Fuel/Vehicle Pathways to a Low-C World: What Kind of Policies are Needed?

Prof. Joan Ogden
University of California, Davis

Presented at Asilomar
July 31, 2009
Insights from Scenarios

• Meeting long term (2050) goals of 50-80% GHG emissions reduction will be extremely challenging

• Transportation is important. Deep cuts in Carbon require radical changes in transportation

• Need portfolio approach (efficiency, de-carbonized primary source for fuels, VMT reduction)

• Light Duty Sector will likely involve significant use of electric vehicles by 2050 (Battery EVs and/or FCVs)

• Given long lead time for radical change, need to start now to achieve major market share/fleet penetration by 2050.
We are looking for a revolution, but...

- Revolutionary technologies face market entry barriers that can’t be probably surmounted with economy-wide measures like carbon tax/C&T
  - High initial cost
  - Uncertainty (tech and policy)
  - Need for new structures of cooperation among stakeholders
  - Long time frame to commercialization
Commercialization Stages Of New Vehicle Tech: When does gov’t hand off to private sector?

- Picking winners v. missing opportunities?

Source: Cunningham, Gronich and Nicholas, presented at the National Hydrogen Association Meeting, March 2008.
How far should tech specific policies go into the “Valley of Death”?*

• Given the multi-decade time frame to major market penetration, need to keep innovation process moving

• Support multiple “networked demos” to launch revolutionary technologies, e.g.
  ✦ 1000 PHEVs in a city with a smart grid
  ✦ 1000 FCVs in a city with 20 H2 stations
  ✦ Pilot scale cellulosic ethanol
  ✦ Pilot scale CCS

• This costs some real $! ($10-100s millions per case). But still tiny compared to $ flows in energy system.
Breaking the “fuel du jour” paradigm

• Be willing to have some tech fail, but don’t abandon too soon.

• Embrace the long time constants inherent in the energy system. Public sector may have to stick with a portfolio of options longer than before, and spend more $.