

The Electric Grid- A Highway To Cleaner Air At POLB



Faster Freight- Cleaner Air Conference

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❖ EV Technical Center



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Setting The Transportation Scene

- **Oil's in the driver's seat** (*Energy Security, terrorism, economic impact, environmental impact*)
- **Consumer reaction** (*fuel economy preference, popularity of alt. fuels, rise of patriotism, rise of activism*)
- **Population growth** (*transportation congestion, urban planning, efficient goods/people movement driving "sustainable" transportation solutions*)
- Ever present **air quality challenges** (*diesel emissions, ports, airports, environmental justice, etc*)
- Propulsion technology trending towards "**energy efficiency**" (*reduced petroleum consumption, reduced GHG emissions and reduced "tailpipe" emissions*)
- Growing **GHG concerns** (*regional focus, regulations, Congressional focus?*)



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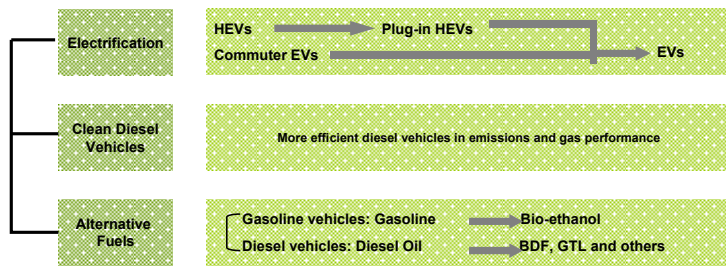


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Improving “Energy Efficiency”... For The Global Community



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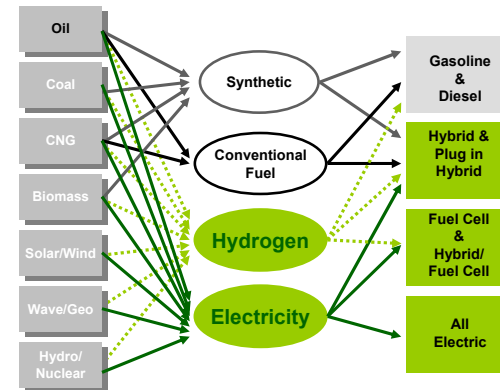


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Source: METI EVS-22, Japan



Improving Fuel Diversity... For Our National Security



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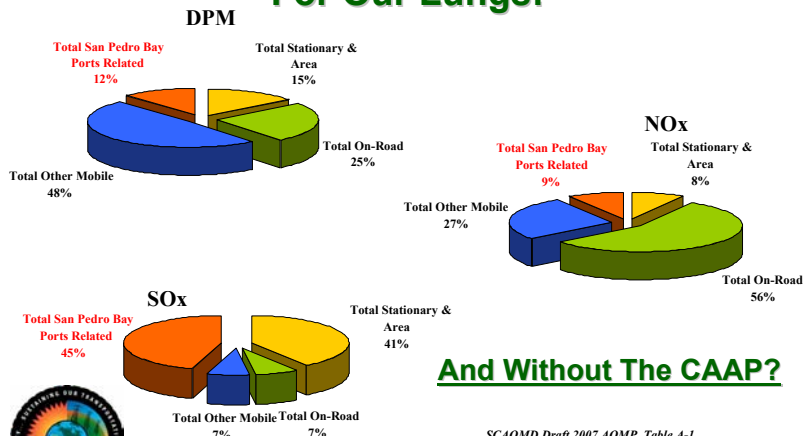


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Source: Toyota and SCE



And Improving Local Air Quality... For Our Lungs!



And Without The CAAP?

SCAQMD Draft 2007 AQMP, Table A-1



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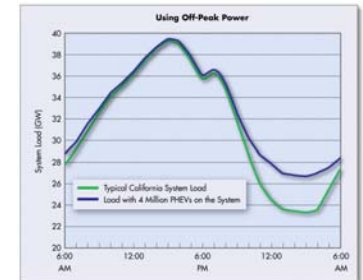
Benefits Of “Fueling” From The Grid

Energy Security/Environment

- Domestic, petroleum free
- Virtually only alt. fuel infrastructure that’s ubiquitous today
- Has existing and excess off-peak capacity
- Generation cleaner over time

Utility

- Generation asset utilization? (efficiency by “filling in” night time)
- Utilization of renewables?
- Clean air and GHG attainment



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**But Doesn't Plugging In
Shift Emissions From
"Tailpipe & Funnel"
To Power Plant?**

Not Really!



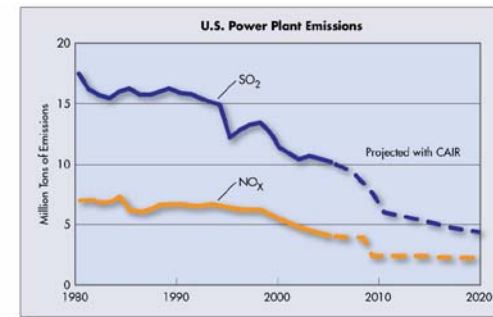
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Regulation Driving Down NO_x and SO_x Both At Power Plant And Tailpipe



Source: U.S. Environmental Protection Agency



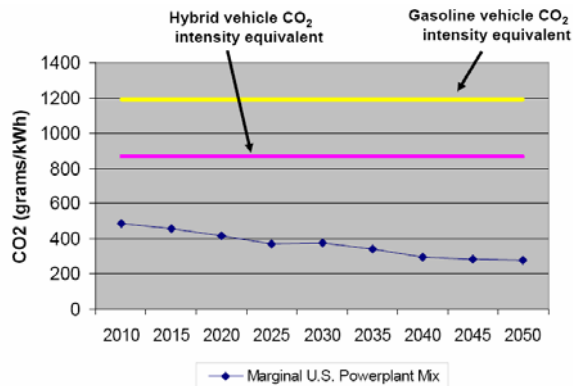
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National CO2 Impacts of Grid-Connection For Example: PHEVs (New EPRI/NRDC Study)



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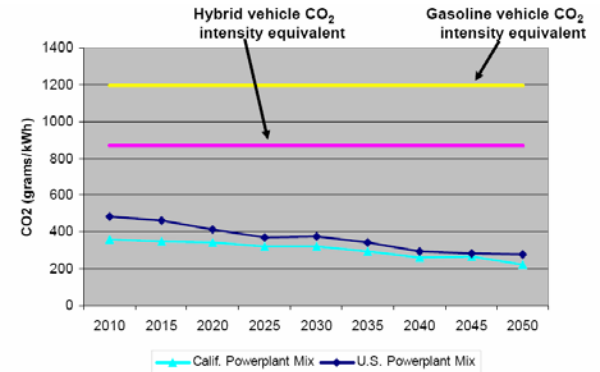


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...And Adding California For Example: PHEVs (New EPRI/NRDC Study)



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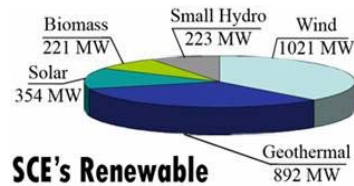
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“Green Energy” Is Important To SCE

- Currently serve **17%** of our customers' needs with renewables (excl. major hydro)
- Lead US in renewables delivery, procuring more than 13 billion kilowatt-hours per year (more than any other U.S. utility or state except for California!)
- Our own renewable portfolio currently delivers more than 2,700 MWs
- SB 107 RPS requires **20% by 2010**



SCE's Renewable Energy Portfolio



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Goods Movement “Plug in” Solutions



Shipside

Cold Ironing
Electric Dredging
E-TRUs
Infrastructure upgrades



Go handling
Gantry Cranes
Reefers
Tractor Movers
Handler Loads
LDVs
Yard Trucks
Infrastructure Upgrades
Switcher Locomotive
(Green Goat)



Delivery

TSE
E-TRUs
Rail
Forklifts
E-Buses
Alameda Corridor



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Near Term Plug In Demonstration Opportunities?



A Plug in Yard Hostler
SCE/EPRI conduction Feasibility study



Foss Maritime preparing to build/operate
world's first hybrid tugboat!



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How SCE Supports POLB Electrification

- **“Obligation to serve”**- adequate, safe, reliable infrastructure
- Active **leadership in EPRI’s IWC** working on and submitting a “plug” standard to NEC
- **Testing, evaluation and demonstration** of electro-drive technologies for the port (partnerships with EPRI, SCAQMD, etc)
- **Expertise** with transportation solutions addressing air quality: forklifts, yard trucks, TSE, E-TRU, and infrastructure consultation
- **Building partnerships** with OEMs, up fitters, Fed/State air quality regulators, others:
 - contacts and industry alliances
 - funding for demonstration projects



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Summary

- **Energy Security, GHG and Emissions** are driving an unprecedented development of sustainable (energy efficient) transportation solutions
- “Fueling” **from the grid is viable** today especially off-peak
- Petroleum, GHG and Emissions **benefits are significant** (not so for most other “alternatives”)
- **SCE is a committed and proven leader** in support of sustainable solutions (EE, Renewables, ET operations, etc)
- Working **through partnerships** today, SCE is helping the POLB realize a new and cleaner air future for all of Southern California



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Thank You



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Southern California Edison (SCE)

- A regulated business unit of Edison International (EIX)
- Electric only utility
 - 4.5 million customers
 - 50,000-square-miles
 - 22,889 MW peak load
- Community Served
 - 428 cities and communities
 - 11 state counties
 - 13 million residents



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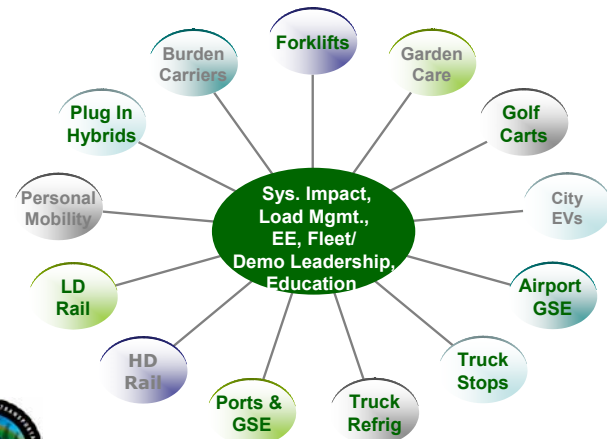


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ET's Role And Focus



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Regulation/Legislation/Political Focus (Energy Security, GHG, Emissions)

- o AB 32 (GHG reduction)
- o AB 1493 GHG Standards for New Cars & Trucks
- o New Low Carbon Fuel standard (LCFS)
- o 2007 SIPs (with tougher ambient standards)
- o ZEV Requirements (including hybrids and PHEVs)
- o CA Alt Fuel Goals: 20% by 2020, 30% by 2030
- o AB 1007 Alternative Fuels Plan
- o PIER (Transportation inclusion)
- o CA Goods Movement Plan
- o Port electrification
- o Diesel Idling Reduction Rules
- o TRU Rules
- o Industrial Vehicle Rules



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