Plug-In 2008

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Strategic Inflection Point (SIP)
Transformation of the $7,000B Energy Industry
What’s Going On

• Perceived decline of U.S.
• “Speculation”
• “Peak oil”
• Globalization
• China
U.S. and China Energy Consumption
Quadrillion Btu

- U.S.
- China
Tragedy of the Commons
At Stake For US:

• Economic security
• National security
Building

ENERGY RESILIENCE

is paramount
The Energy Industry Today

Residential Industrial Transportation

Not fungible (red wall)

Coal Renewables Nuclear Agrifuels Oil

Natural Gas
The New Energy Industry

Fully fungible (no red wall)

Dual-Fuel car

- Residential
- Industrial
- Transportation

- Coal
- Renewables
- Nuclear
- Natural Gas
- Agrifuels
- Oil
Fungibility requires use of electricity in transportation
Stickiness
How?
Definitions:

“Electric Car” = always relies on electricity

“Dual-fuel car” * = uses electricity first; gasoline when needed

* Aka PHEV
Factoid:

80% of U.S. drivers drive fewer than 40 miles per day

A dual-fuel car, with 40 miles electric range, can cut gasoline use by more than half.
Job 1

• Take a large step toward electricity in transportation
  – Convert PSVs* first
  – Aim at ≥40 mile daily electric range

* PSVs = Pickups, SUVs, Vans
• 100M PSVs on U.S. roads
• Conversion would save ~50% of imported petroleum
Key Issues

• Infrastructure
• Battery cost
• Carbon emission
• Production ramp
Enough Reserve Capacity For Over 50 Million D-F Vehicles

- Electrical Energy (TW hr)
- Number of Vehicles (millions)

Graph showing the relationship between electrical energy and the number of vehicles, with lines indicating spare capacity and PSV vehicles.
Battery Costs Decline

$/kWhr


50% / 5 years

F150 40 miles
Carbon Emission Reduced

Potential: ~50% reduction!
We Must Have a 10X Ramp

Units/millions

- Remaining PSVs
- Retrofits 10X faster ramp “Fast Adapters”
- New D-F vehicles (fast ramp)
- Automobile companies

Years
Lesson From the Development and Deployment of the Internet

**Force**

- Entrepreneurs
- Cross-Boundary Disruption
- Internal transformation
- Complementors (market devel)
- Government

**Examples from History**

- PC industry
- Apple ➔ Music industry
- Cable industry
- Multimedia
- Telecom industry

**Compete/Complement**
Inter-Industry Task Force

• Core members from electric utility, auto, high-tech industries and academia
• Goal: 10 million Dual-Fuel PSVs on roads in four years
• Present plan to new President on January 21, 2009
Rebuilding the Commons Requires Contributions From All

- Consumers
- Utilities
- Legal System
- Investment Community
Consumers:

(Short video clip here)
Consumers: Change of Behavior

- Tax credit (50%) for retrofitting PSVs
- Cost offset by ‘progressive’ licensing fees (for all vehicles, boats and planes)
Utilities:
Market Development

• Free electricity for use in D-F PSVs for 2 years
Legal System: Streamlined

• Special Federal court district
  – Intellectual property managed and adjudicated under its supervision

• Auto manufacturers
  – Adopt open source principles in re specs
  – Commit to not withhold warranties
Investment Community:  
Drive Innovation / Support Entrepreneurism

- Venture community leads
- SBA helps grow by providing loans and assistance to retrofitters
Approach to U.S. Government

- As a unified industry
- Resolve conflicts internally
Rebuilding The Commons

• Cooperative, problem solving attitude
  – Internet model

• Urgency
  – Industrial response to WWII
CLEAR AND PRESENT DANGER
There Could Be Blood