

Electric Vehicle Council
April 17, 2014
2:00 PM to 4:00 PM
Harry Hughes Suite, MDOT Headquarters, Hanover

1. Welcome – Chairman Parran
2. Public Comment and Discussion
 - *No public comment or discussion*
3. PEV Charging for State Employees – Bob Bruninga, Lauren Bucker (DGS)
 - Mr. Bruninga’s presentation proposed that public charging stations are not the future because most charging occurs during non-driving hours. Rather, L1 outlets should be promoted and located at residences and workplaces where drivers park for long periods.
 - Mr. Bruninga proposed free L1 charging at park and rides and to put up charging station signs at existing outlets in the State’s Calvert Street garage in Annapolis
 - DGS expressed three concerns over the Calvert Street garage proposal. First, the garage is already at capacity. Second, DSG has liability concerns regarding damage to vehicles. Third, current customers have not expressed a desire for the service
 - Chairman Parran suggested further input from EVIC members on the proper ratio of L1 to L2 chargers in state facilities.
4. Toyota’s Advanced Technology Vehicle Strategy – Tom Stricker (Toyota)
 - Toyota considers the entire electric drive vehicle market instead of isolating the EV market. Hybrid vehicles are seen as the leaders in this market.
 - The tax credits have been essential for all vehicles and, if they lapse, reducing battery cost will not suffice to reduce the cost of an EV.
 - Toyota is bullish on hydrogen fuel cells and will release their first vehicle in 2015.
5. *The Electric Road Trip* Documentary – Jonathan Slade
 - Mr. Slade and his wife drove from Oakland, MD to Ocean City in a Nissan Leaf. The goal was to demonstrate the viability of the EV as a commuter car and to encourage electric vehicle use as part of the pioneering American spirit.

- Mr. Slade suggested stations in activity center throughout the State, particularly in rural town centers. He suggests that public charging station could create an EV tourism trail.

6. Legislation Update – Fred Hoover

- The EV tax credit has been extended to 2017. The credit is now set at \$125 per kWh of battery capacity with a limit at \$3,000 in order to further incentivize cars with longer charges.
- The charging station tax credit was scrapped in favor of a charging station rebate. New slots were added in the program for government entities. A special subcategory was created for retail service station to participate.
- The work group gave testimony regarding penalty for non-EV drivers parking in EV parking spaces. No position was taken. The bill did not pass.

7. Workgroup Updates – Fred Hoover, Liz Entwistle(for Kathy)

- Legislative Workgroup did not meet due to the business of session.
- The outreach workgroup announced that Frederick now has a sustainability coordinator. The workgroup want to duplicate the work done in Frederick. The workgroup has not met since the last EVIC meeting.

8. Possible Future Items

- EVIC will send a letter from the Chairman to County Executives alerting them that government entities are eligible for charging station rebates under new legislation.
- A complaint was lodged that their homeowners association would not allow him to install a charging station.

THE EARLY MARKET FOR ELECTRIC DRIVE VEHICLES...AND WHAT'S NEXT

Tom Stricker, Toyota Motor North America, Inc.

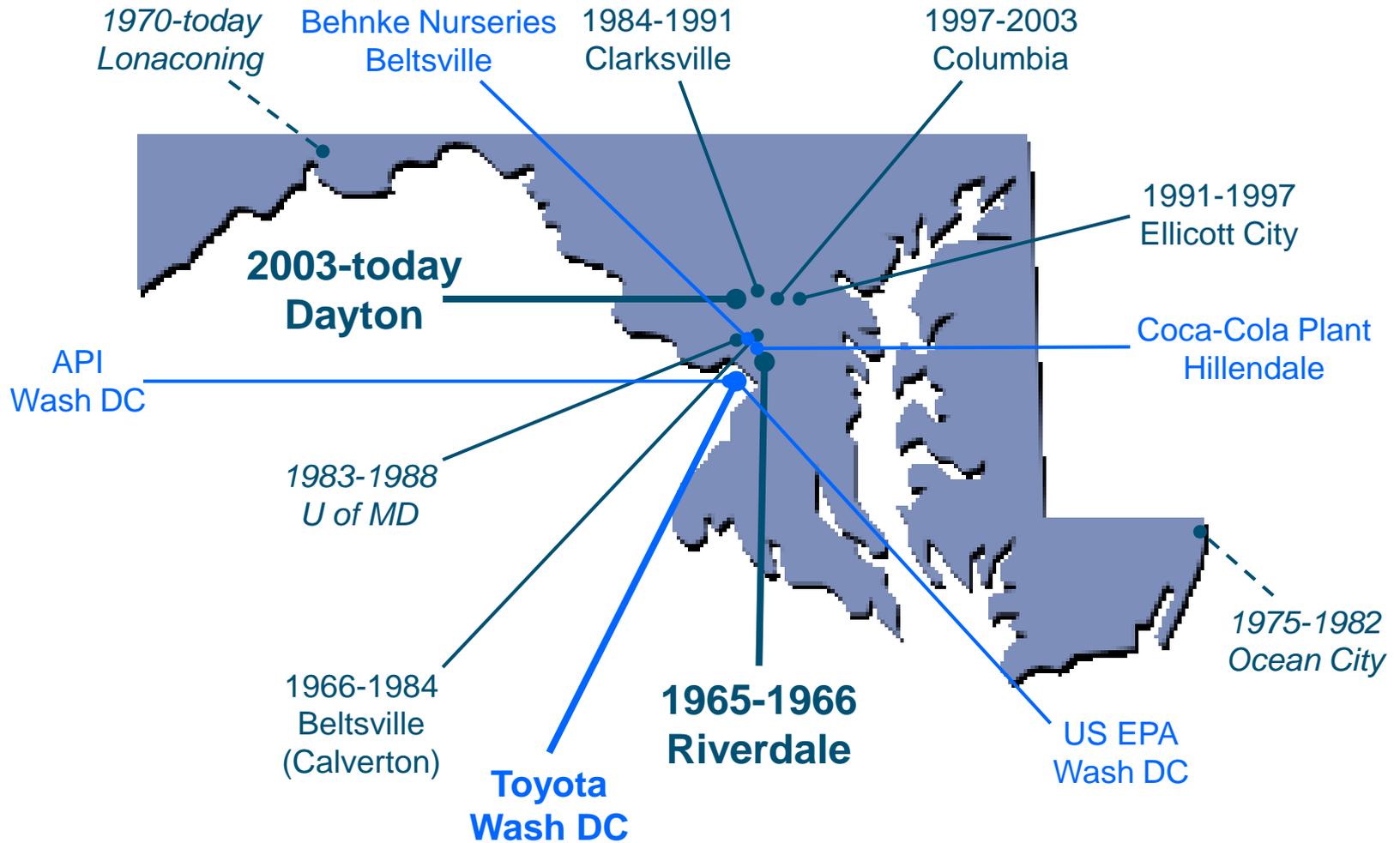
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Maryland Electric Vehicle Infrastructure Council

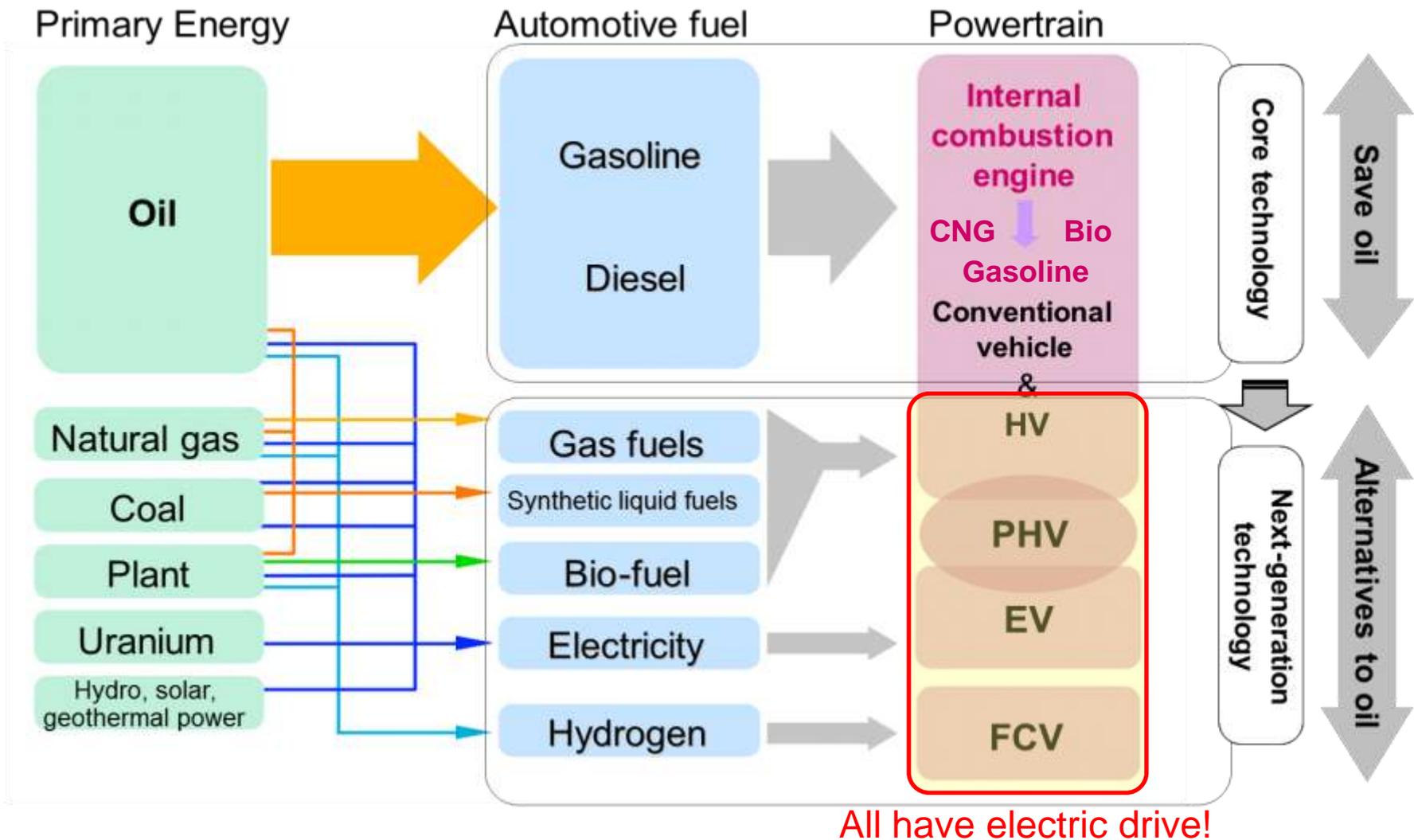
April 17, 2014

TOYOTA

My Maryland "Street Cred"



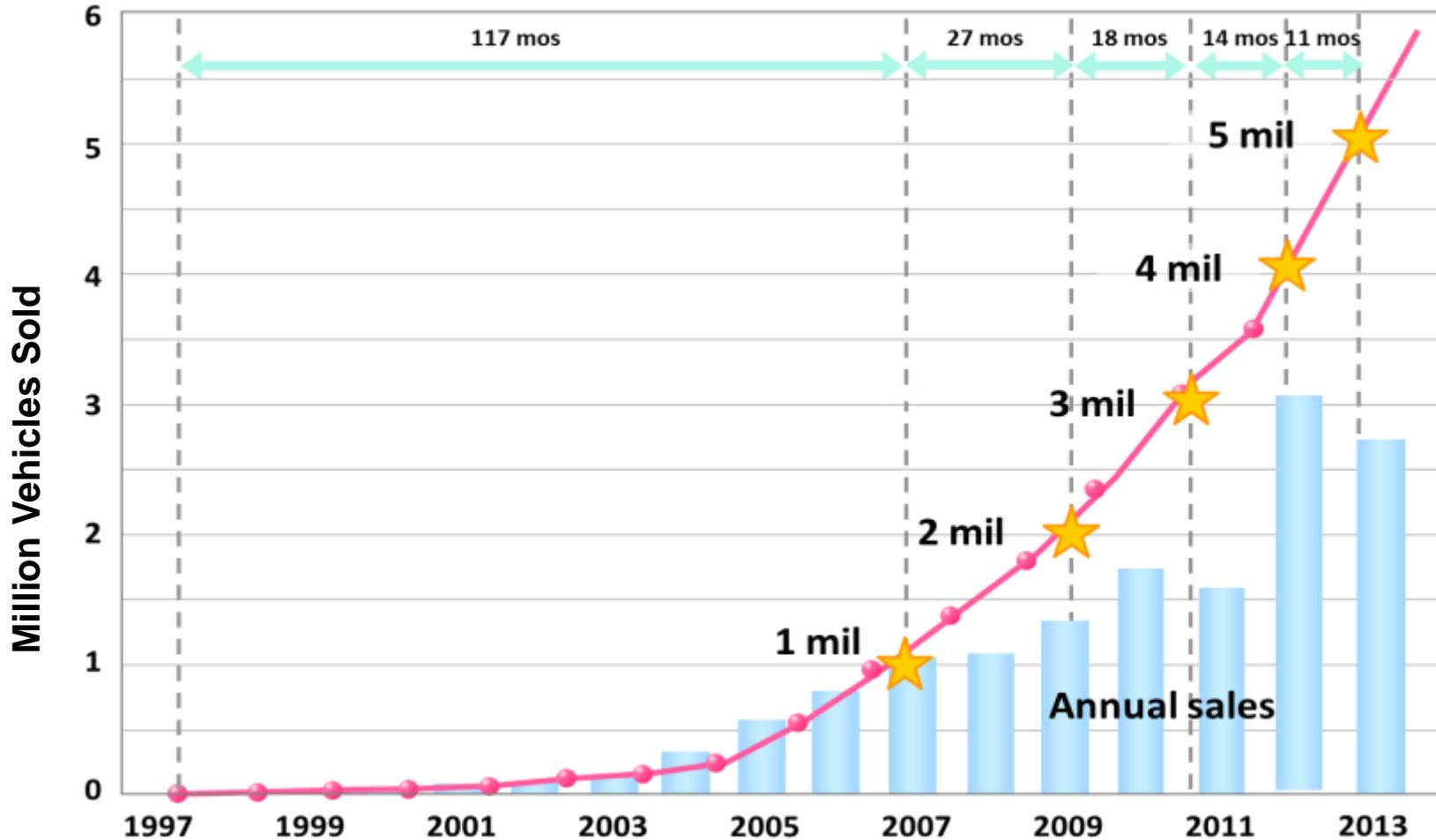
Backdrop – Everything is on the Table



Toyota's Hybrid "Street Cred"

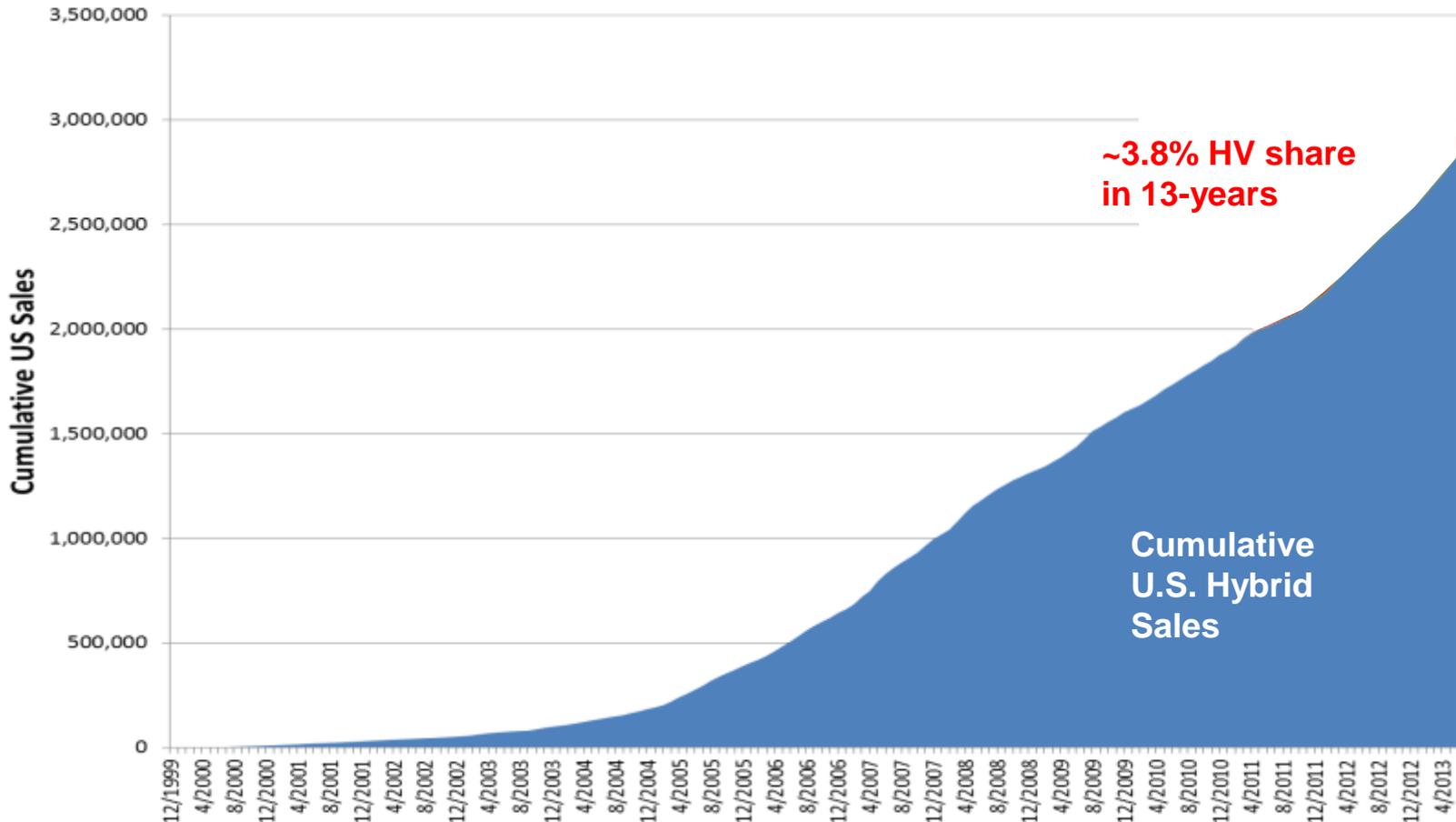


Toyota Cumulative Global Hybrid Vehicle Sales



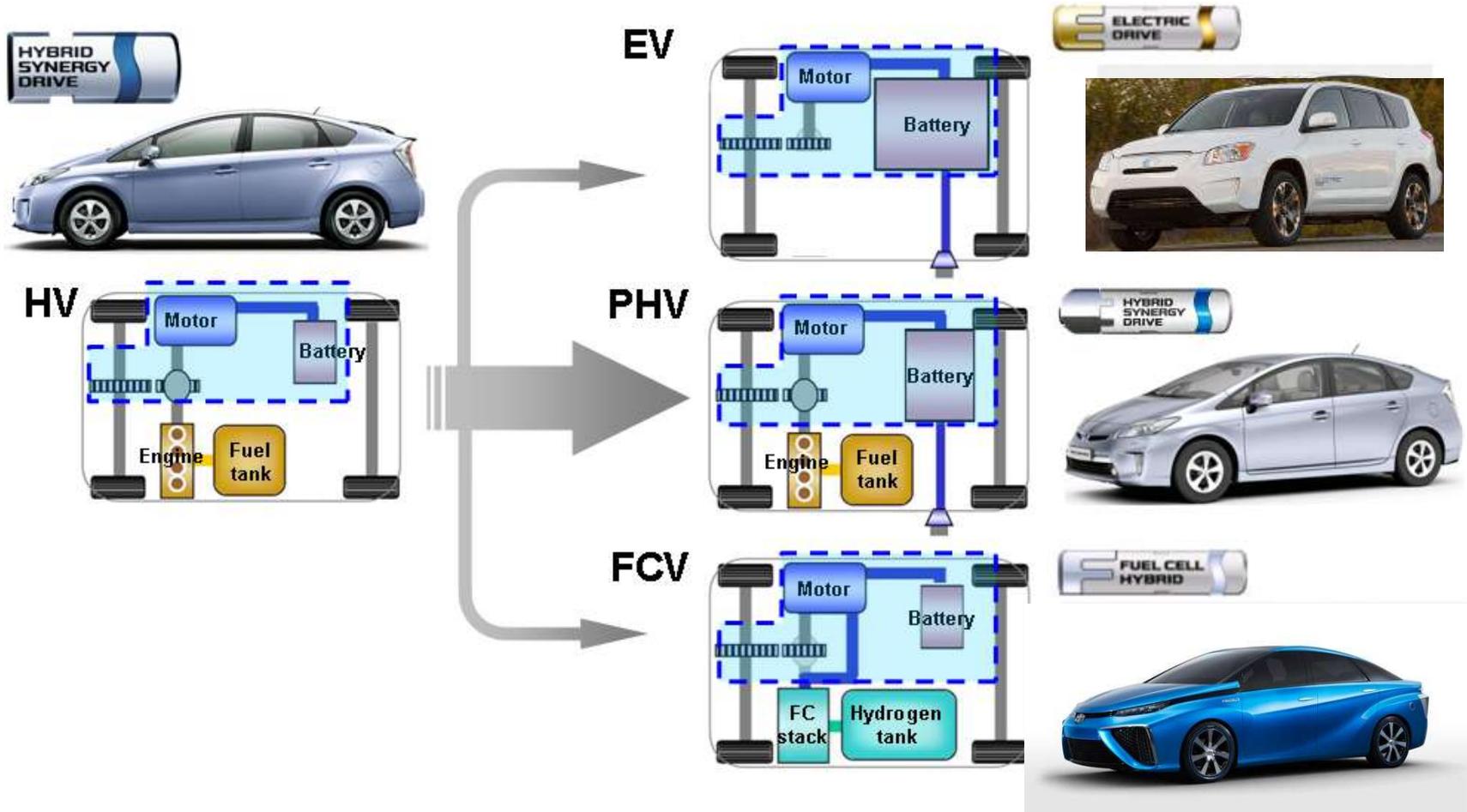
Toyota just surpassed 6M global hybrid sales.

Hybrids have Reached the Mainstream in the U.S. with Steady Growth Over the Past Decade



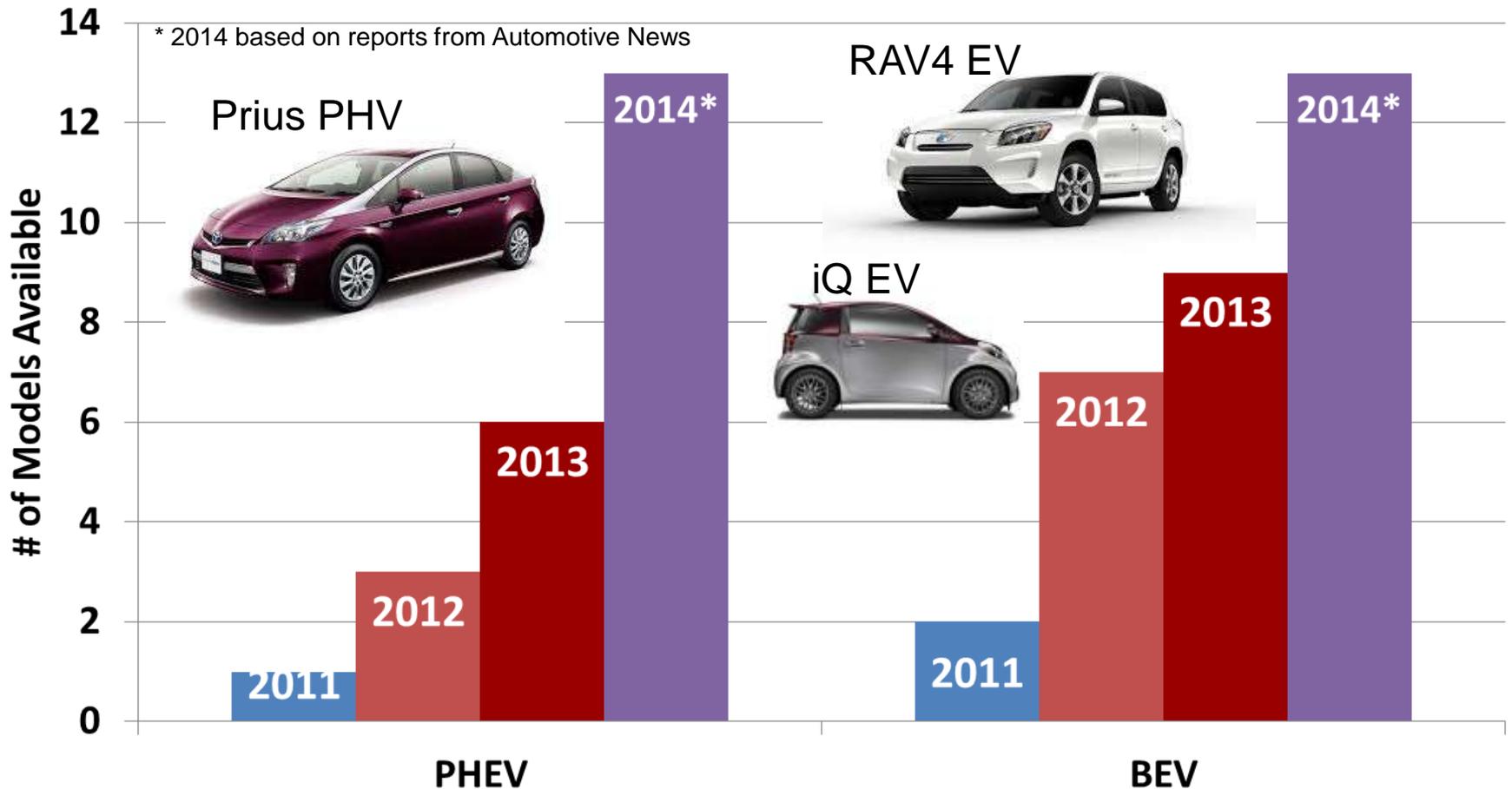
At ~4% share, hybrids are the most successful alternative powertrain.

Hybrid Vehicle Technology Forms the Foundation for ZEV Technologies



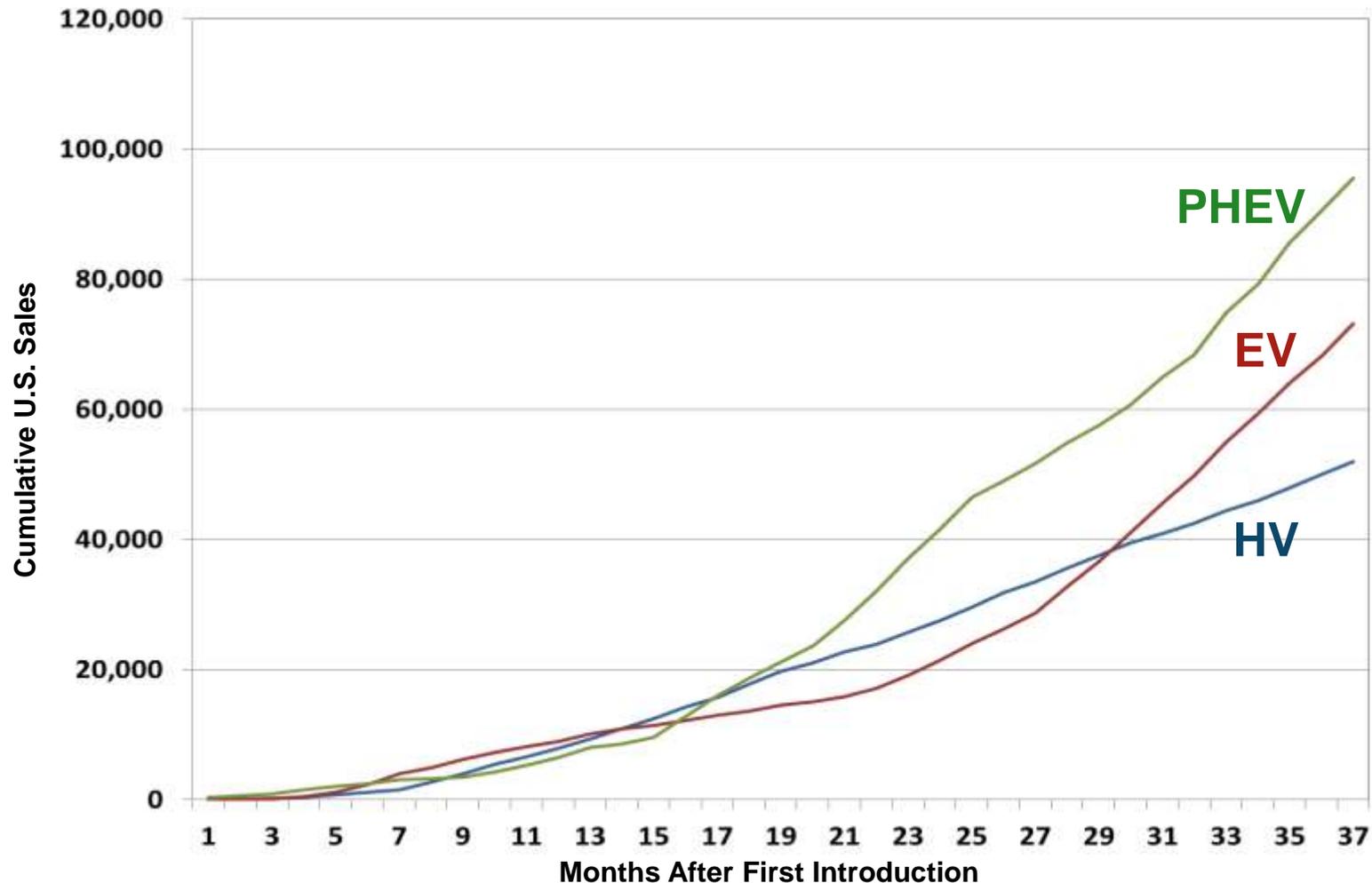
Hybrid technology is critical in the development of ZEV's.

Electric and Plug-In Electric Offerings Are Growing (PEVs) (Industry-Wide U.S. Models)



A significant number of models are available in the market.

Hybrid, EV and PHEV U.S. Sales (First 37-Months After Introduction)



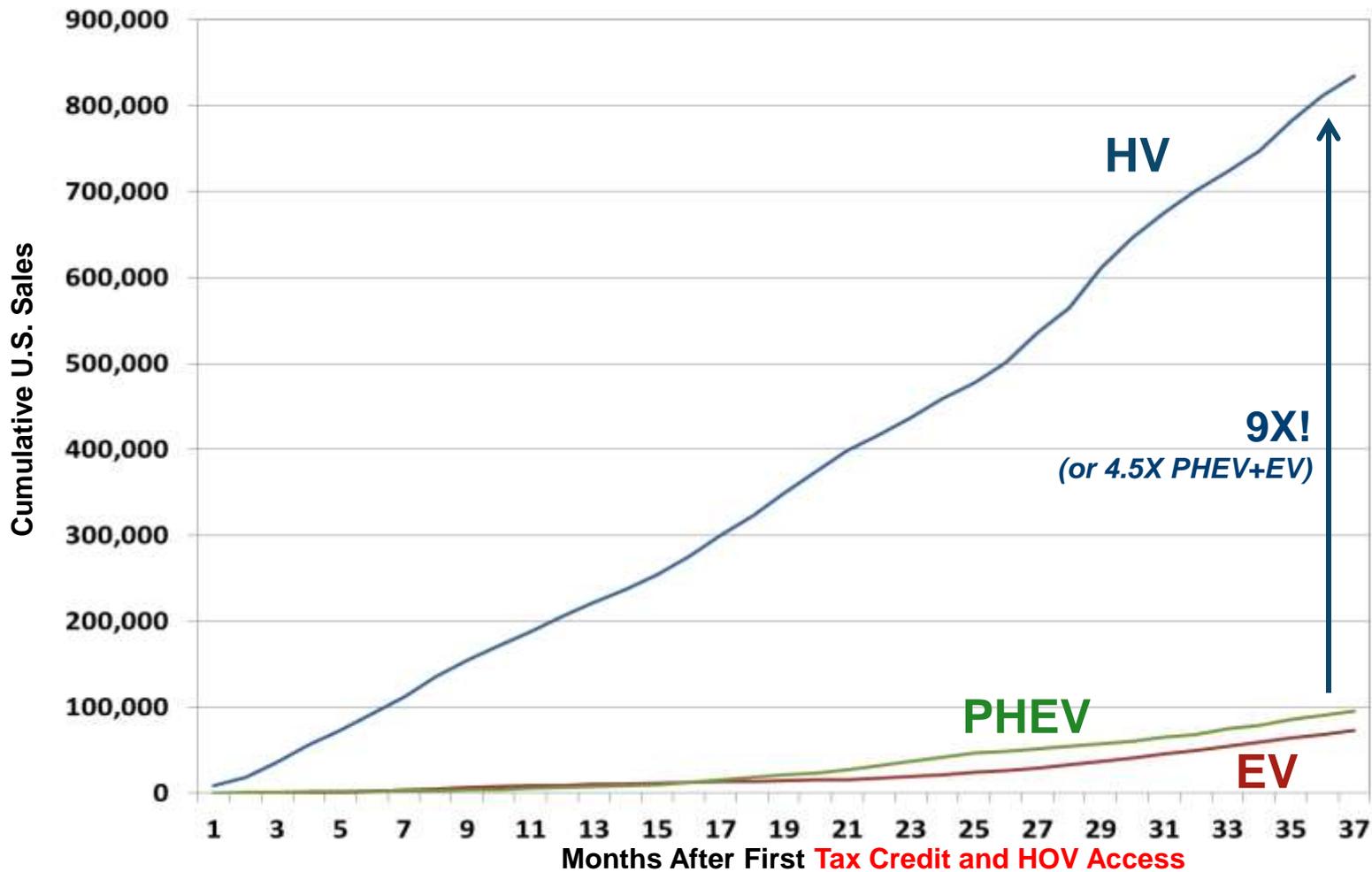
Early PEV sales actually HAVE surpassed early hybrid sales.

Comparing Early Hybrid and PEV Sales Requires Perspective

	HEV		PEV
	2000 –	2005 –	2013 –
Consumer Tax Credit?	No (limited federal deduction)	Yes (modest)	Yes (LARGE and Including CA)
HOV Lane Access?	No	Yes	Yes
Cheap Gas	~\$1.50	~\$2.50	~\$3.50
Number of Models	2	Few	16+
Mandatory by Regulation?	No	No	Yes
Consumer Awareness	None	Some	Moderate (on the back of HEV)

All of these factors make early comparisons misleading.
Accounting for two factors changes the comparison greatly.

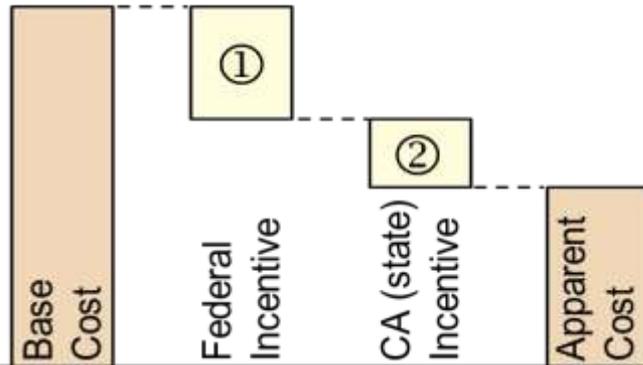
Hybrid, EV and PHEV U.S. Sales (First 37-Months After Tax Credit and HOV Access)



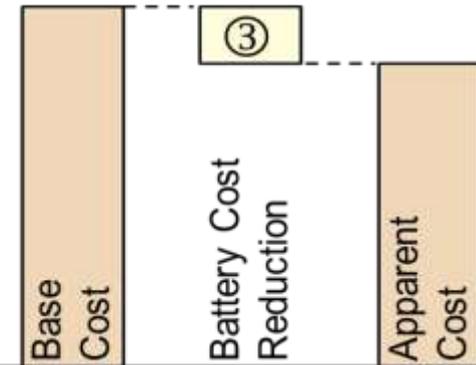
Once hybrids enjoyed tax credit and HOV access, the story changed.

Can Battery Cost Reductions Offset Eventual Loss of Consumer Tax Credits?

Current: Tax Credits



Future: Cost ↓ & No Tax Credit

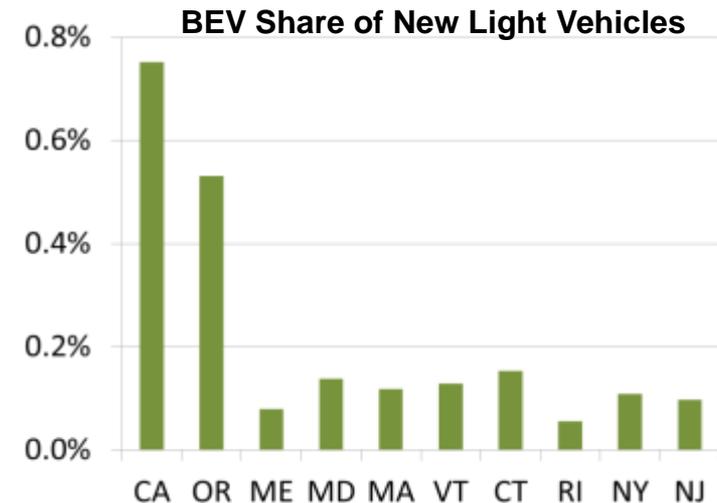
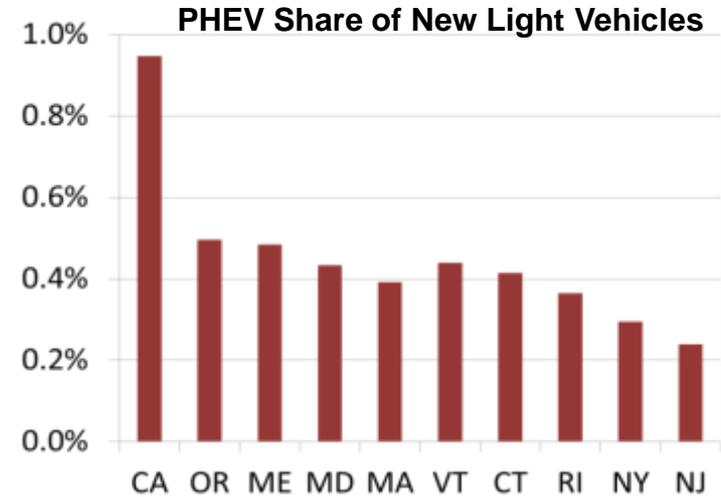
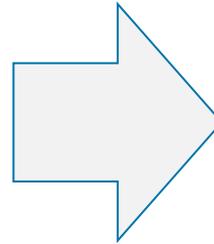
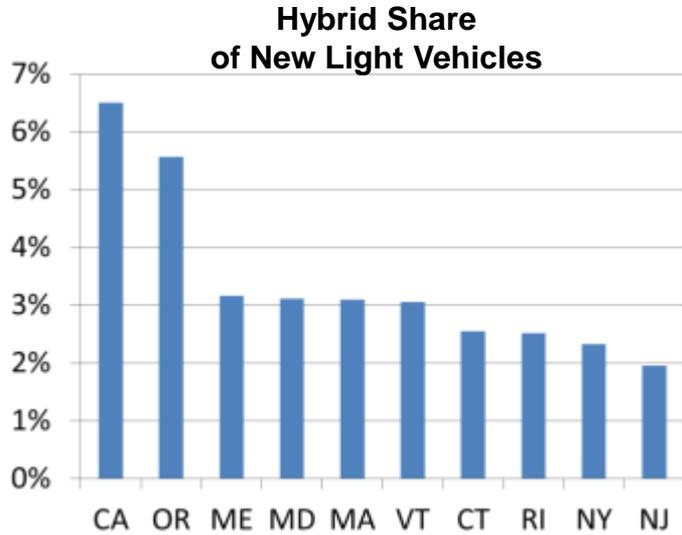


Plug-In Vehicle	① Federal Incentive	② CA Incentive	Total Incentive	Battery Capacity (kWhr)	③ Cost Reduction* @ - \$275/kWhr	Net Increase if No Tax Incentive (vs today)
Nissan Leaf	\$7,500	\$2,500	\$10,000	24	\$6,600	+\$3,400
Chevy Volt	\$7,500	\$1,500	\$9,000	16	\$4,400	+\$4,600
Prius PHV	\$2,500	\$1,500	\$4,000	4.4	\$1,210	+\$2,790

Even substantial battery cost reductions may not spur accelerated sales once tax credits phase-out.

* Source: EV MARKET OUTLOOK State of the Plug-in Electric Vehicle Market; Electrification Coalition; July 25, 2013

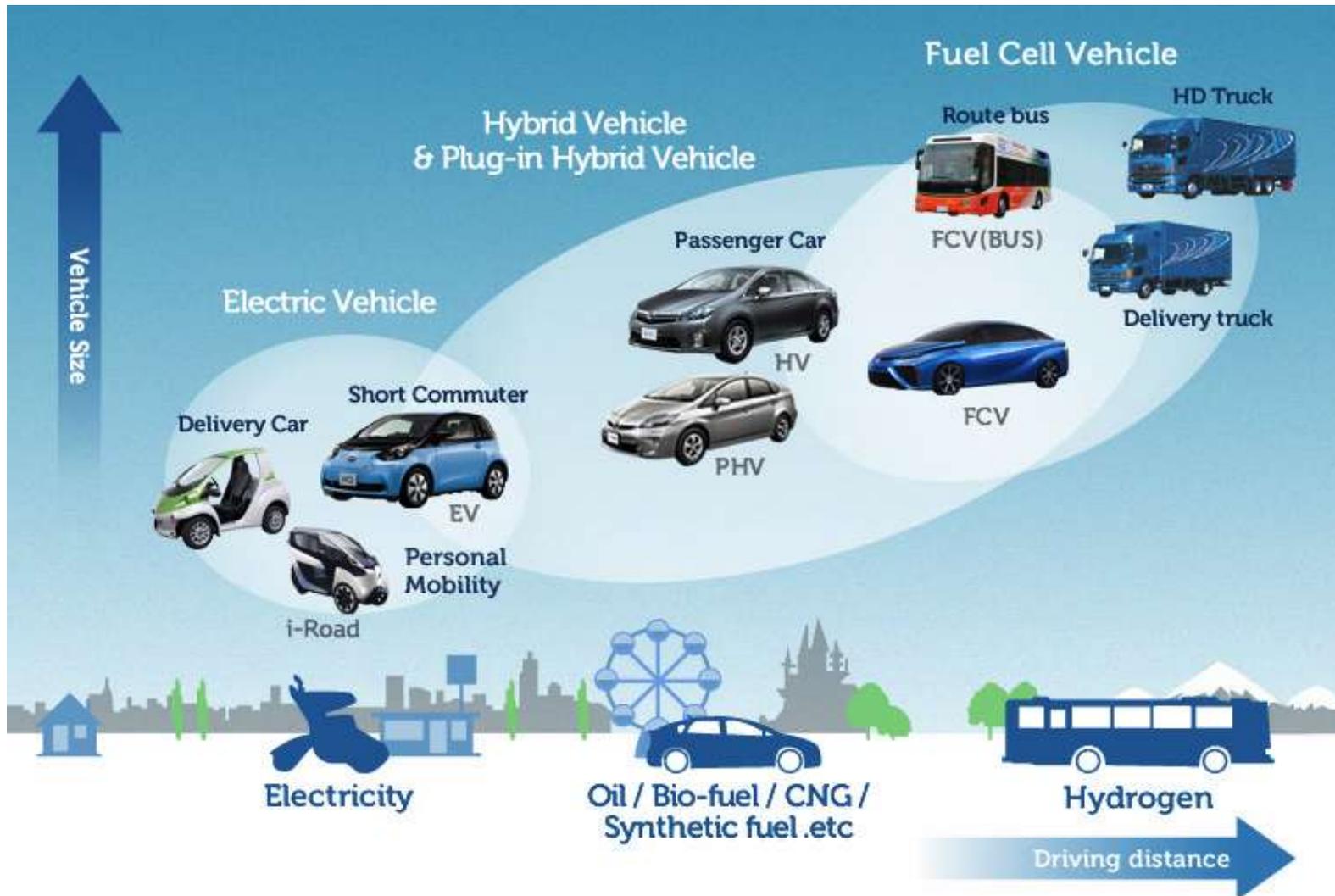
The Hybrid Market is Instructive for the Future of PHEV and BEV Markets



While the scale of penetration is quite different, the relative disparity between CA and other states is strikingly consistent with the HV experience.

Source: R.L Polk

Electric Vehicles are One Part of the Solution



Industry Deployment of Fuel Cell Vehicles is Imminent



Honda FCV Concept



Mercedes Benz FCV



General Motors FCV



Hyundai FCV



Toyota FCV Prototype



Toyota 2015 FCV Concept

- Zero tailpipe emissions
- Fast refueling and +300 mile range
- 100s on the road
- Millions of test miles
- Deployment 2014-17

Toyota Hydrogen Fuel Cell Vehicle to Launch in 2015



Toyota is has made Significant Progress and is Bullish on Hydrogen Fuel Cell Vehicles

Durability



Cold Weather



Range



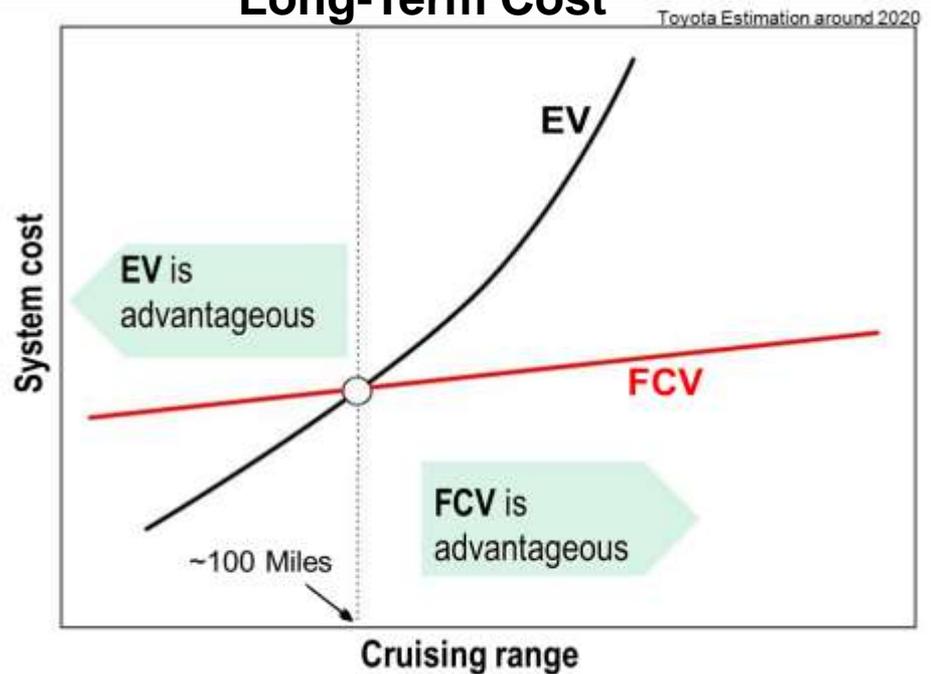
Fueling Time



Infrastructure



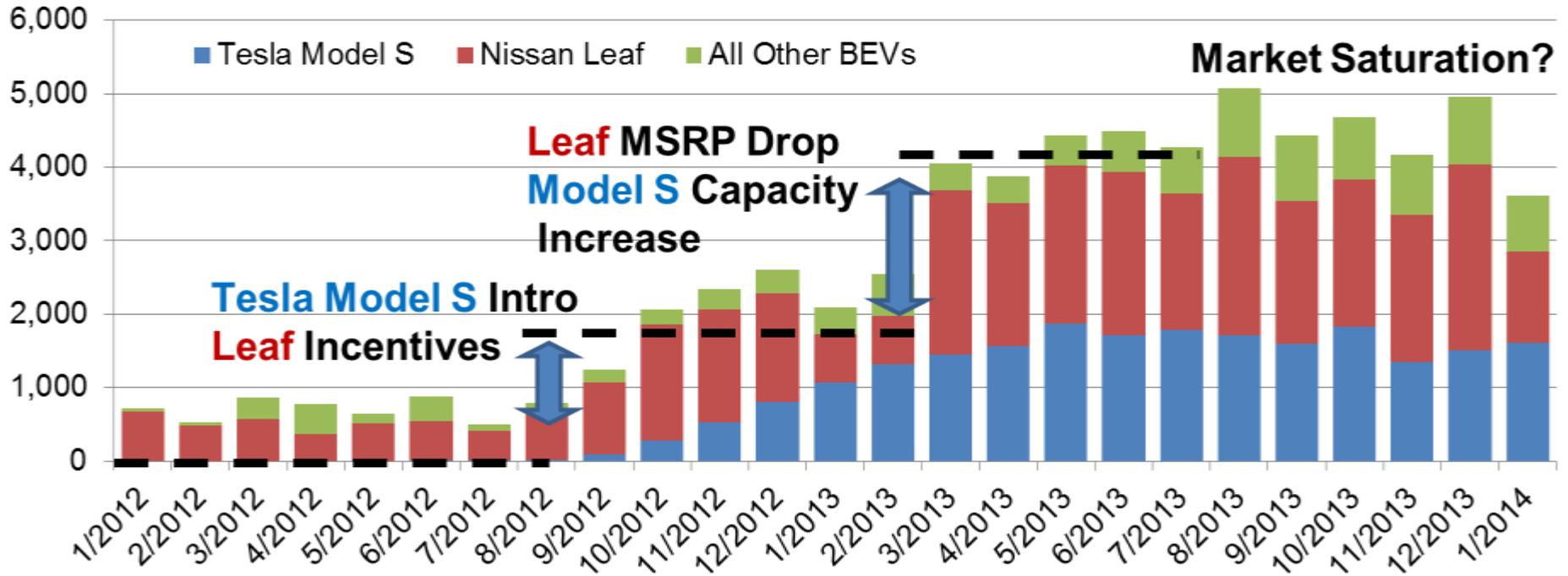
Long-Term Cost



Infrastructure development (including outside CA) is critical. Current consumer tax credit will expire just before OEMs begin deploying vehicles.

Thank You!

US Battery Electric Vehicle Sales

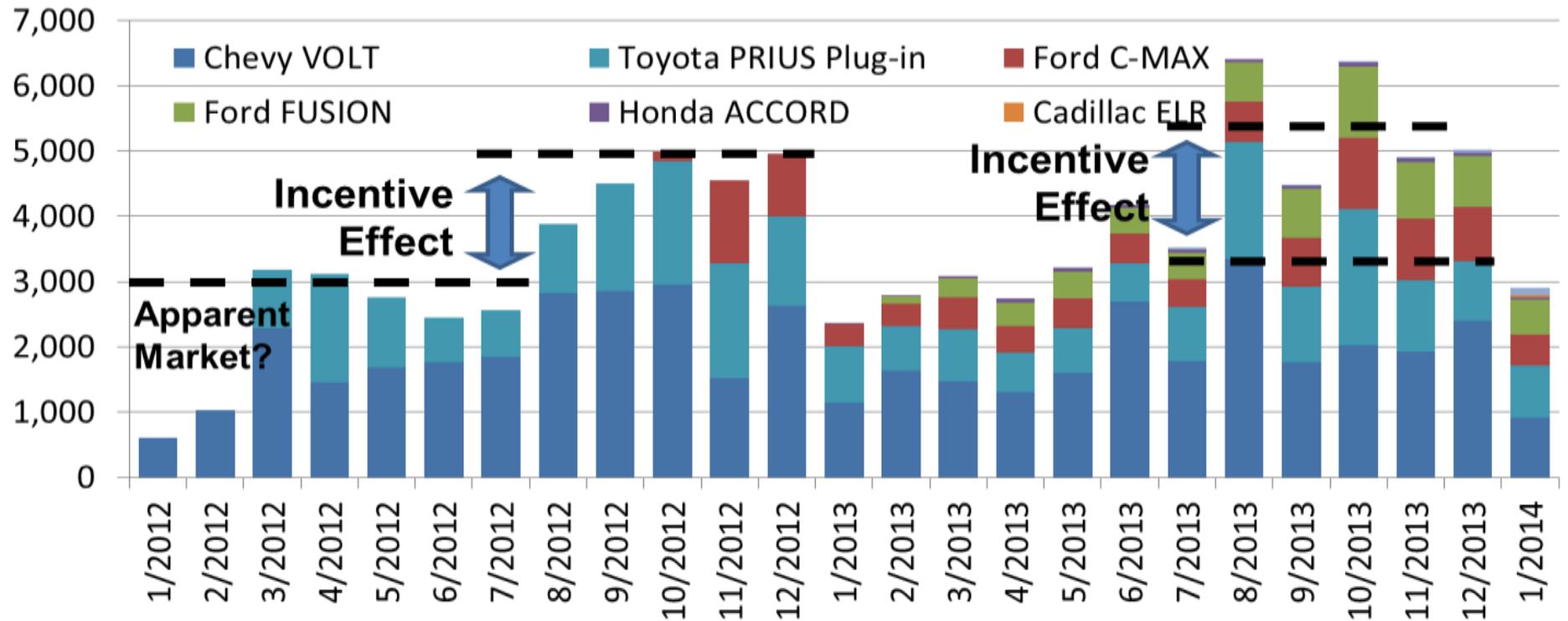


Source: WardsAuto InfoBank

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Two models driving the market, which may be near saturation.

US Plug-In Hybrid (and EREV) Vehicle Sales



Source: WardsAuto InfoBank

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Sales stable (?) between 3-5k per month with second half surges.

What is Driving the PEV Market Right Now?

- Market driven by incentives
- Federal and State Tax Credits
- \$10K+ Mfg. Incentives
- MSRP drops & Low cost leases
- HOV Access



As of January, 2014

	Mfg. Incentive	Low Cost Lease	MSRP Drop
Fit EV		\$ 259	
Nissan Leaf	\$5k to \$10k	\$ 199	\$ 6,400
Ford Focus Electric		\$ 284	
Fiat 500e		\$ 199	
Chevy Spark EV		\$ 199	
Mitsubishi I-MiEV			\$ 6,130
Chevy Volt	\$5k to \$10k		\$ 5,000
Toyota RAV4 EV	\$10k+		
Toyota Prius Plug-in	\$3k to \$6k		



Sustaining the PEV market is becoming extremely expensive.

Industry is Collaborating with Stakeholders to Promote Zero Emission Technologies



Infrastructure Development



Product Advertising



Dealer Training and Incentives



Codes and Standards



Future Product Development

Only time will tell if these efforts will bear success.