




# **PHEVs and California's Regulatory Structure**

*Environmentally beneficial load  
growth and utility profit in California*



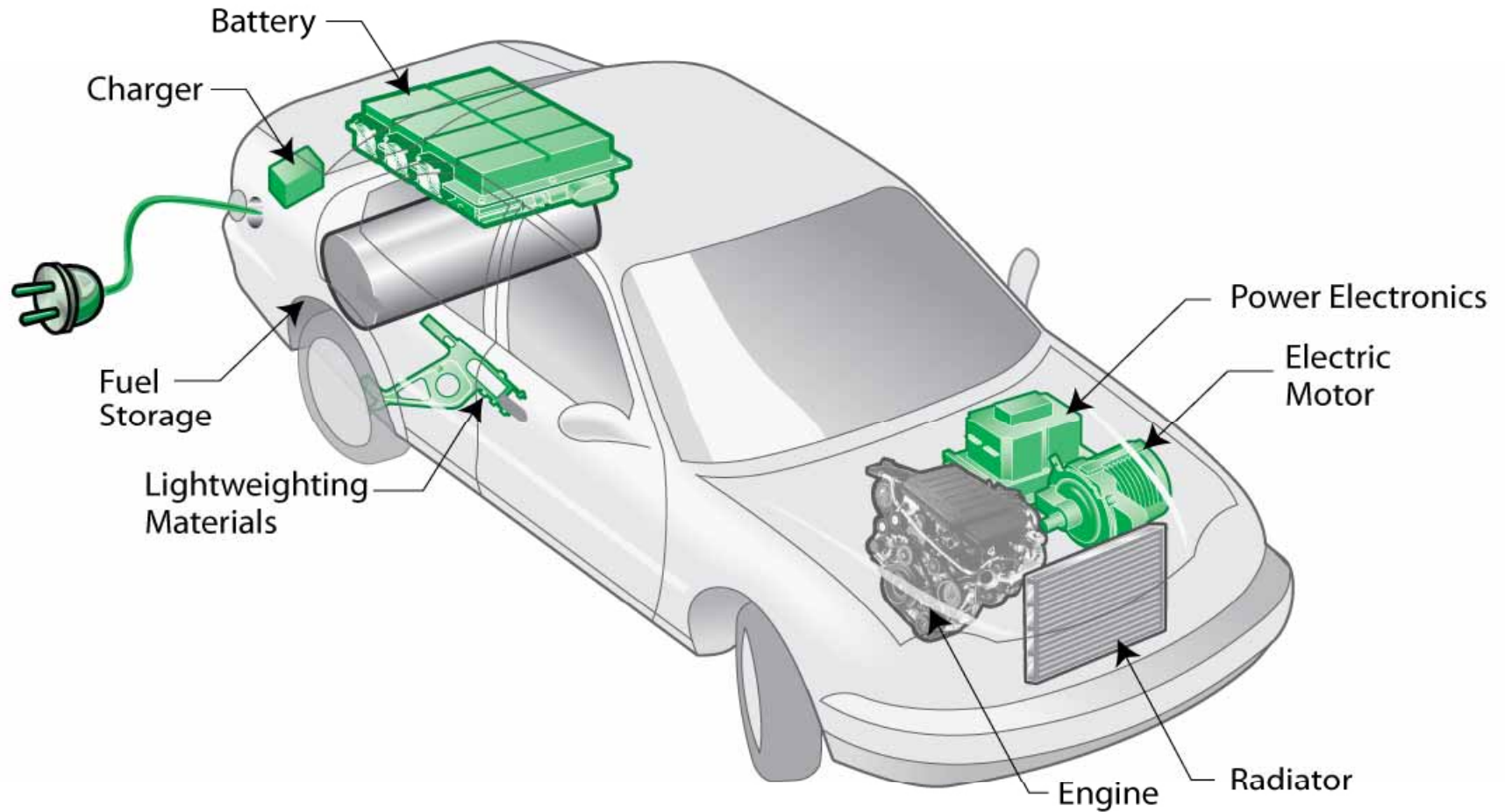
AESP 18th Annual Conference  
January 31, 2008

Natalie Mims  
Rocky Mountain Institute

A new generation of hybrids is on the horizon



# Plug-In Hybrid Electric Vehicles (PHEV) are a revolutionary technology



# The environmental benefits are significant



There will also be significant consumer benefits

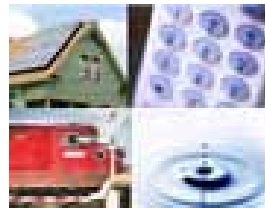


# Utilities also stand to come out ahead





One concern for utilities will be regulatory issues



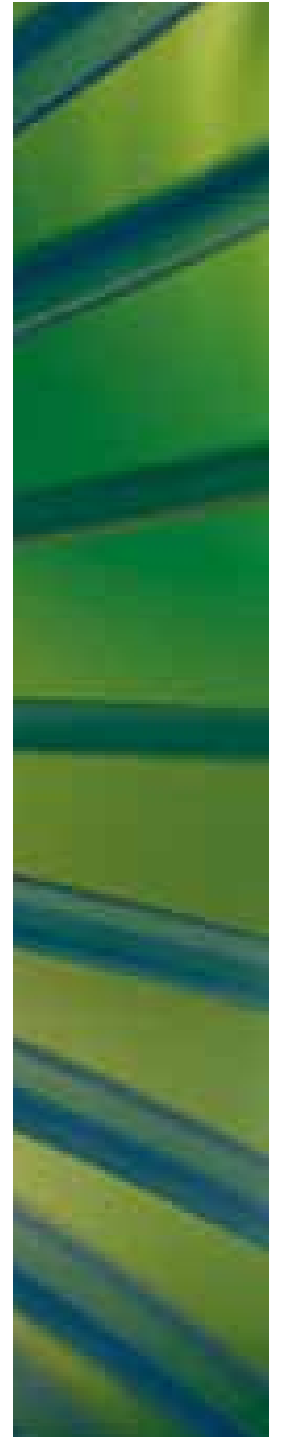
California Public  
Utilities Commission



 *California Environmental Protection Agency*  
**AIR RESOURCES BOARD**

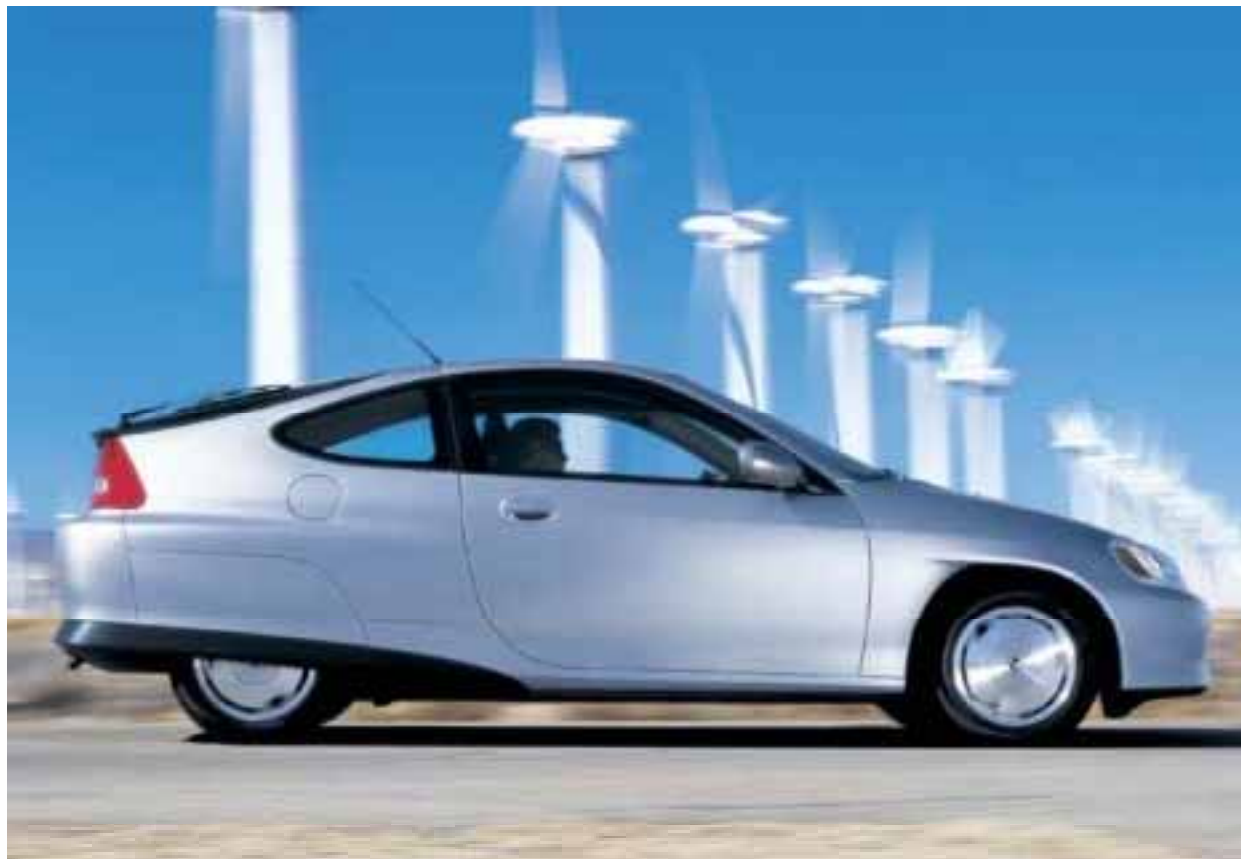


People in the energy industry will have to prepare for these changes

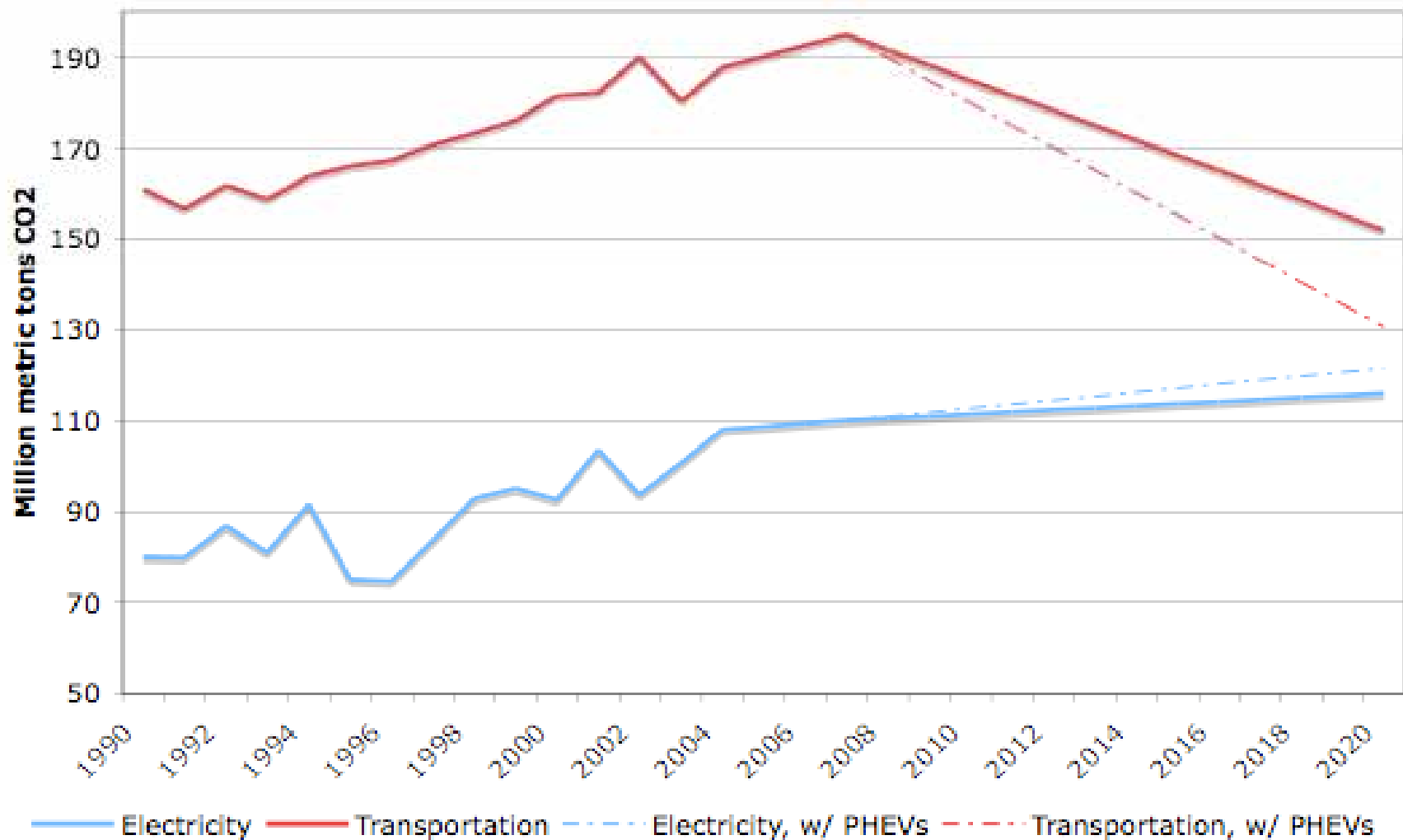




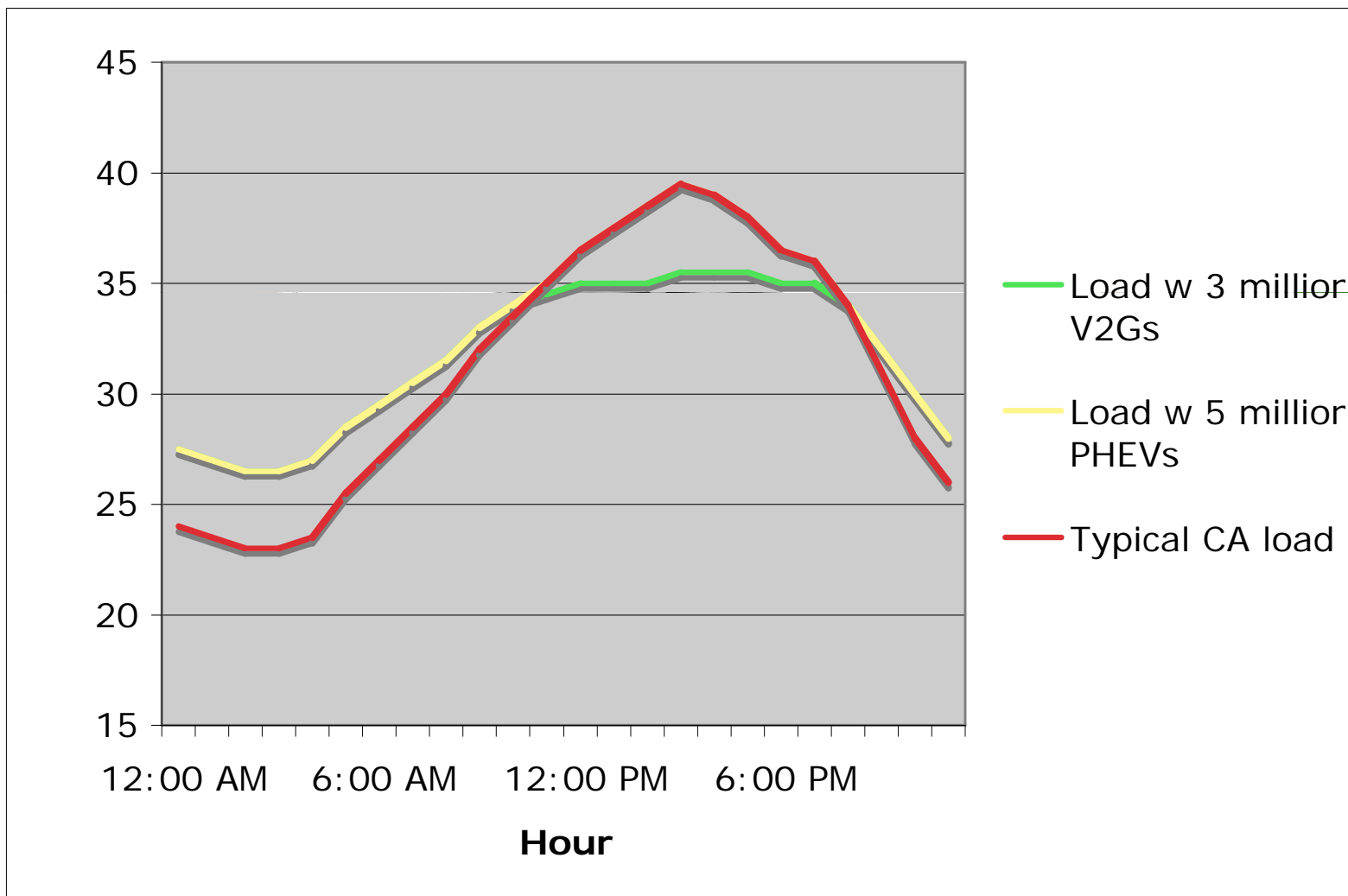
Utilities can benefit from PHEVs by using them to firm intermittent renewables



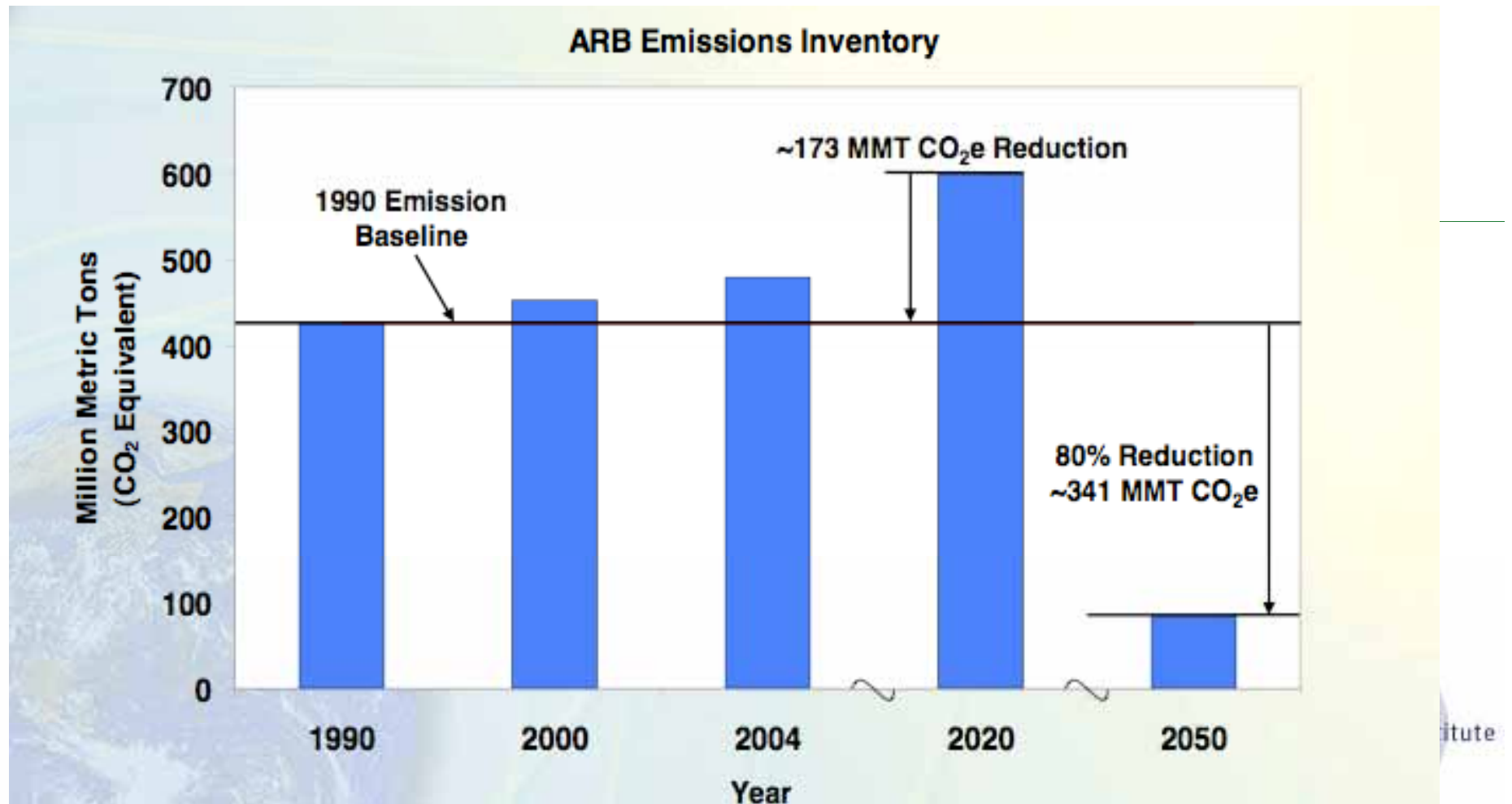
# Utilities will have an increased load...



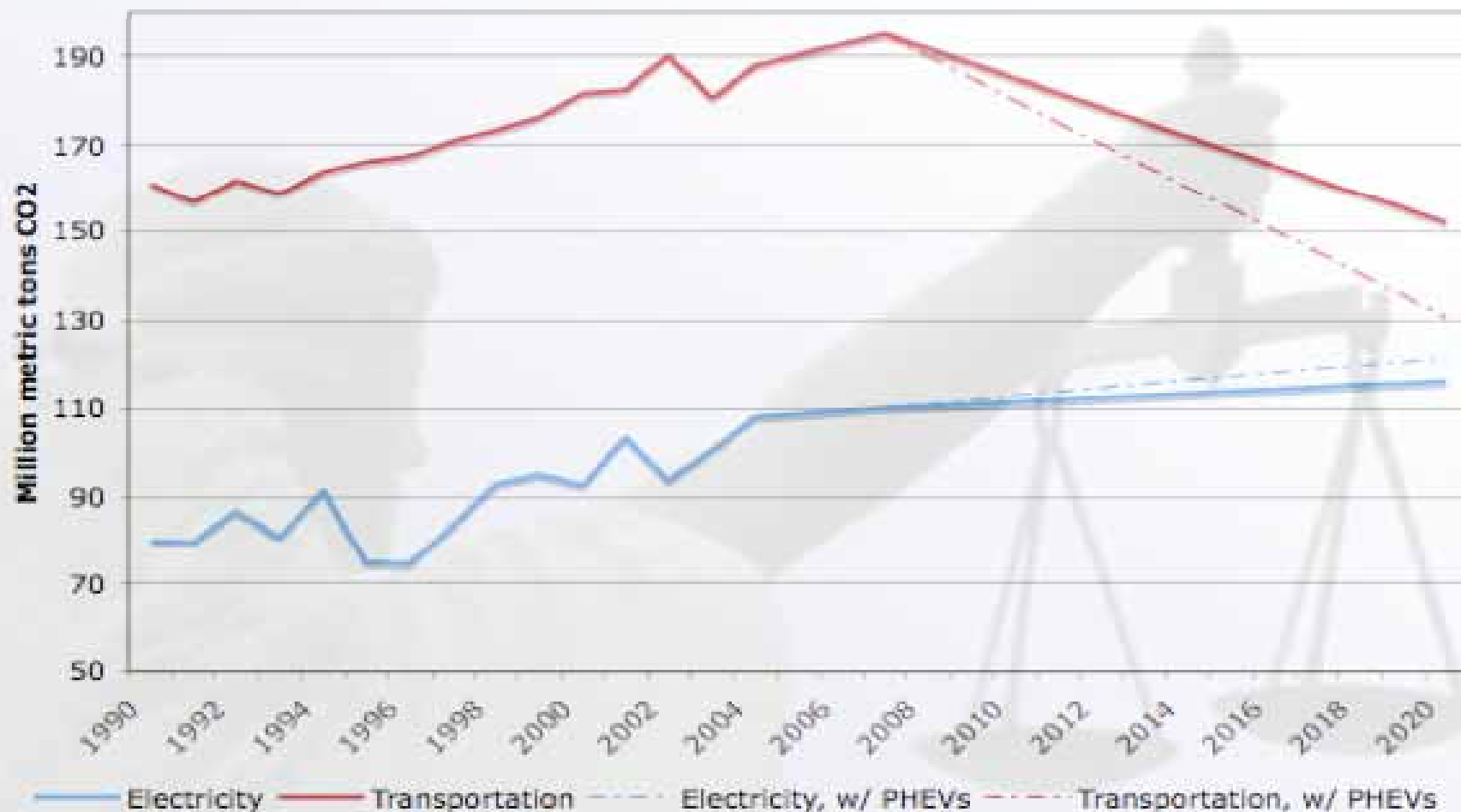
# Increased load may be useful to utility



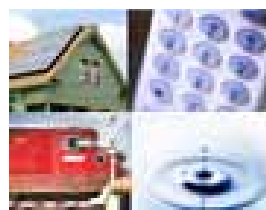
But it will also create a challenge with new emissions regulations and existing regulatory structure



Utilities want to find a way to handle this increased load without being penalized



There are several possibilities that might help utilities avoid penalties



California Public  
Utilities Commission



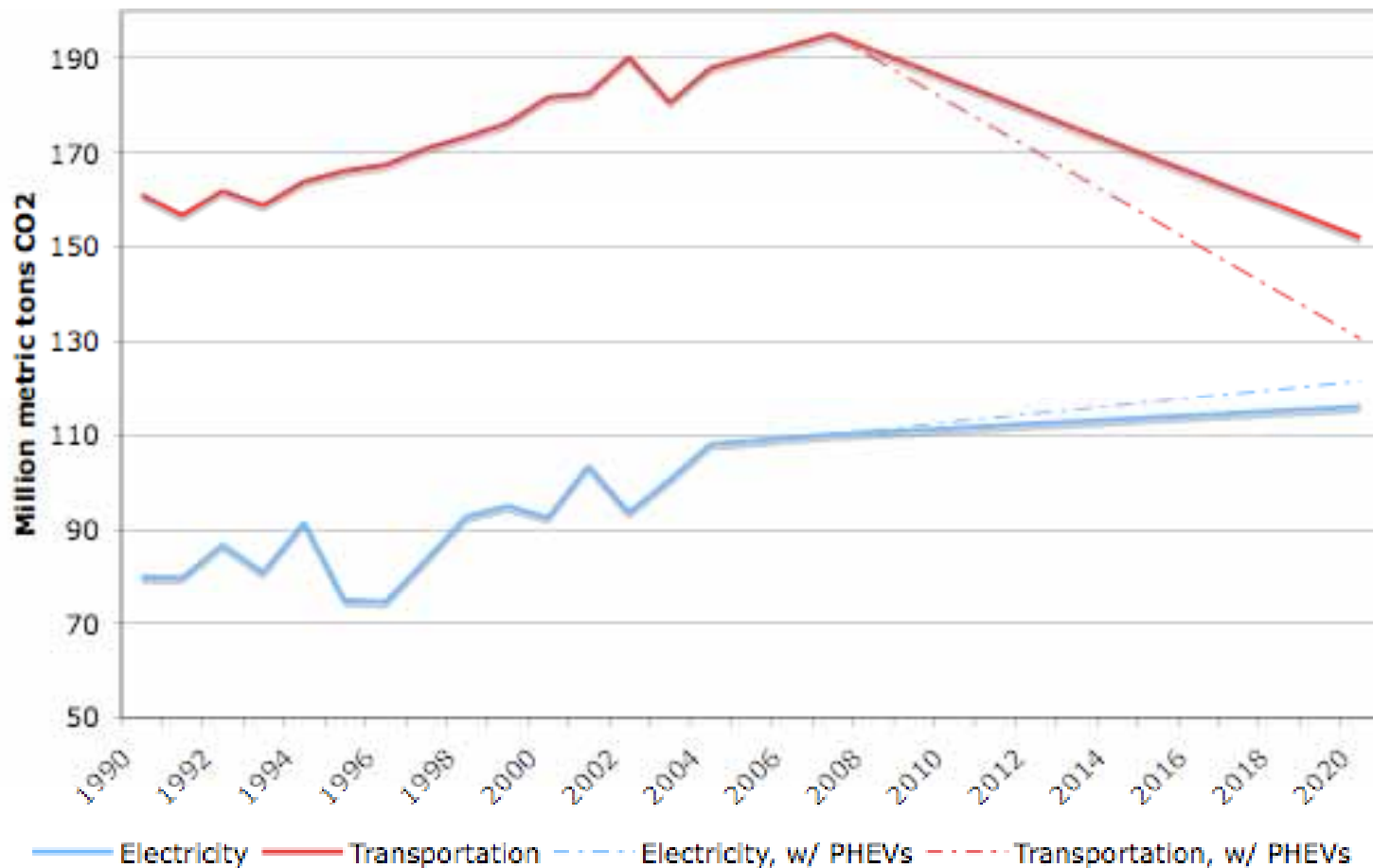
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nstitute

# Three possibilities: replacing decoupling, independent metering, and GHG emission credit allocation





What would it mean to replace decoupling altogether?



# Replacing decoupling creates utility profits for load growth

% Change in Sales	Revenue Change		Impact on Earnings		
	Pre-tax	After-tax	Net Earnings	% Change	Actual ROE
2.00%	\$3,619,015	\$2,352,360	\$12,252,360	23.76%	13.61%
1.00%	\$1,809,508	\$1,176,180	\$11,076,180	11.88%	12.31%
0.00%	\$0	\$0	\$9,900,000	0.00%	11.00%
-1.00%	-\$1,809,508	-\$1,176,180	\$8,723,820	-11.88%	9.69%
-2.00%	-\$3,619,015	-\$2,352,360	\$7,547,640	-23.76%	8.39%

# Replacing decoupling is not recommended

- Replacing decoupling creates financial incentive for load growth
- Also removes IOU's incentive for efficiency, unless replaced with cost recovery and incentives
- Likely that replacing decoupling would result in less overall efficiency for State

# The next possibility is independent metering



# Independently metering allows utility to track PHEV electric consumption

- Utility can create a separate PHEV rate class
- Enables:
  - Accurate information and data tracking
  - Utility control for system optimization
  - Different rate structures



Independently metering is necessary -  
but not sufficient



Independent metering  
creates a financial  
incentive but does not  
address increased  
emissions

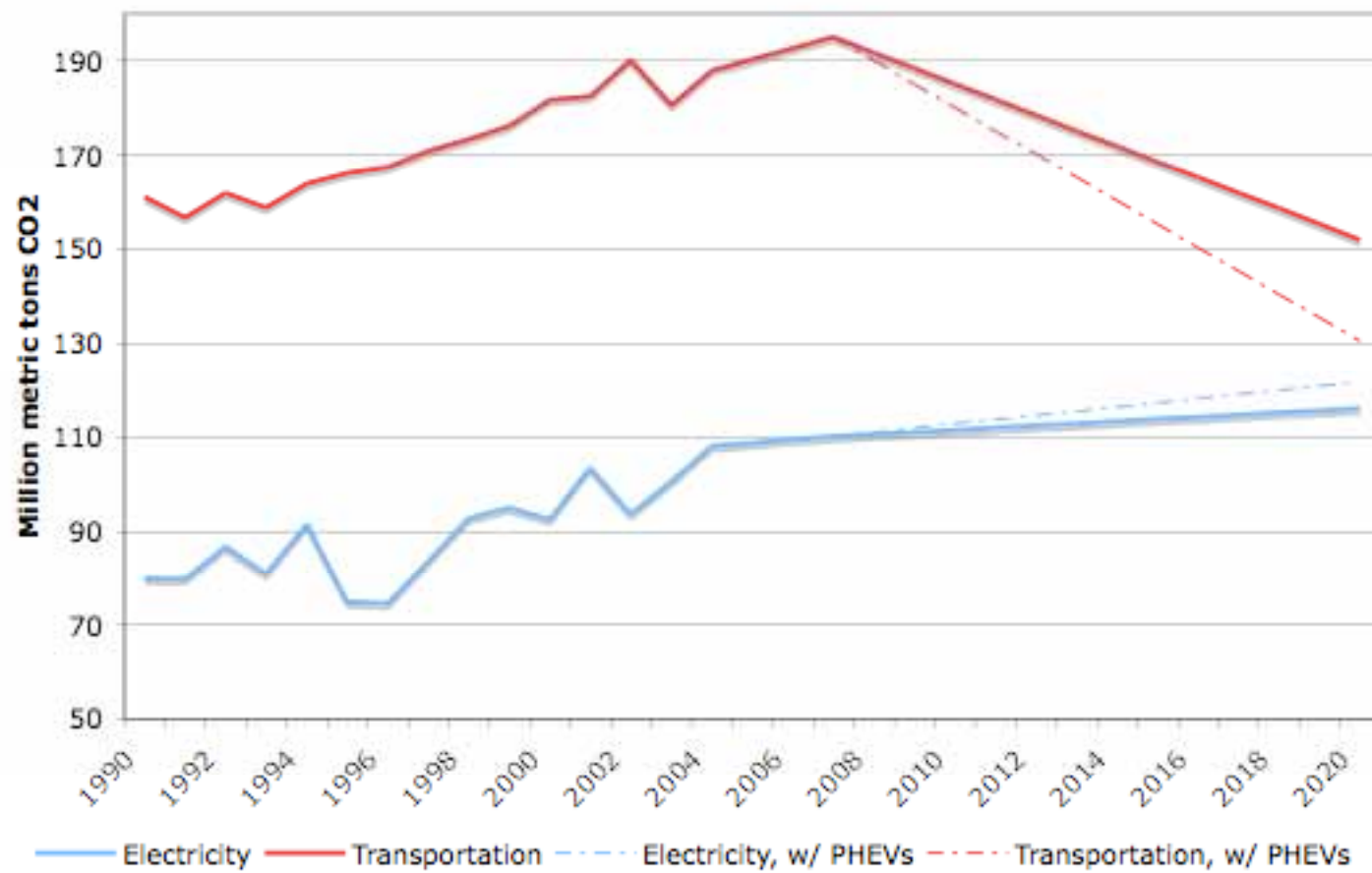


## GHG emission credit allocation to utilities is a strong possibility to avoid penalty

- Determining actual allocation of emission allowances is dependent on California's GHG reduction strategy
- Provide utility sector with sufficient GHG offsets to cover increase in emissions from PHEVs
- Allocate remainder of GHG offsets to transportation sector



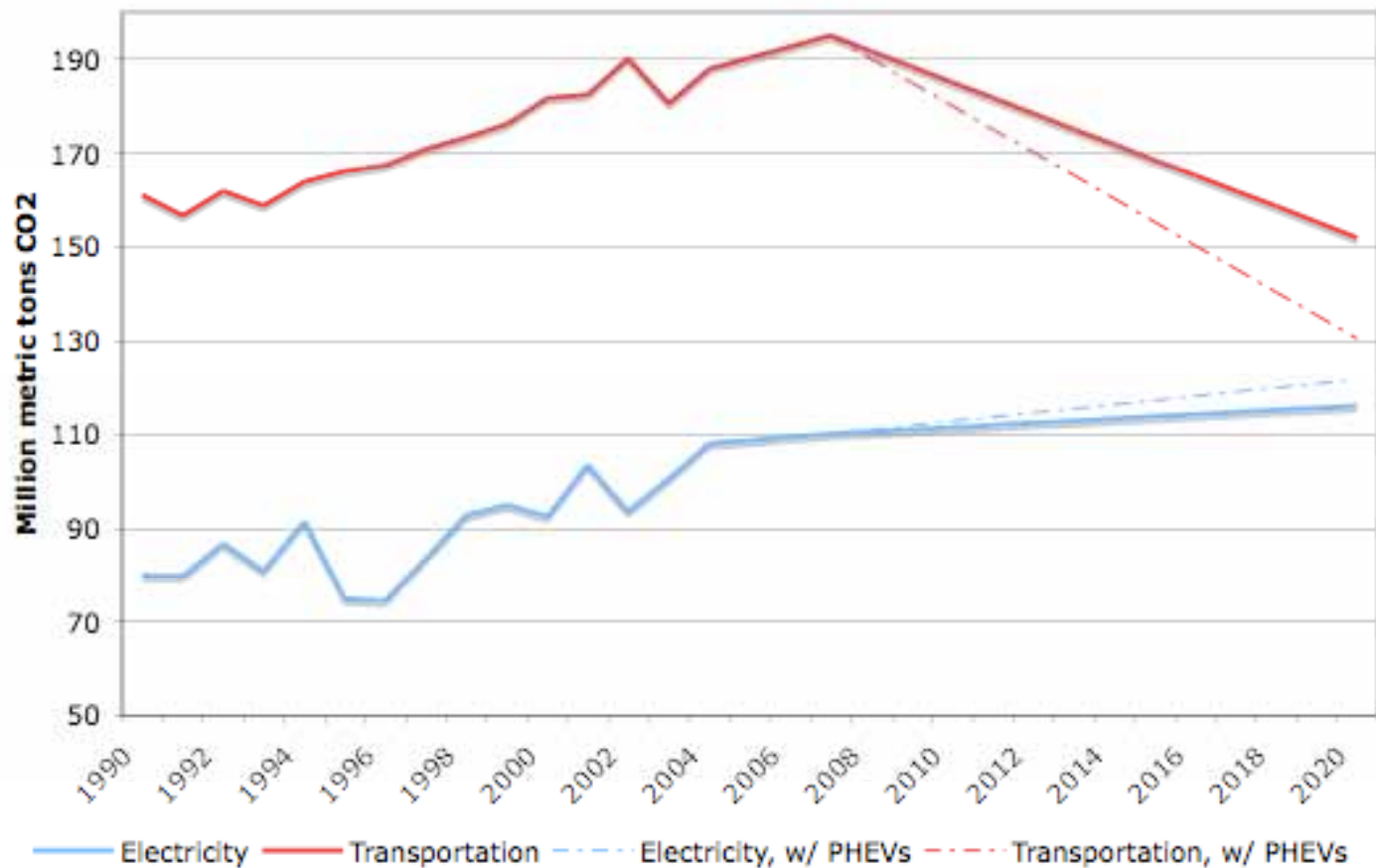
# GHG emission credit allocation addresses the disparity between transportation and electric sector emissions



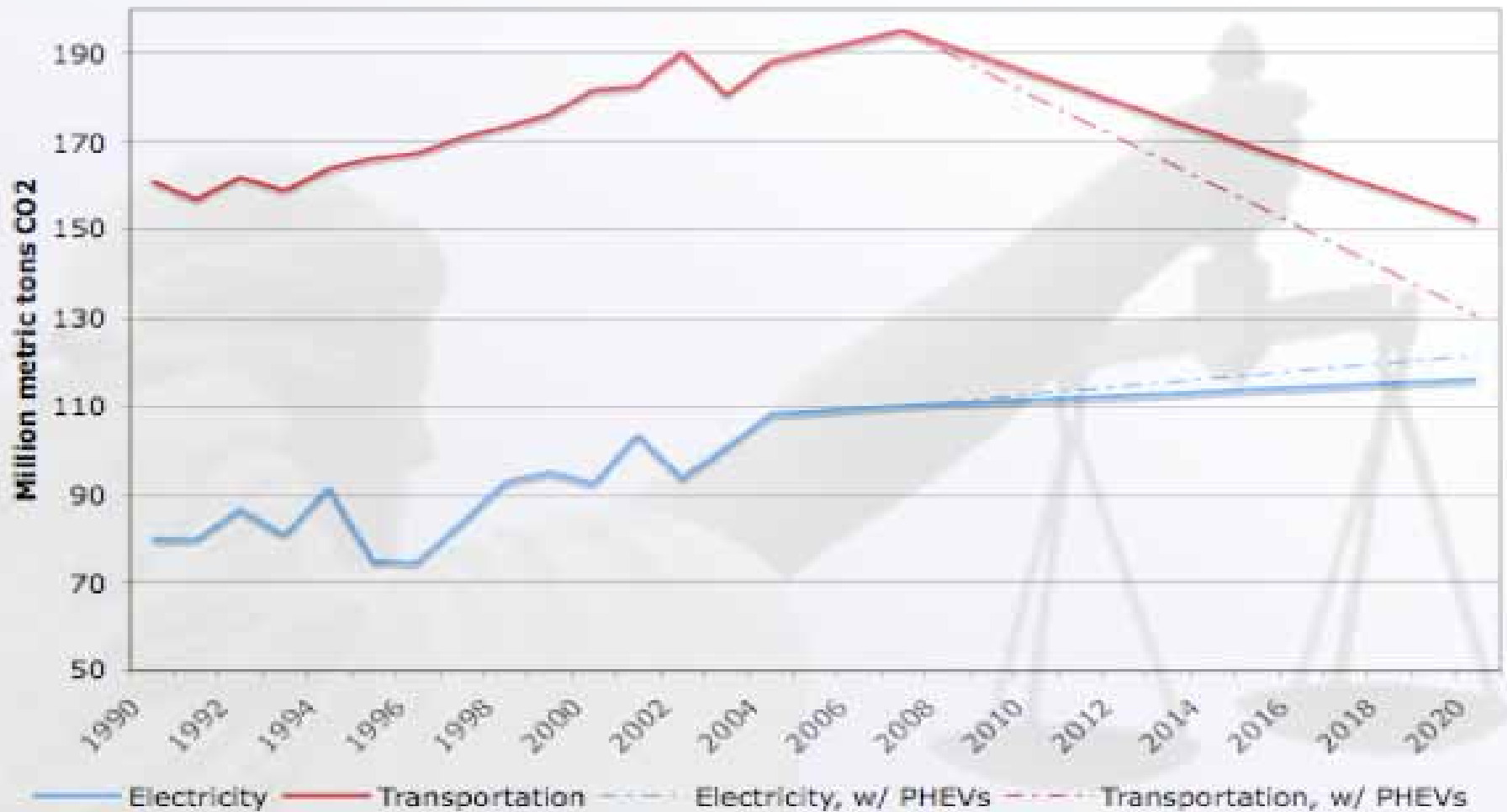
# GHG credit allocation is a strong solution

Law/Regulation	Million metric tons CO2-equivalent
Global Warming Solutions Act	??
Emissions standard	??
Pavley Act	32
Low carbon fuel standard	15-20
<i>30% PHEV penetration</i>	22
<i>50% PHEV penetration</i>	36

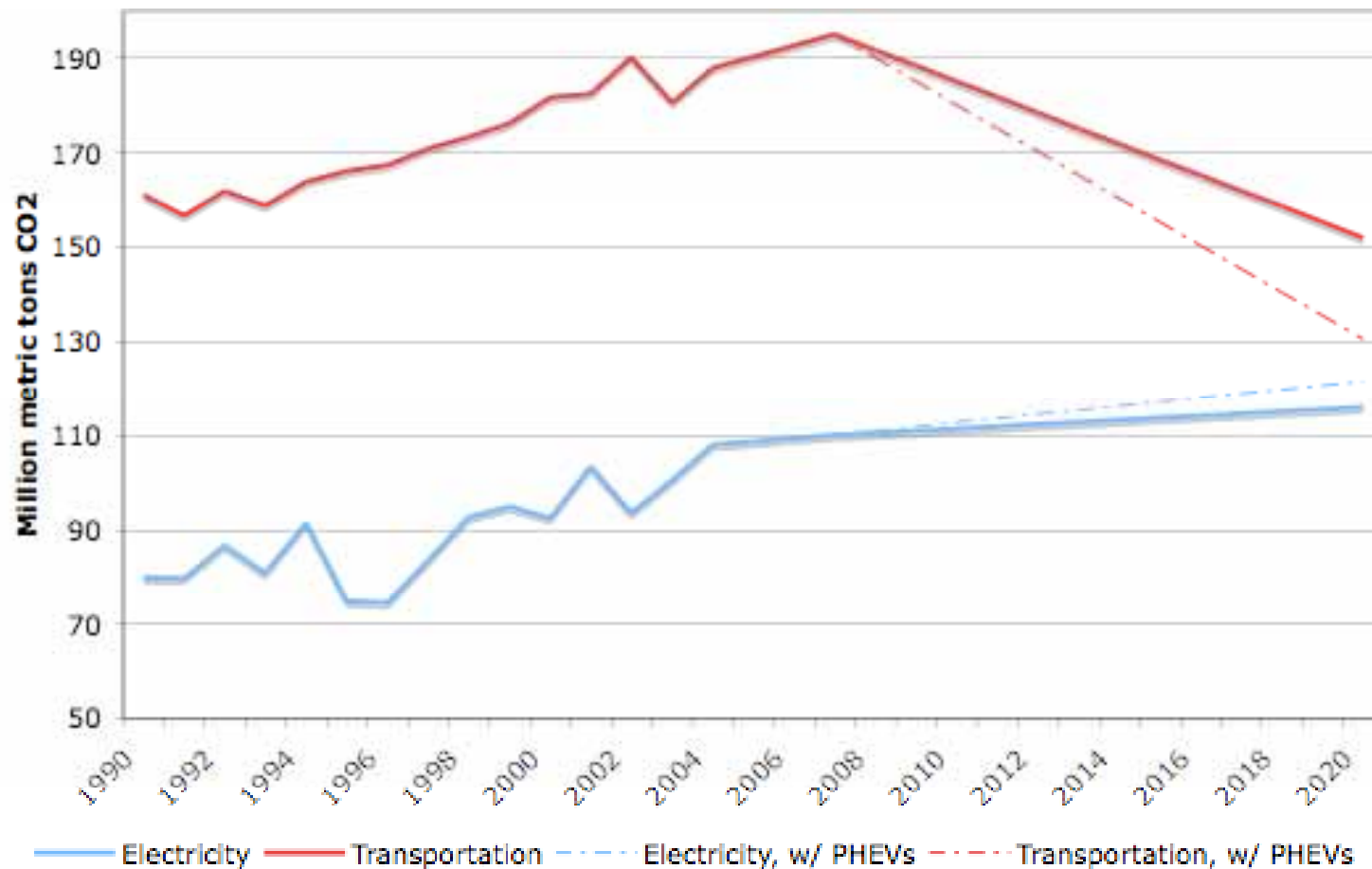
We are looking at these issues because of the impact PHEVs will soon be having on the energy sector



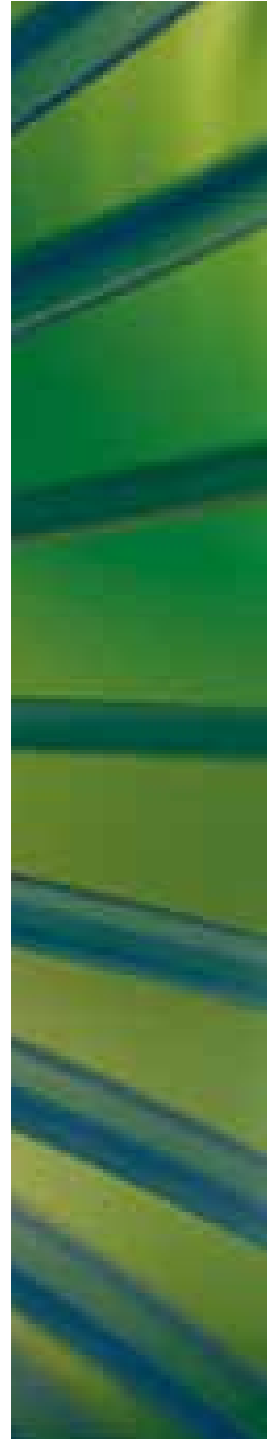
With new emissions regulations,  
utilities want to avoid penalties



# We discussed three important solutions



Adoption must be encouraged



The introduction of PHEVs is a huge environmental opportunity

