

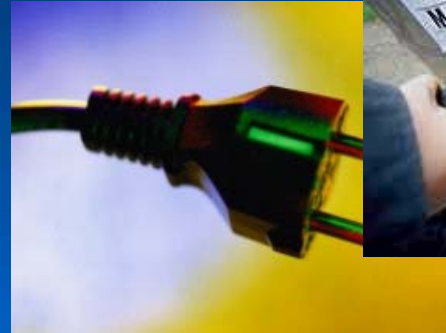
Transportation & “Electricity”- A View Of The Future

June 22, 2006

Background- Trends



- China and India
- 2005- \$70 barrel
- 2006- our “oil addiction”
- \$3+ @ pump...
- \$4+ by ?



- Growing calls for domestic alternative fuels
- Recognizing electricity as an alt. fuel



- Consumers demanding better MPG-



- Signs of consumer backlash to “muscle hybrids”?



- Today's auto “Ecoist” v 60's “enthusiast” (mpg. v speed)

Driving The Plug-In-Hybrid (PHEV) Movement

President Bush on Plug-In-Hybrids
 “*amazing technological breakthrough*”



EPRI

DaimlerChrysler- *Sprinter Van*



Mitsubishi

Ford- “Considering them”

GM- “Looking at PHEVs”

“Set America Free”
 “Plug In America”

Alliance To Save Energy
 Bud MacFarlane

Pataki
State-of-The-State

Frank Gafney

George Shultz

NRDC
Robert F Kennedy Jr

Pluginpartners.org

Bills incl. PHEVs

Alan Greenspan

James Woolsey
 DOE

Calcars.org

Plug-In-Hybrid
 Consortium

“National Commission on Energy Policy”

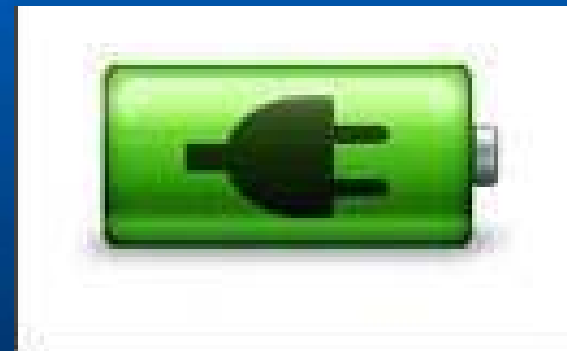
Battery Advances

CARB and CEC studies

LA Times, NY Times, Time Magazine, Business Week, IEEE Spectrum, Wall Street Journal, USA Today, Wired, Associated Press, Reuters, ABC, NBC, CBS, CNN, PBS, NPR and many more.

PHEV Technology Today

- Most Autos have hybrid programs
- Toyota “hybridizing” every carline
- Tomorrow’s PHEVs basically same as today’s hybrids w/ larger battery and plug (higher cost)
- DaimlerChrysler/EPRI Sprinter Van PHEV
- Next generation Toyota Prius?
- Batteries (cost, duty cycle) a challenge
- Lithium preferred chemistry
- Energy batteries needed for mobile and stationary “systems”

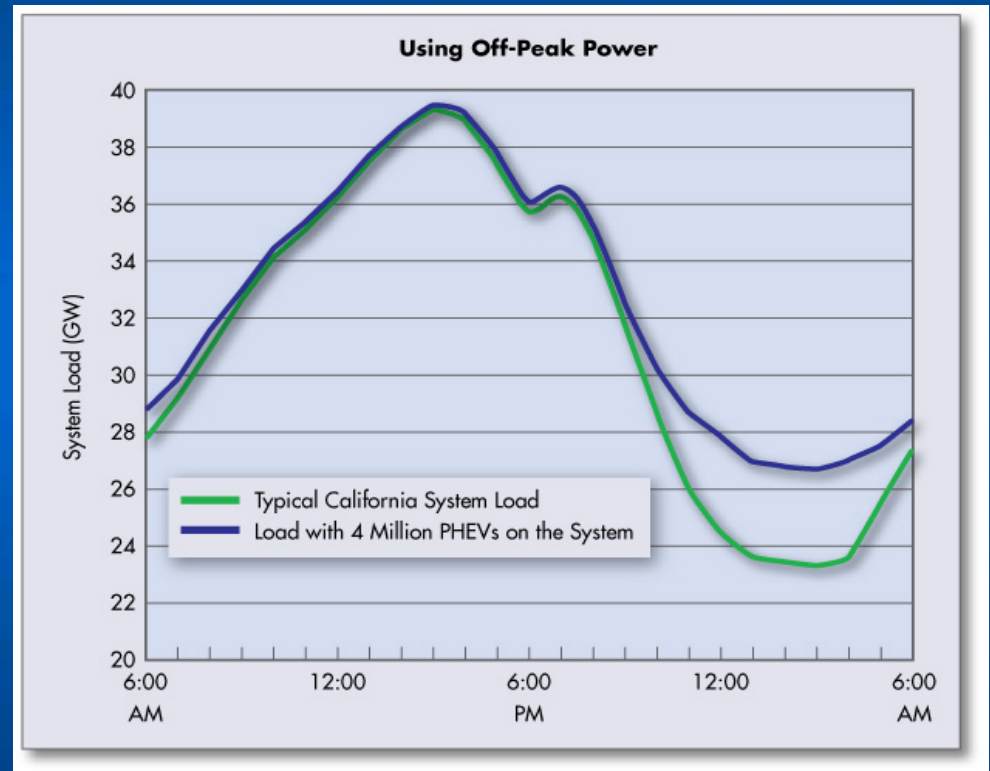


Overall PHEV Environmental Benefits

- Compared to best in class HEV today a PHEV 20–40 delivers-
 - 35% - 50% reduction in NOx and ROG
 - 45% - 65% reduction in petroleum
 - 30% - 45% reduction in greenhouse gases
- Flex-Fuel PHEVs:
 - Cellulosic ethanol PHEVs approach petroleum-free, “zero-carbon”
 - Beneficial “pairing”: plug in for local urban miles, cellulosic E85 for range extension fuel

Benefits of Plugging In

- Domestic, petroleum free, multiple feed stocks
- Excess off-peak capacity
- Western State power plants relatively clean and only getting cleaner over time (regulations, technology)
- Reduces urban air pollution (ZEV miles)
- Reduced GHG emissions
- Approx 30 % cost of petroleum (gge)



Source EPRI

And The Vision Tomorrow?

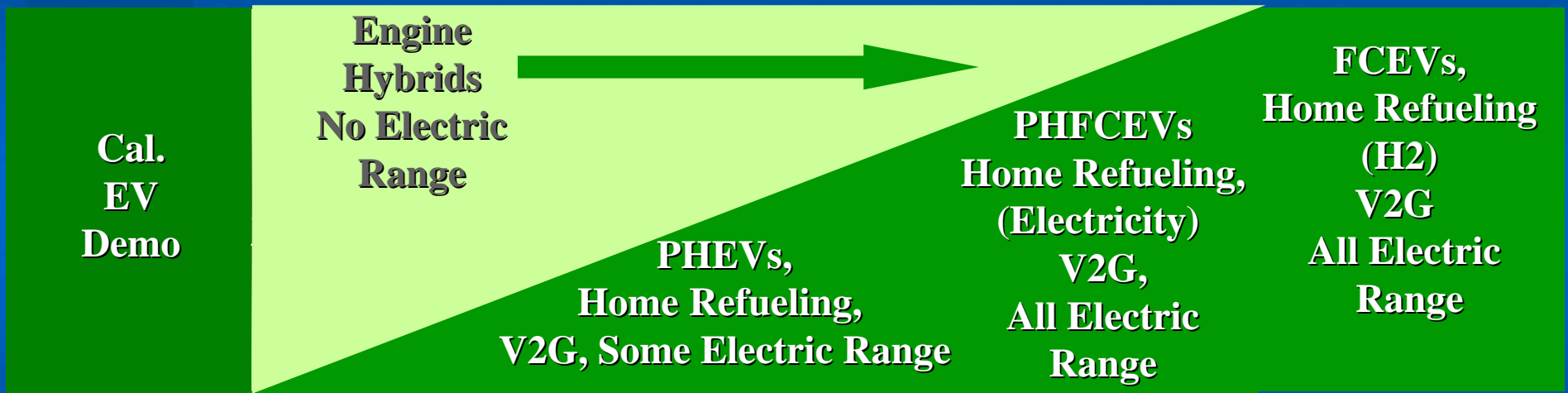
1990's

2000

2008

2010

2025+



Performance w/
little fuel economy

Performance And
fuel economy

Total Petroleum
Diversity

Plugging In To The Hydrogen Economy

Edison's Leadership



- 90's Edison EV built California's EV charging
- Today SCE has largest EV fleet nationally
- Evaluating first PHEV prototype- partnering w/ EPRI/DaimlerChrysler & SCAQMD
- 2003 built first "proof- of-concept" heavy duty PHEV utility boom truck- catalyst for 13 utility partnership w/Calstart & Eaton/International
- Leading new utility/EPRI PHEV medium duty utility boom truck program
- Operate nationally renowned EV Tech Center
- Constructing hydrogen fueling test station at Rosemead

SCE's Hydrogen Station

- Partnering w/Chevron
Hyundai & DOE
- Five year program
- Breaking ground July
- Commissioning 12/06
- Up to 10 Hyundai FCEVs
- Future PV addition



Conclusions

SCE recognizes the;

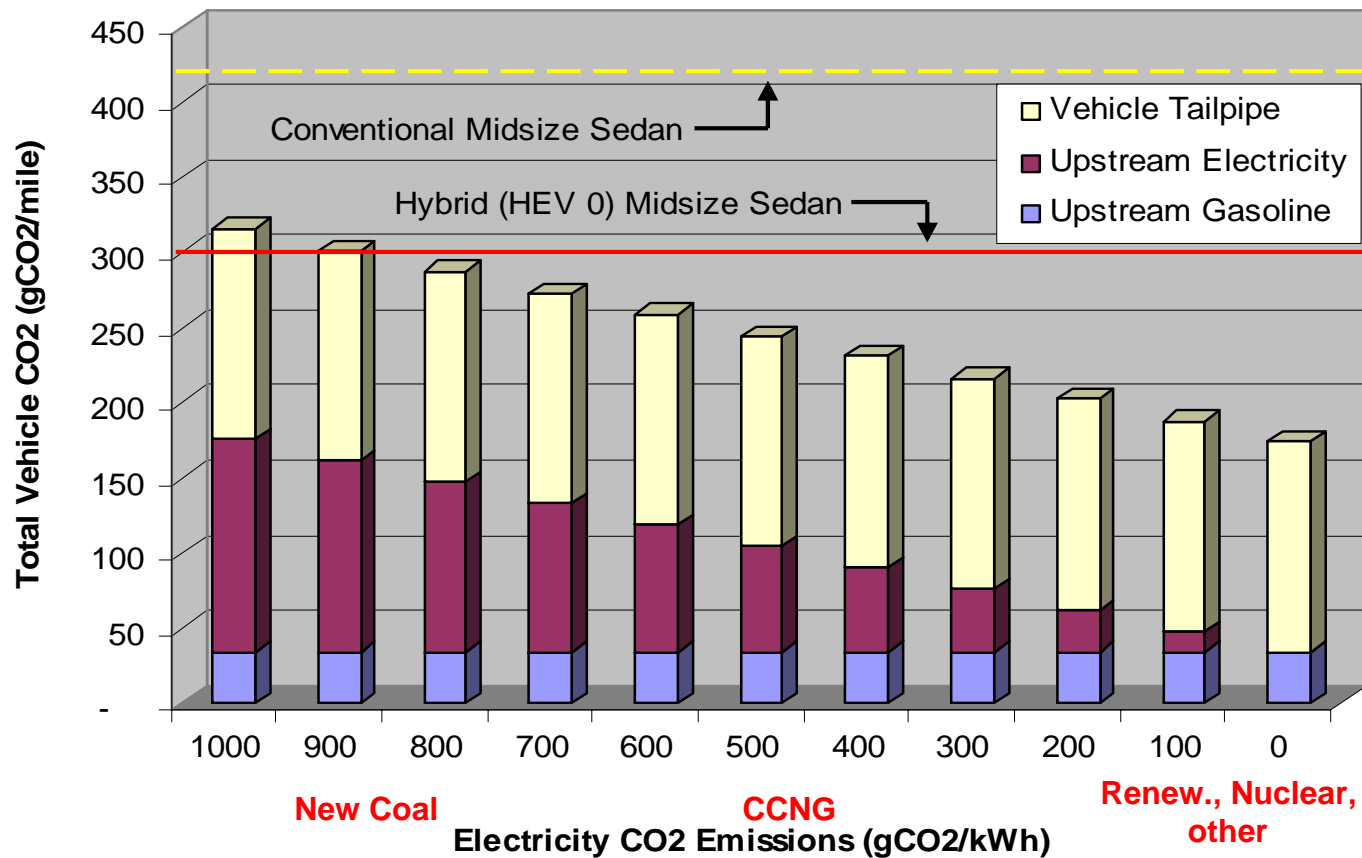
- critical need for the US to reduce it's imported oil dependence
- growing importance for transportation to reduce GHGs and emissions
- utility has a role to play as an alternative fuel provider

**SCE believes grid electricity,
the utility industry's existing infrastructure
and it's excess off-peak capacity represents a
critical national energy security asset**

Appendix

Grid Impacts- CO₂ “Well to Wheels”

PHEV 20 CO2 Emissions Breakdown



CA – average = 250 – 300 grams per kWh
 CA - marginal today = 330 grams per kWh and US in 2050
 CA in 2050 = about 150 grams per kWh

Source: EPRI