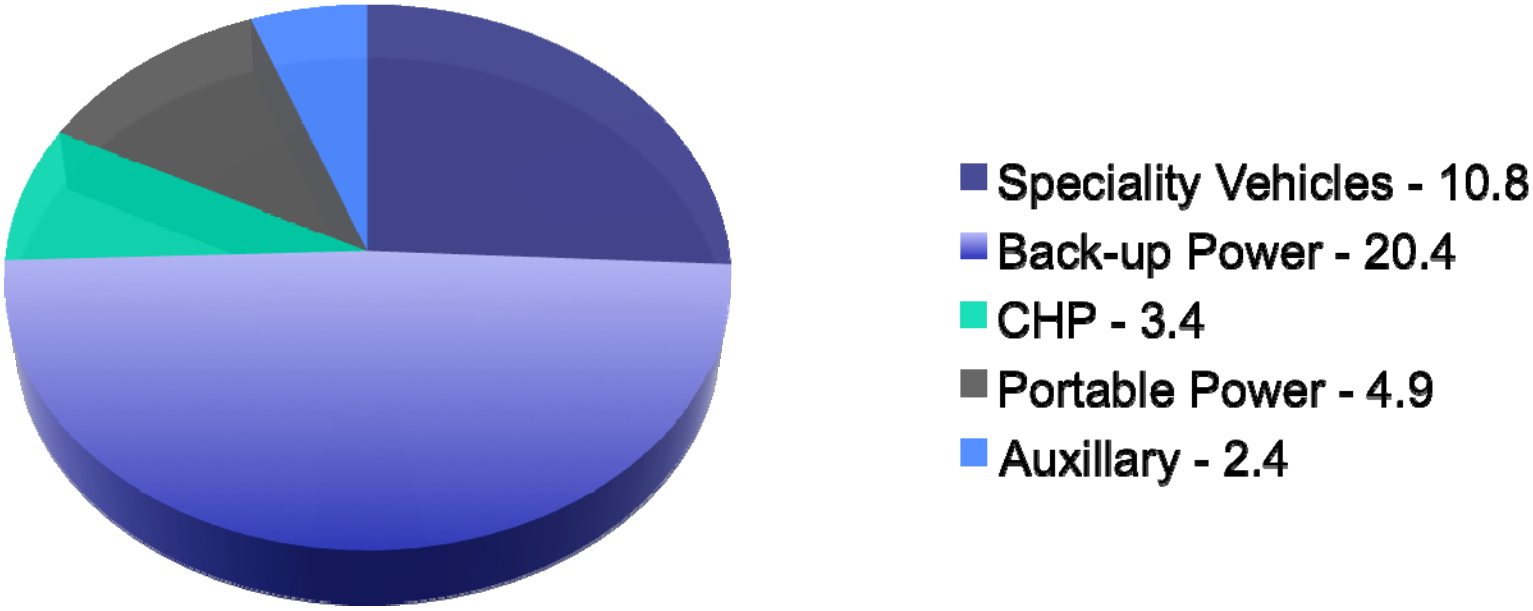
Recovery Act Opportunity	Potential Fuel Cell Application	Total Amount
Energy efficiency improvements in federal buildings and HUD housing	***Stationary fuel cells for CHP***	**$4.5 B (federal buildings)** **$250 M (HUD housing)**
Alternative fueled vehicles GSA federal fleets	***Vehicles & fueling infrastructure***	**$300 M (GSA)**
Transit investments for greenhouse gas and energy reduction	***Vehicles & fueling infrastructure***	**$100 M (DOT)**
Improvements at DoD facilities—including energy efficiency upgrades	***Stationary fuel cells with CHP***	**$4.2 B (DoD)**
Strategic Technologies—including small unit operations, maritime operations, and portable power (DARPA)	***Portable power, auxiliary power, stationary power.***	**TBD (DoD)**
Loan guarantees for projects to reduce pollution and GHGs including fuel cells for residential, industrial or transportation applications	***All***	**$6.0 B**

Recovery Act — *Tax Credits*

Some tax credits affecting hydrogen & fuel cells were expanded.

Hydrogen Fueling Facility Credit	**Increases the hydrogen fueling credit from 30% or $30,000 to 30% or $200,000.**
Grants for Energy Property in Lieu of Tax Credits	**Allows facilities with insufficient tax liability to apply for a grant instead of claiming the ITC or PTC. Only entities that pay taxes are eligible.**
Manufacturing Credit	**Creates 30% credit for investment in property used for manufacturing fuel cells and other technologies**
Residential Energy Efficiency Credit	**Raises ITC dollar cap for residential fuel cells in joint occupancy dwellings to $3,334/kW.**

ARRA Funding for Hydrogen and Fuel Cell Projects - $41.9 Million



New Recovery Act Projects

Deploying Fuel Cells for Specialty Vehicles

Anheuser-Busch (St. Louis, MO)	**$1.1 million**	***23 fuel cells in class-1 lift trucks***
FedEx Freight East (Harrison, AR)	**$1.3 million**	***35 fuel cells in class-1 lift trucks***
GENCO (Pittsburgh, PA)	**$6.1 million**	***156 fuel cells in 6 fleets of class-1 and -3 lift trucks***
Nuvera Fuel Cells (Billerica, MA)	**$1.1 million**	***Supplement a fuel cell forklift fleet with 10 fuel cell power packs and a hydrogen fueling system***
Sysco of Houston (West Houston, TX)	**$1.2 million**	***90 fuel cells in class-3 pallet trucks***

TOTAL: **$10.8 million**

Advantages of Fuel Cells for Specialty Vehicles:

- Allow for rapid refueling — much faster than changing-out or recharging batteries
- Provide constant power without voltage drop
- Eliminate space requirements of batteries & chargers
- *May provide substantial cost-savings* over battery-powered forklifts

New Recovery Act Projects

Deploying Fuel Cells for Back-up Power

Plug Power Inc. (Latham, NY)	**$2.7 million**	• *Up to 275 kW of backup power at government sites*
ReliOn Inc. (Spokane, WA)	**$8.6 million**	• *Backup power for 25 sites in utility communications network* • *180 backup power installations for telecommunications network*
Sprint Communications (Reston, VA)	**$7.3 million**	• *1-kW to 10-kW fuel cell systems for backup power to state/local first responders*
Jadoo Power (Folsom, CA)	**$1.8 million**	• *Evaluation of environmental and cost benefits of using 1-kW fuel cell power system, as opposed to gas/diesel generators and lead acid batteries*

TOTAL: **$20.4 million**

Advantages of Fuel Cells for Backup Power:

- Provide longer continuous run-time, greater durability than batteries
- Require less maintenance than batteries or generators
- Can be remotely monitored

New Recovery Act Projects

Demonstrating PEM Fuel Cells for Residential and Small Commercial CHP

CHP fuel cell systems for critical load facilities...

- **Provide high-quality, reliable, grid-independent power**
- **Improve the effectiveness of data center power use by 40%**

Plug Power, Inc. (Latham, NY)	$3.4 million	*5-kW stationary CHP systems*

BENEFITS of FUEL CELLS for CHP...

- Low O&M requirements, less down-time
- Less fluctuation in efficiency across variable loads
- Zero emissions
- Low noise and vibration

New Recovery Act Projects

Deploying Fuel Cells for Portable Power

MTI MicroFuel Cells (Albany, NY)	$2.4 million	• *1 W consumer electronics power pack*
PolyFuel, Inc. (Mountain View, CA)	$2.5 million	• *Portable power system for mobile computing*
TOTAL:	$4.9 million	

Deploying Fuel Cells for Auxiliary Power

Delphi Automotive (Troy, MI)	$2.4 million	• *3 – 5 kW SOFC APU for heavy-duty class 8 trucks*

Joint SC – ILC Meeting

October 13 – 15, 2009

Logistics:

- L'Enfant Plaza Hotel, Washington, DC
  - One block from DOE Headquarters
- Government Per Diem Available: $233 per night
  - Must register for hotel room by September 14.
  - 1-800-635-5065 or on-line (web address provided on IPHE Website)
- Conveniently located on the subway system (L'Enfant Plaza Metro Station) to allow for participants to easily commute from other lodging.