H_2 and FC Technologies Manufacturing R&D Workshop
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U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Small Fuel Cell Systems with Hydrogen Storage

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How do Small FC Systems fit in the DOE Portfolio?

- Reduction in greenhouse gas emissions?
  - Not much impact
- Reduction in dependency on petroleum?
  - Not much impact

- Development of vendor supply?
  - Essentially same components and BOP – just many less kWs!
- Obtain information on FC system performance and operation?
  - Potential for high number of systems in relatively short time!
  - Various operating conditions and environments!
- Provide education and outreach?
  - Puts the technology in consumers hands!
  - Develops familiarity and comfort with the technology!

Fuel Cells: Addressing Energy Challenges

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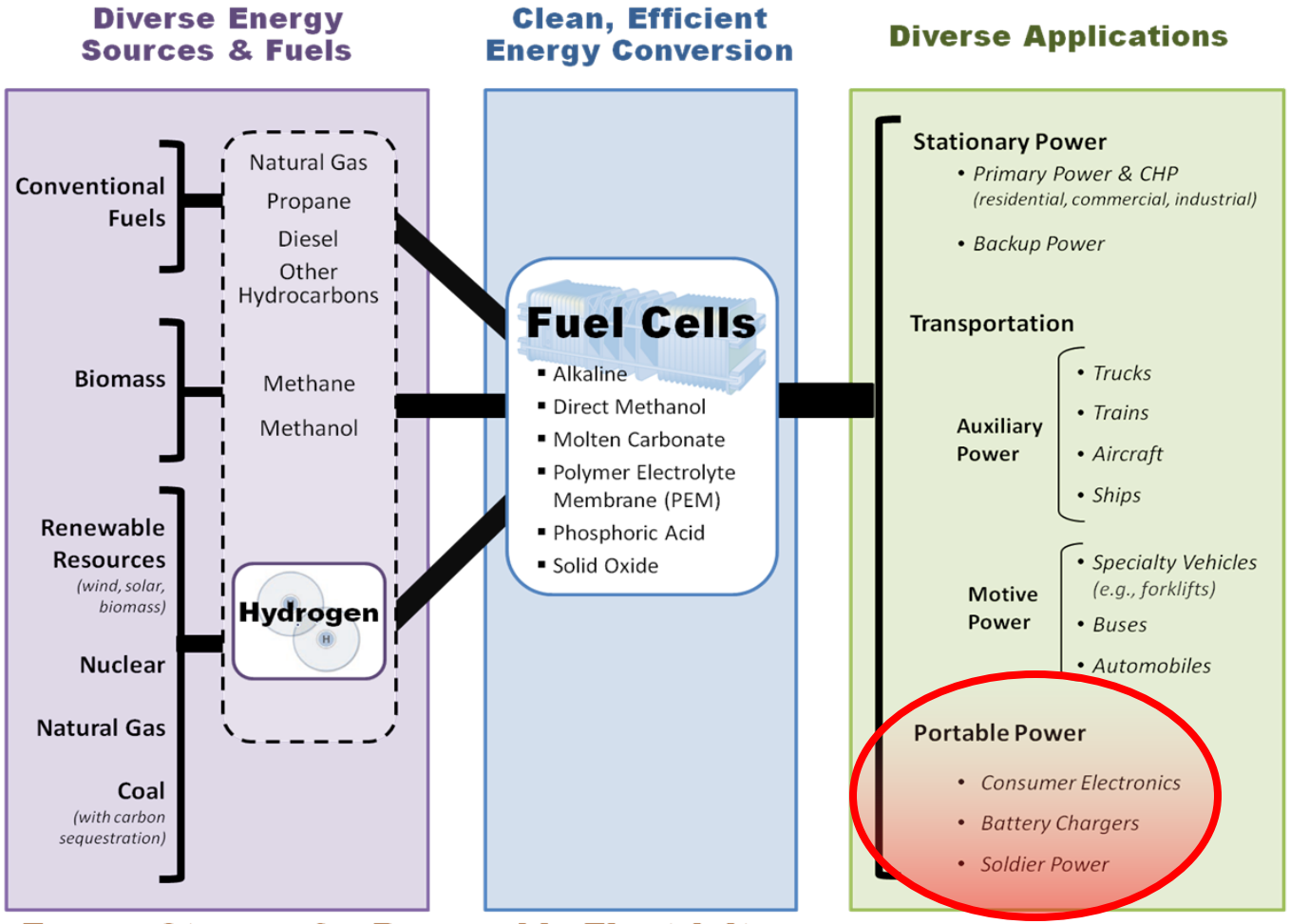
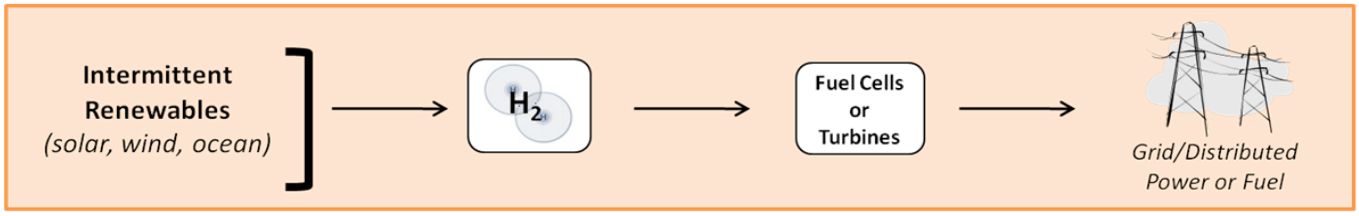
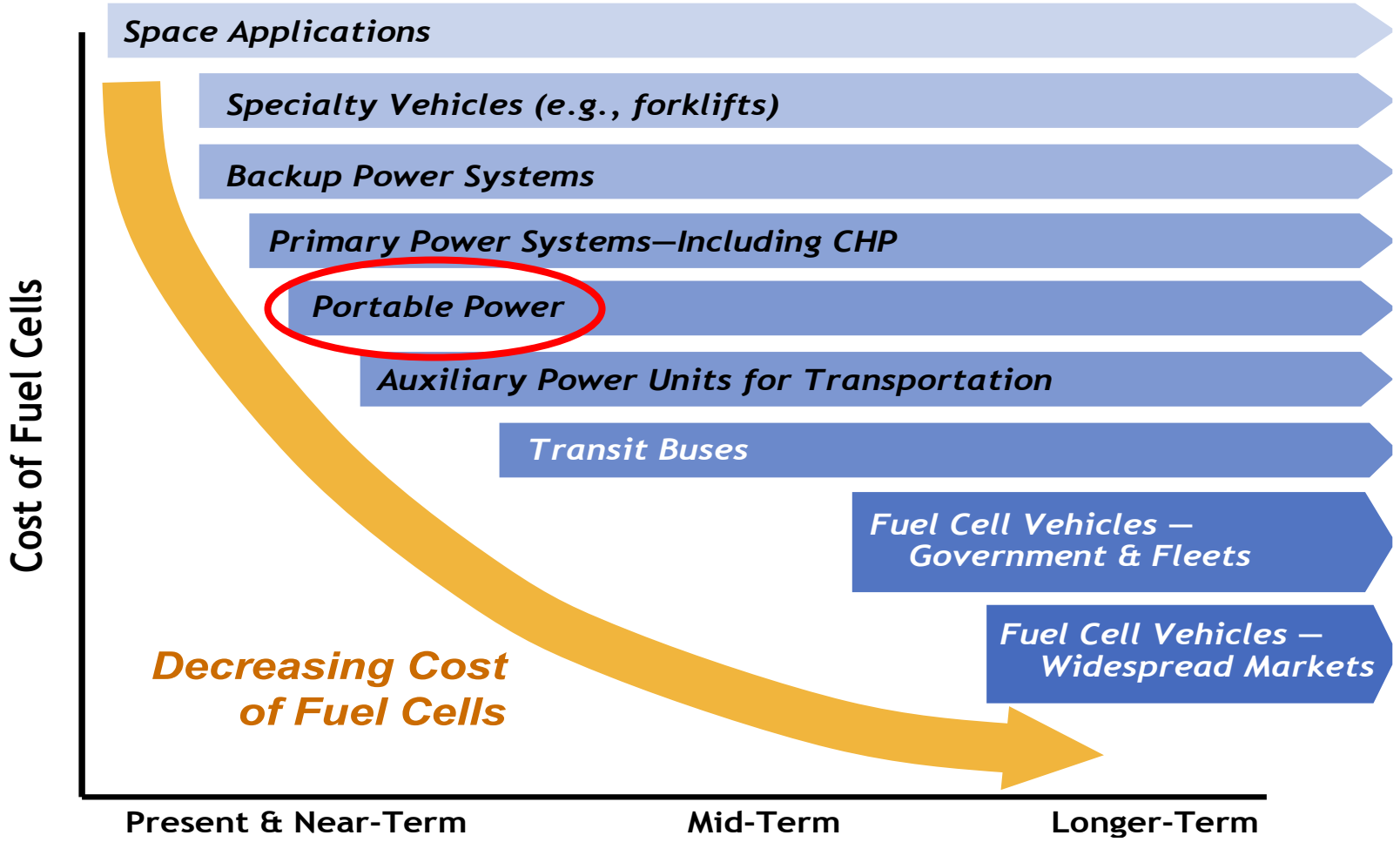


Energy Storage for Renewable Electricity



Status Fuel Cells - *A Potential Timeline*

As the cost of fuel cells comes down (through technological improvements and economies of scale), they will become competitive in a growing number of markets.



Source: US DOE 09/2010

Fuel Cell Market Overview

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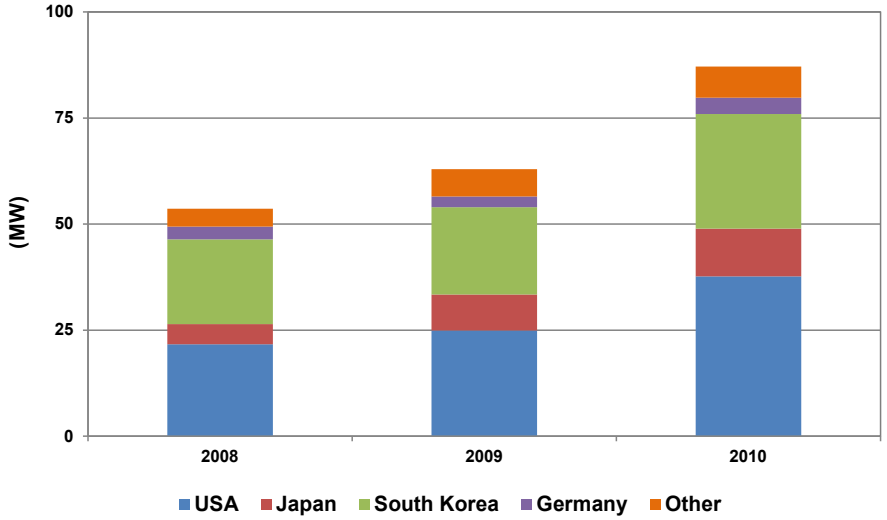
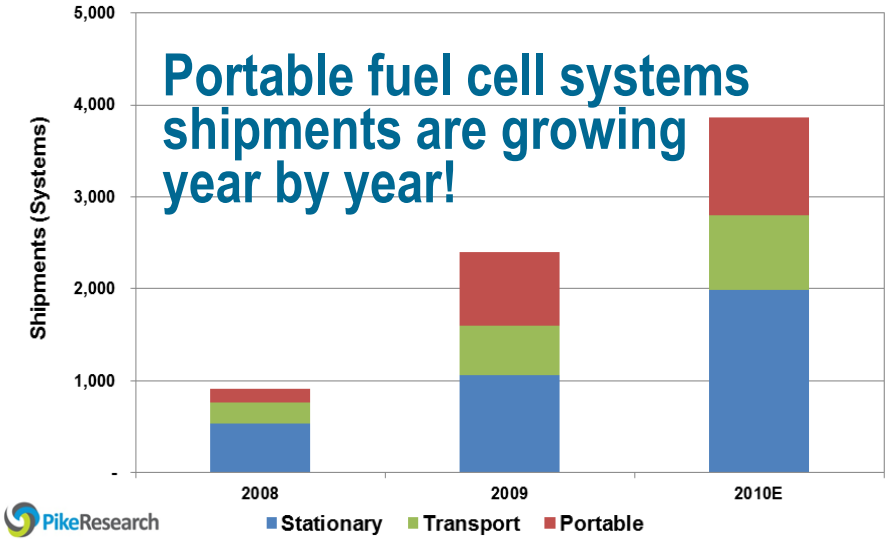
Megawatts Shipped, Key Countries: 2008-2010



North American Shipments by Application



Fuel cell market continues to grow
- ~36% increase in global MWs shipped
- ~50% increase in US MWs shipped

Various analyses project that the global fuel cell/hydrogen market could reach maturity over the next 10 to 20 years, producing revenues of:
- $14 – $31 billion/year for stationary power
- $11 billion/year for portable power
- $18 – $97 billion/year for transportation

Widespread market penetration of fuel cells could lead to:
- 180,000 new jobs in the US by 2020
- 675,000 jobs by 2035

FuelCells2000, Pike Research, Fuel Cell Today, ANL

http://www1.eere.energy.gov/hydrogenandfuelcells/pdfs/program_plan2010.pdf

What are we looking for?

- **What can the DOE do for industry to aid in developing manufacturing technologies/capabilities in small Fuel Cell Systems and Hydrogen Storage Systems?**
- **What are the key or most important areas for DOE to be involved with?**
- **What is the timing required?**