Consumer Federation of America

THE ZERO EMISSIONS VEHICLE PROGRAM

Clean Cars States Lead in Innovation

OCTOBER 24, 2013

The Consumer Federation of America supports the Zero Emission Vehicle (ZEV) program and applauds the states that have decided to participate in it because they are leaders in advancing a product that is vitally necessary to meet the needs of households for personal transportation in the 21st century.

Our recent analysis of the diffusion of energy efficiency technologies provides strong reasons for our support of the Clean Cars ZEV program.[1]

- First, the innovation diffusion literature highlights the important role that supply-side leadership plays in moving new technologies into the market (see Exhibit 1).
- Second, the efficiency gap literature demonstrates that performance standards can play a key role in creating a market for efficiency technologies.
- Third, the approach of the ZEV program has the key attributes that make performance standards successful.[2]

The ZEV program stands at the intersection of these three findings.

There is an even more direct and important reason to believe that the ZEV program will play a leading role in creating an important market for new vehicles – the dramatic success of the Low Emission Vehicle (LEV) program, the immediate predecessor of the ZEV program.

More than two decades ago, when California launched the LEV program, which helped to jump-start the hybrid market, many predicted it would be a costly failure, but the LEV standard helped to stimulate the hybrid market. Today, hybrids are a hugely successful and profitable product, with millions sold. Many of the most popular automakers are offering hybrids in the broad range of vehicles that consumers are most likely to buy.

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[1] Mark Cooper, *Energy Efficiency Performance Standards: The Cornerstone of Consumer-Friendly Energy Policy* (Consumer Federation of America, October 2013)

[2] Id., p. 46, **Long-Term:** Setting an increasingly rigorous standard over a number of years that covers several redesign periods fosters and supports a long-term perspective. The long term view lowers the risk and allows producers to retool their plants and provides time to re-educate the consumer. **Product Neutral:** Attribute based standards accommodate consumer preferences and allow producers flexibility in meeting the overall standard. **Technology-neutral:** Taking a technology neutral approach to the long term standard unleashes competition around the standard that ensures that consumers get a wide range of choices at that lowest cost possible, given the level of the standard. **Responsive to industry needs:** The standards must recognize the need to keep the target levels in touch with reality. The goals should be progressive and moderately aggressive, set at a level that is clearly beneficial and achievable. **Responsive to consumer needs:** The approach to standards should be consumer-friendly and facilitate compliance. The attribute-based approach ensures that the standards do not require radical changes in the available products or the product features that will be available to consumers. **Pro-competitive:** All of the above characteristics make the standards pro-competitive. Producers have strong incentives to compete around the standard to achieve them in the least cost manner, while targeting the market segments they prefer to serve.

Given the success of the LEV program and its impact on the clean cars market, it is not surprising to find that, depending on the measuring stick one uses, **today's electric vehicles are on par with or ahead of where hybrids were at a similar stage of their development.**

- Electric vehicle sales certainly match those of hybrids in their early years on the market (see Exhibit 2).
- Moreover, the number of makes and models available today is larger than the number of hybrid makes and models that were available in the early years of the hybrid experience (see Exhibit 3).

Based on the historical experience of the hybrid, the targets set for the ZEV program are certainly achievable, but it would be a mistake to forget that the hybrid's success was aided by the forward-looking regulation of the LEV states.

The decision of the executive branch agencies of the Clean Cars states to embrace the ZEV program represents a leadership decision that is not only consistent with the extensive research literature and the experience of the LEV program, it is consistent with broad popular support for policies to promote greater energy efficiency of vehicles and state level action to reduce auto emissions.[3]

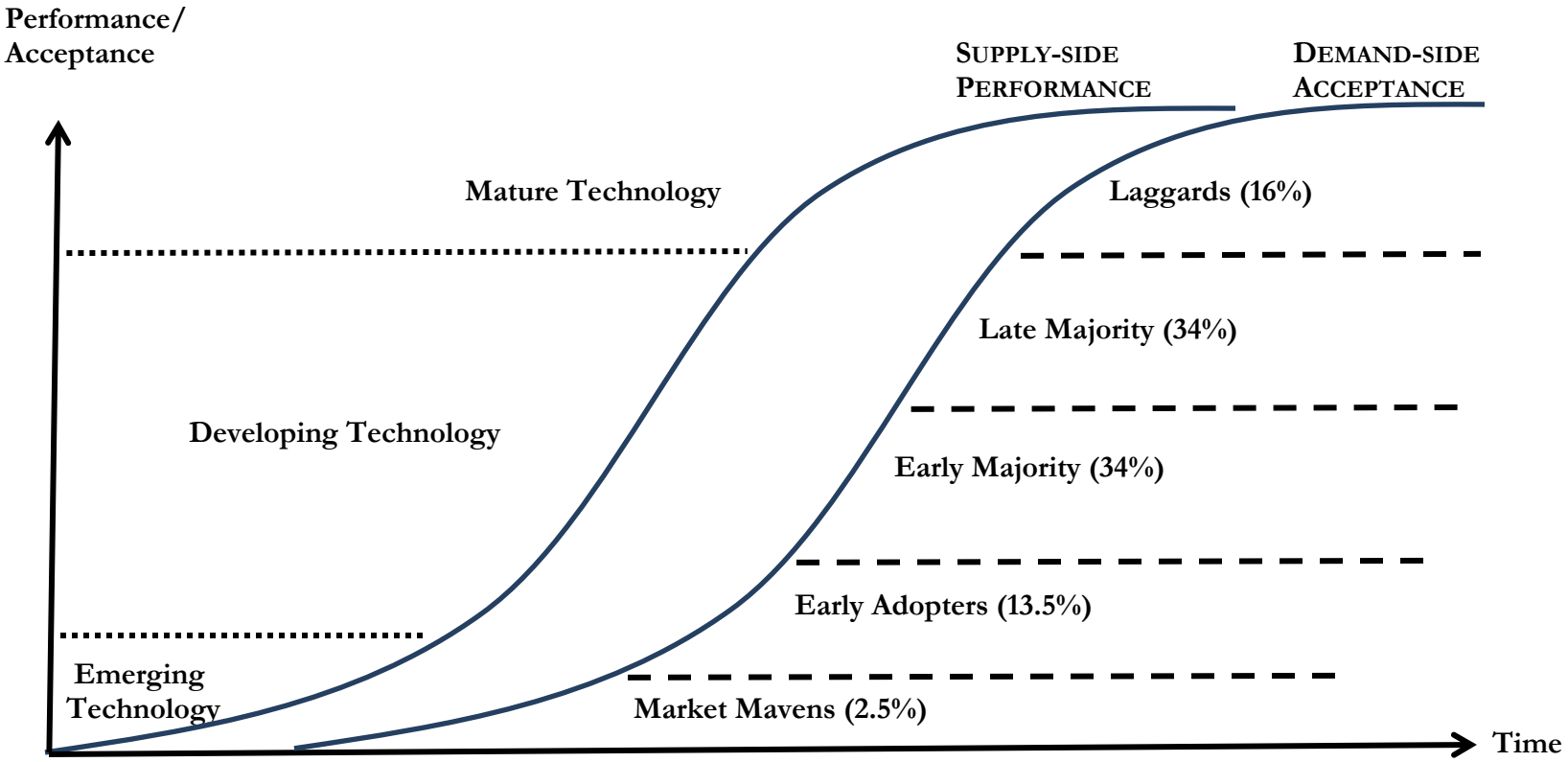
Eight states representing a quarter of the U.S. auto-buying market are joining forces to push for more zero-emission vehicles (ZEVs). Their goal: to get 3.3 million of these clean vehicles on the road by 2025. Governors from California, Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island and Vermont are pledging to take specific steps to promote the use of electric cars and trucks, plug-in hybrids, and hydrogen-powered vehicles. The governors have pledged to include these vehicles in their public fleets, and to create new incentives to promote ZEVs. They have promised to promote lower electricity rates for home vehicle-charging systems, develop common standards for roadway signs and charging networks, and harmonize building codes to make it easier to build new electric-car charging stations.

These actions, taken in the eight states across the country, will help accelerate the growth of the national market for the latest clean and efficient cars. It's clear that more and more Americans want to do exactly that. Moreover, the commitment to accelerate the sales of electric vehicle is exactly what U.S. automakers need to get an edge in the 21st century auto market.

U.S. automakers were in the rear guard of the hybrid revolution and the failure of the industry to recognize the need to innovate proved to be catastrophic. A failure to recognize the importance of electric vehicles could again be disastrous. **Aanalysts project that the global plug in electric market will grow over ten times as quickly as the total light duty market over the next decade.[4] U.S. automakers need to be in the vanguard of the electric vehicle market to be competitive in the global auto market.**

[3] Mark Cooper, *Rising Gasoline Prices And Record Household Expenditures: Will Policymakers Get Serious About Ending Our "Addiction To Oil" By Supporting A 60 Mile Per Gallon Standard?* (Consumer Federation of America, May 16, 2011).
[4] Dave Hurst and John Gartner, *Electric Vehicle Market Forecasts* (Navigant, 2013).

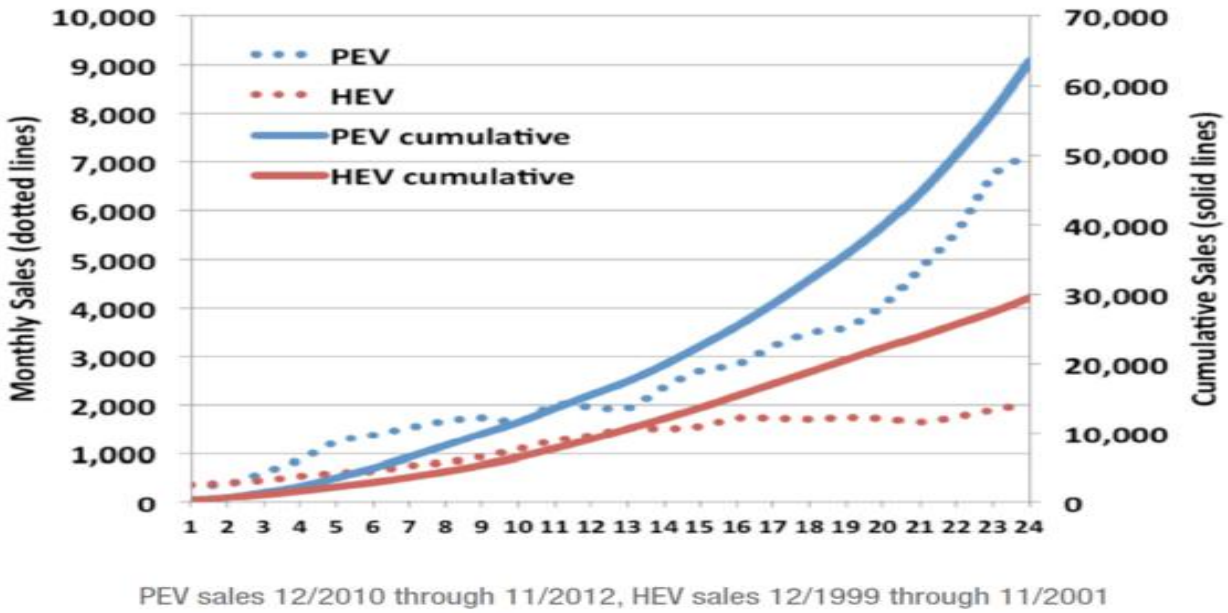
EXHIBIT 1: THE INTERACTION OF SUPPLY AND DEMAND IN THE CREATION/DIFFUSION OF INNOVATIVE TECHNOLOGIES



Sources: Mark Cooper, *Energy Efficiency Performance Standards: The Cornerstone of Consumer-Friendly Energy Policy* (Consumer Federation of America, October 2013, p. 50)derived from Mahajan, Vijay, Eitan Muller and Frank M. Bass,1990, "New Product Diffusion Models in Marketing: A Review and Directions of Research," *Journal of Marketing,* 54; Rick Brown, "Managing the "S" Curve of Innovation," 1992, *Journal of Consumer Marketing;* Fenn, Jackie, 1995, *When to Leap on the Hype Cycle,* Gartner Group; Paul Gilder and Gerard J. Tellis, 1997, "Will it Ever Fly? Modeling the Takeoff of Really New Consumer Durables," *Marketing Science,* 16: 3, "Growing, Growing Gone: Cascades, Diffusion, and Turning Points in the Product Life Cycle," *Marketing Science,* 23: 2 (2004); Kohli, Rajeev Donald R. Lehman and Jae Pae, 1999,"Extent and Impact of Incubation Time in New Product Diffusion, *Journal of Product Innovation Management,* 16; Osawa, Yshitaka and Kumiko Miazaki, 2006, "An Empirical Analysis of the Valley of Death: Large Scale R&D Project Performance in a Japanese Diversified Company," *Asian Journal of Technology Innovation,* 14:2; Sood, Ashish, et al., 2012, "Predicting the Path of Technological Innovation: SAW vs. Moore, Bass, Gompertz and Jryder," *Marketing Science,* 31: 6; Gartner, 2013, *Interpreting Technology Hype.*

EXHIBIT 2: HYBRID ADOPTION COMPARED TO PLUG IN ELECTRIC VEHICLE ADOPTION

Early Months



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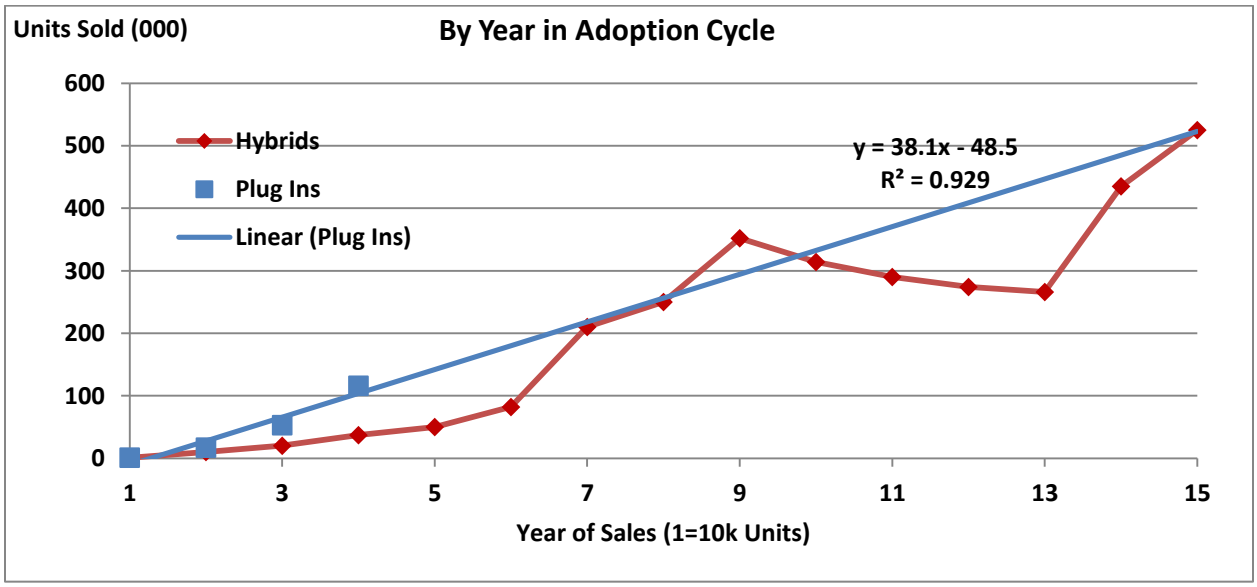
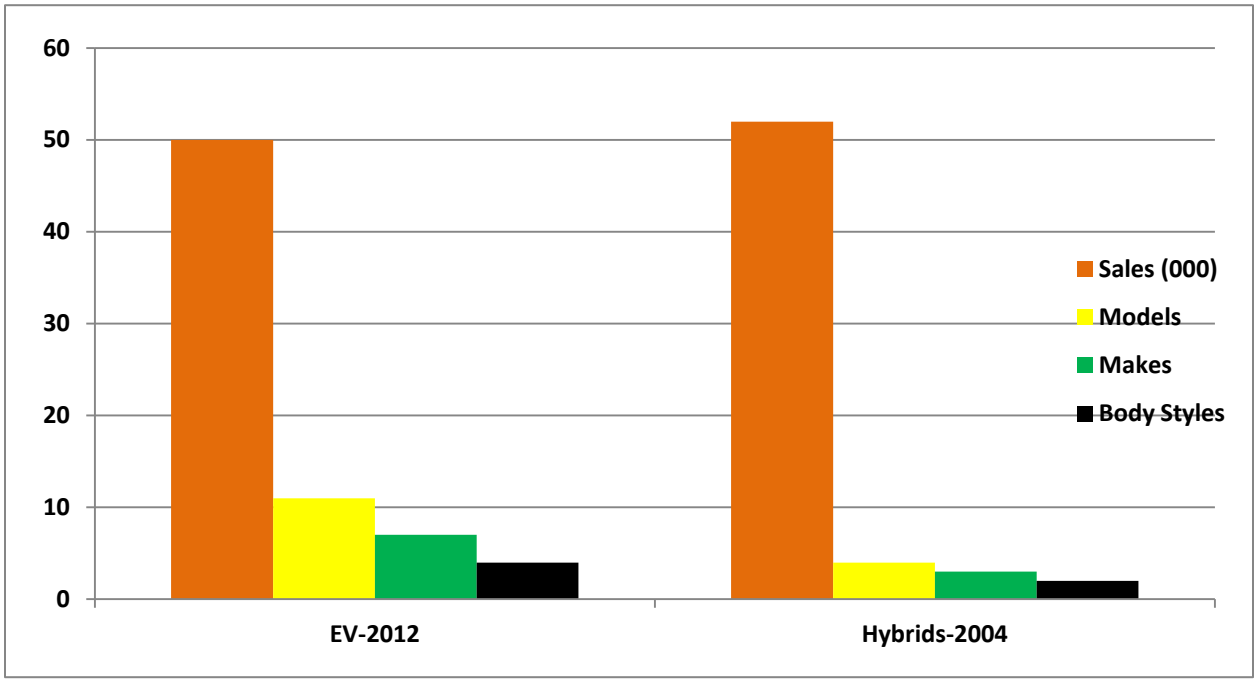


Source: Updated from Jack Gillis and Mark Cooper, *The Fuel Economy of 2013 Vehicles: A Fast Start toward the Goal of 54.5mpg in 2025* (Consumer Federation of America, April 2013). Based on Rudi Halbirght, Max Dunn, *Case Study: The Toyota Prius, Lessons in Marketing Eco-Friendly Products*, March3, 2010; http://www.hybridcars.com/hybrid-sales-dashboard/... Various years; J.D. Power, ,Mike Omotoso, *Global Alternative Fuel Light Vehicle Sales Forecast,* April 2010; J.D. Power and Associates - 2, *Despite Rising Fuel Prices, the Outlook for "Green" vehicles Remains Limited for the Foreseeable Future,* April 27, 29011, The Boston consulting Group, *The Comeback of the electric Car? How Real, How Soon, and What Must Happen Next?,* June 2011, Exhibit 5, from the "steady pace Scenario;" Electric drive vehicle sales figures (U.S. Market) - EV sales, http://www.electricdrive.org/index.php?ht=d/sp/i/20952/pid/20952.

FIGURE 3: EARLY DEVELOPMENT, MODELS, MAKES AND BODY TYPES: HYBRIDS V. NON-HYBRID ELECTRIC VEHICLES



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