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# Shifting Energy use toward Domestic Sources in U.S. Transportation using Natural Gas and Electricity

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*New England Governors and Eastern Canadian Premiers' Conference on  
Alternative Fuel Vehicles*



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- **About C2ES**
- **PEV Dialogue Initiative ([www.c2es.org/initiatives/pev](http://www.c2es.org/initiatives/pev))**
- **Market State of Play: Sales, Trends, Expectations**
- **Federal Policy Update**
- **State Activity**
  - Plug-in Electric Vehicles (PEVs)
  - Natural Gas Vehicles (NGVs)
- **Policy Outlook**



- **Independent, nonpartisan, nonprofit organization**
- **Working to advance strong policy and action to address the twin challenges of energy and climate change**
- **Founded in 1998 as the Pew Center on Global Climate Change**
- **Became C2ES in 2011**
- **Named world's #1 environmental think tank in 2011 (Univ. of Pennsylvania survey)**

# Business Environmental Leadership Council (BELC)



# PEV Dialogue Initiative

Focused on 3 challenges – (1) ensuring PEV owners can conveniently plug in, (2) safeguarding the reliability of America’s electrical grid, & (3) informing car buyers



- **C2ES convened the PEV Dialogue Group in early 2011**
  - Leaders from public and private sectors and NGOs
- **Initiative aims to accelerate PEV deployment nationwide by focusing on:**
  - Regulatory environment
  - Charging infrastructure
  - Consumer awareness
- **Doesn't duplicate other efforts and avoids favoring certain PEV technology**
  - Added more members over time to capture broader representation (e.g., Rocky Mountain Institute)
  - Takes into account work of other groups through overlapping membership



A123 Systems  
AASHTO  
Argonne National Laboratory  
The Alliance of Automobile Manufacturers  
Better Place  
Center for Climate and Energy Solutions  
City of Raleigh  
Daimler  
U.S. Department of Energy  
Edison Electric Institute (EEI)  
Electric Drive Transportation Association (EDTA)  
Electrification Coalition  
Electric Power Research Institute (EPRI)  
General Electric  
General Motors  
Georgetown Climate Center

Indiana Utility Regulatory Commission\*  
Johnson Controls Inc.  
Metropolitan Washington Council of Governments  
Michigan Public Service Commission\*  
National Wildlife Federation  
North Carolina Department of Transportation  
Northeast Utilities System  
Natural Resources Defense Council  
NRG Energy  
PJM Interconnection  
Rockefeller Brothers Fund  
Southern California Edison  
U.S. Department of Transportation  
University of Delaware  
Washington State Department of Transportation

*\* The role of these group members must be limited to technical contribution because of their organizational function.*



- **PEV Dialogue Group identified major market barriers and collaborated on Action Plan development**
  - Provides a roadmap for coordinated public and private sector action at state and local levels to ensure PEV owners can plug in their cars without overtaxing the grid
- **Action Plan lays out steps to enable a national PEV market by:**
  - Creating a Consistent Regulatory Framework Nationwide
  - Optimizing Public and Private Investments in Charging Infrastructure
  - Facilitating PEV Rollout
  - Educating Consumers





- **Identified 4 focus areas**
  - Connect PEV Leaders around the Country
  - Advise Individual PEV Efforts
  - Driver Behavior Analysis
  - Consumer Education Strategy
- **To date, 3 projects underway with key stakeholders**
  - Conduct PEV Stakeholder Connection Initiative with U.S. DOE's Clean Cities
  - Run multiple PEV-related workshops with U.S. DOT and 8 state DOTs
  - Authored literature review for and advise Northeast Electric Vehicle Network
- **In discussions with key stakeholders on work related to driver behavior analysis and consumer education**

# Market State of Play

A small but growing market for alternative fuel vehicles driven by business opportunity and public policy



- **51,728 medium- and heavy-duty NGVs on the road in 2010**
  - Though up 360% since 2003, NGVs still make up less than 1% of total truck sales
  - Plurality of vehicles are buses (42%)
  - Only 6% of vehicles are LNG, 94% are CNG
- **Plug-in electric vehicles are off to a good start**
  - About 11,000 passenger plug-in electric vehicles (PEVs) on the road in 2010
  - 2011 sales were almost 18,000 for Chevy Volt and Nissan LEAF
  - 2012 PEV sales are over 25,000 and could hit 35,000 by the end of year
  - PEVs makeup about 0.3% of total auto sales



- **Macro Opportunities**

- **Environment:** Vehicles emit less greenhouse gas emissions and criteria pollutants
- **Security:** Vehicles run on almost entirely domestic energy source
- **Jobs:** Advanced vehicles create jobs in new energy economy

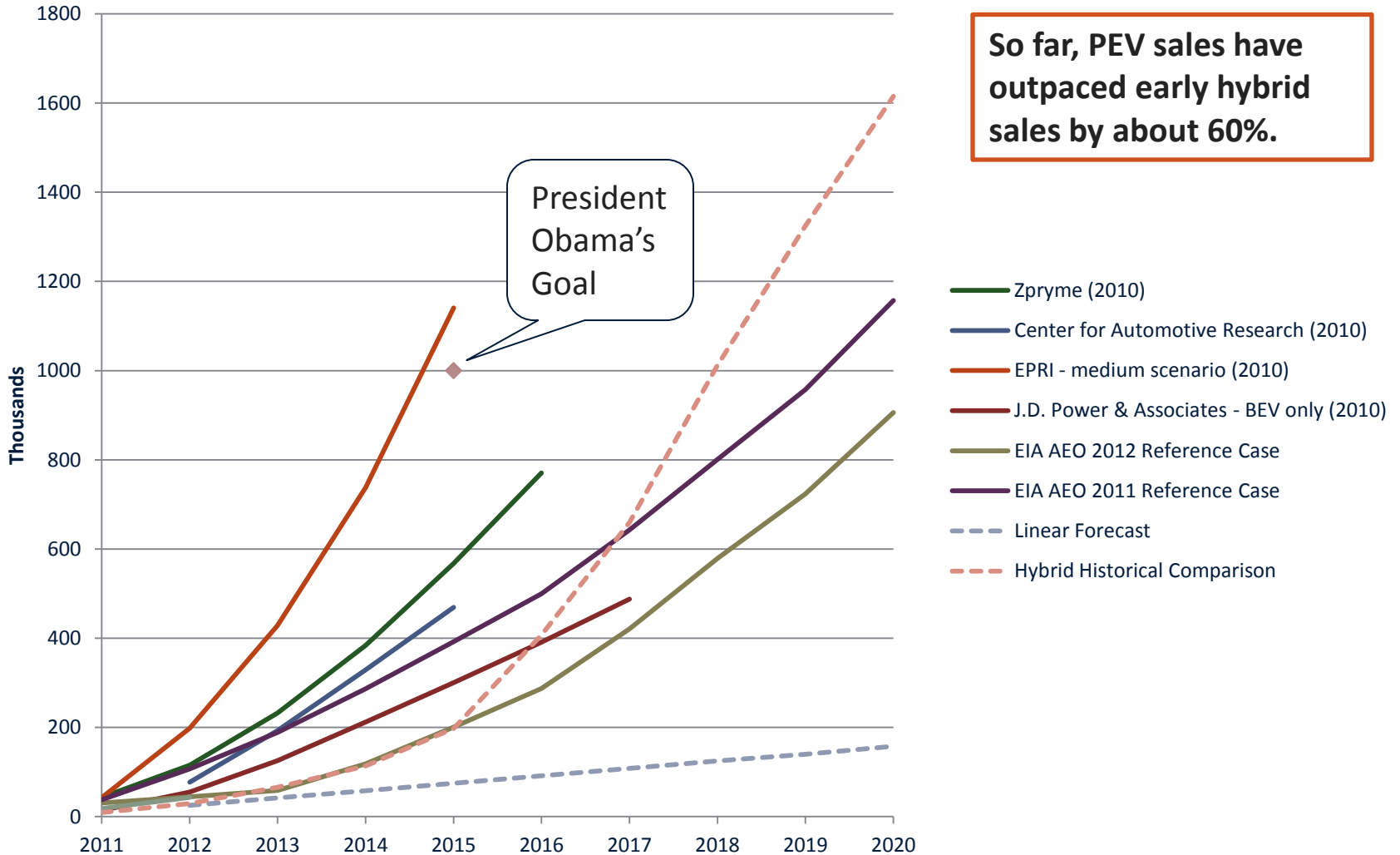
- **Natural Gas Vehicles**

- **Opportunities:** fuel cost savings, price certainty, single point refueling
- **Barriers:** inadequate refueling infrastructure, upfront cost, wall between fleet operating/capital budgets
- **Primary Target Market:** private and public fleets

- **Plug-in Electric Vehicles**

- **Opportunities:** significant fuel costs savings, price certainty, fun driving experience, “Prius-effect,” home refueling
- **Barriers:** upfront cost, education (e.g., range anxiety for BEVs only)
- **Primary Target Market:** everyday consumer

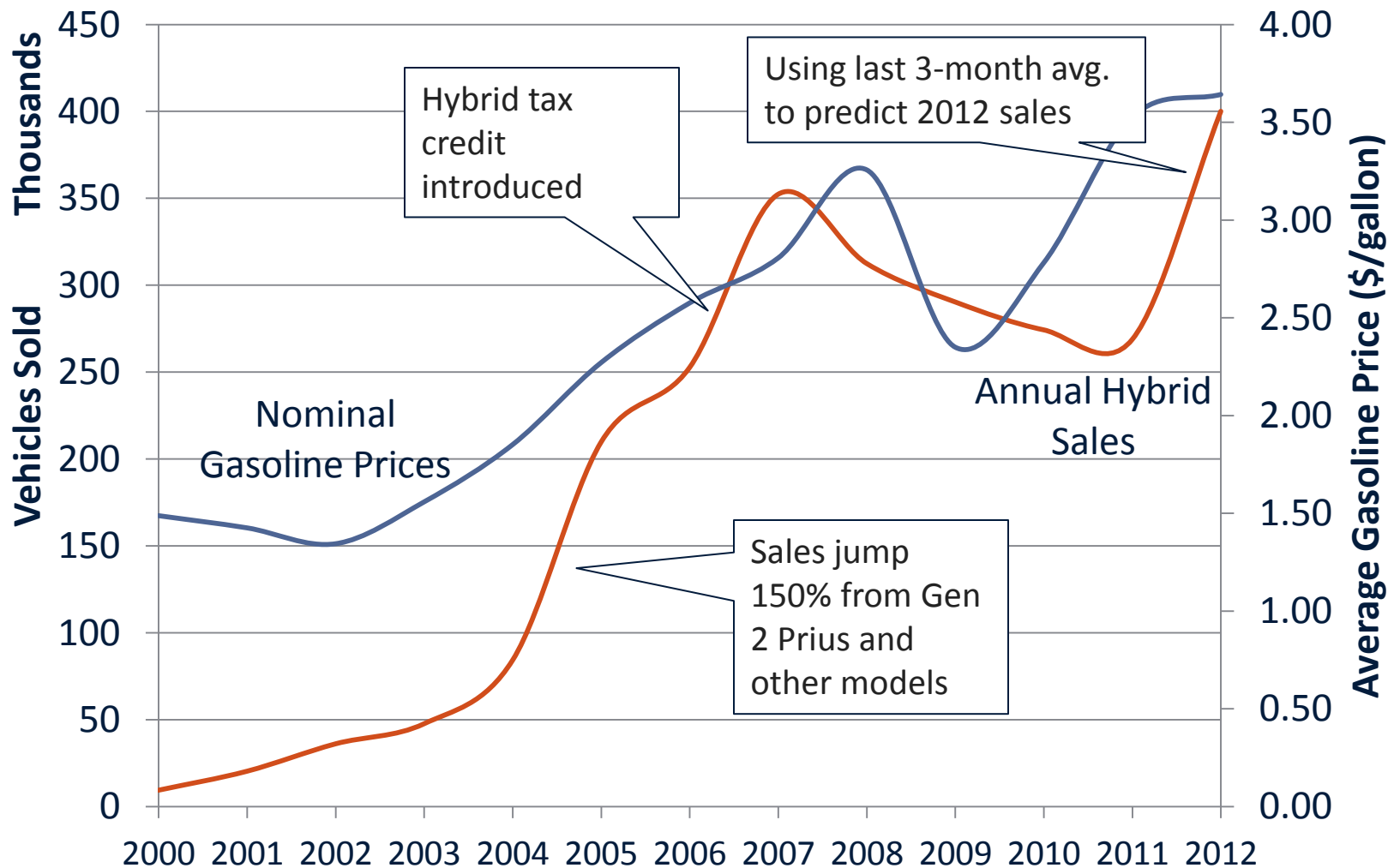
# Forecasts for cumulative PEV sales vary greatly



# Public Policy Update

States experimenting with policy to drive passenger vehicle and infrastructure deployment; coordinated action is in nascent stages for PEVs and NGVs

# Market Drivers: Vehicle Choice, Incentives, Gasoline Prices, and Time



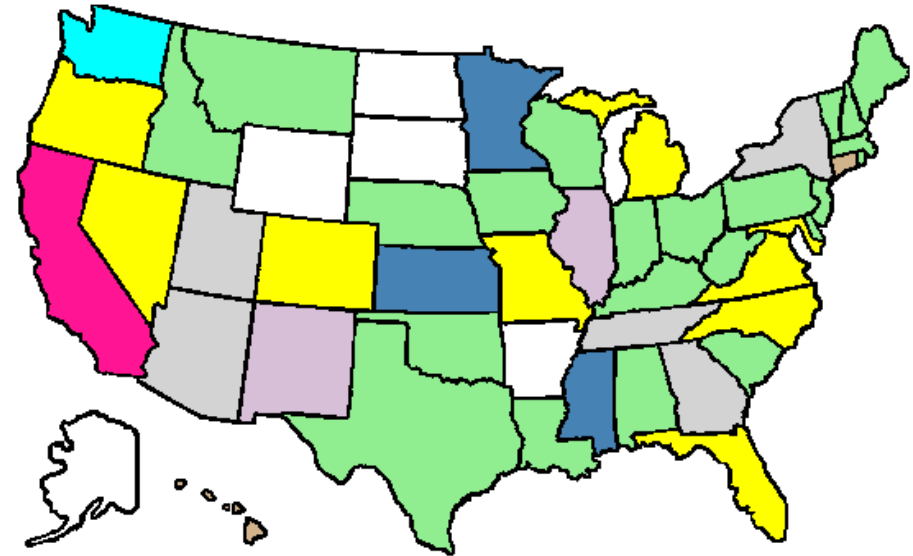
- **2012-2025 passenger vehicle fuel economy standards**
  - Potentially big incentives for EVs
  - Fuel economy for NGVs and PEVs is divided by 0.15 for compliance to provide incentive
- **2014-2018 medium- and heavy-duty standards**
  - Agencies felt GHG benefit from NGV was enough of an incentive
- **Federal vehicle tax credits**
  - \$7,500 credit for PEVs absolutely critical; NGV tax credit expired in 2010
- **Congressional action unlikely despite bipartisan support**
  - NatGas Act not moving this session in U.S. Congress
  - No prospects for PEV legislation this session in U.S. Congress
- **Executive branch outlook**
  - ARPA-E programs for NGVs and PEVs
  - DOE's "EV Everywhere" initiative



# PEV-Related State Action



- Electricity & Transportation Policy
  - California leads the way on regulations
  - State legislatures are very active (e.g., Maryland PEV laws, Washington PEV fee)
  - State legislatures may or may not favor PEVs in legislation
  - Lack of action at regulatory level in most states
- Vehicle and infrastructure Policy
  - CA, CO, GA vehicle tax credit
  - HOV lane exemptions
  - ZEV mandate
  - Charging station grants from U.S. DOE
  - Forward-looking policy (e.g., vehicle-to-grid credit in Delaware)
- Many Collaborative Groups
  - **National:** PEV Dialogue Group
  - **Regional:** Transportation and Climate Initiative
  - **State:** California PEV Collaborative
  - **Cities:** Project Get Ready



PEV policies in the states from [www.c2es.org](http://www.c2es.org)



- **Growing interest in NGVs, including passenger vehicles**
- **CNG buses make up 18.6% of public buses in 2010**
  - Up from < 3% in 1996
  - CNG vehicles consumed 15% of total fuel for buses
- **22-state partnership spearheaded by Colorado and Oklahoma aimed at pushing for more passenger vehicle choices**
  - Is there too much attention by states on passenger vehicles?
  - Some states see NGVs as a bridge to hydrogen fuel cell vehicles
- **State policies targeted at natural gas vehicles not as numerous as PEV policies**
  - \$2,500 vehicle tax credit in Utah and Georgia; \$6,000 credit in Colorado
  - HOV lane exemption in California for NGVs
  - 75% tax credit for commercial infrastructure in Oklahoma

- **PEV-related activity out of executive branch could hinge on Presidential election**
- **Congressional action on NGVs or PEVs is dependent on too many factors to make an educated guess**
  - Tax reform negotiations offer a window for some incentives
  - Similar to opportunity for gasoline tax reform, likely needs to be “too small to notice”
- **Strong likelihood that states will continue to push PEVs and NGVs because of perceived job opportunities and environmental benefits**



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FOR MORE INFORMATION

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