

DOCKETED

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California Energy Commission

California Vehicles Sales-Weighted Average Price (SWAP)

Vehicle Attributes Workshop
Art Rosenfeld Hearing Room

September 30, 2015

Eva Borges
Demand Analysis Office
Energy Assessment Division



Source: DMV Database

Energy Commission staff process and validate DMV data to extract and generate different products for post-analysis such as:

- **New Vehicle Sales**: includes monthly sales with Make, Model, Series, Model Year, Sell Date, Class, Fuel Type and **Estimated Price**.
- **Vehicle Estimated Price**: the transaction price after manufacturer incentives and before taxes and government incentives.
- **Sales-Weighted Average Price**: calculated using New Vehicle Sales and Vehicle Estimated Price for Light-Duty Vehicles.



Data Limitations

- Currently, data used for Sales-Weighted Average Price calculations are only available for the last five years (2010-2014).
- Sales-Weighted Average Price is only applied to Light Duty Vehicles.
 - Any vehicle that exceeds \$96,600 is set with an Estimated Price of \$96,600 due to the maximum purchase price used by DMV (based on the Vehicle License Fee Code)
 - *Luxury cars represent less than 1% of the Total New Vehicle Sales per year.*



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Light-Duty Vehicle (LDV) Classes and Fuels/Technologies

Light Duty Vehicle Classes (15)		Example Models
Car Classes	1 Car-Subcompact	Toyota Echo, VW Golf, Fiat 500, Smart fortwo, BMW i3, Kia Soul Electric, Mitsubishi i-Miev
	2 Car-Compact	Honda Civic, Ford Focus, Honda Fit, Chevy Volt, VW e-golf
	3 Car-Midsize	Honda Accord, Toyota Camry, Nissan Leaf, Toyota Prius, Honda Fcx, Ford Fusion, Toyota Mirai
	4 Car-Large	Buick LeSabre, Tesla Model S, Porsche Panamera S E-Hybrid
	5 Car-Sport	Ford Mustang, Toyota Celica, Chevrolet Camaro
	6 Cross/Ut-Small-Car	Chrysler PT Cruiser, Toyota Matrix
Light Truck Classes	7 Cross/Ut-Small-Trk	Toyota RAV4, Honda CRV, Toyota RAV4 EV, Porsche Cayenne S E-Hybrid
	8 Cross/Ut-Midsize	Toyota Highlander, Honda Pilot, Lexus RX300
	9 Sport/Ut-Compact	Chevrolet Equinox, Nissan Xterra, Hyundai Tucson
	10 Sport/Ut-Midsize	GMC Envoy, Dodge Durango, Acura MDX
	11 Sport/Ut-Large	Toyota Sequoia, Chevrolet Tahoe, Ford Expedition
	12 Van-Compact	Dodge Caravan, Honda Odyssey
	13 Van-Std	Ford Econoline, Dodge Ram Van, Chevrolet Express
	14 Pickup-Compact	Chevrolet S10, Ford Ranger, Nissan Frontier
	15 Pickup-Std	Ford F150, GMC Sierra, Toyota Tundra, GMC Sierra C3500

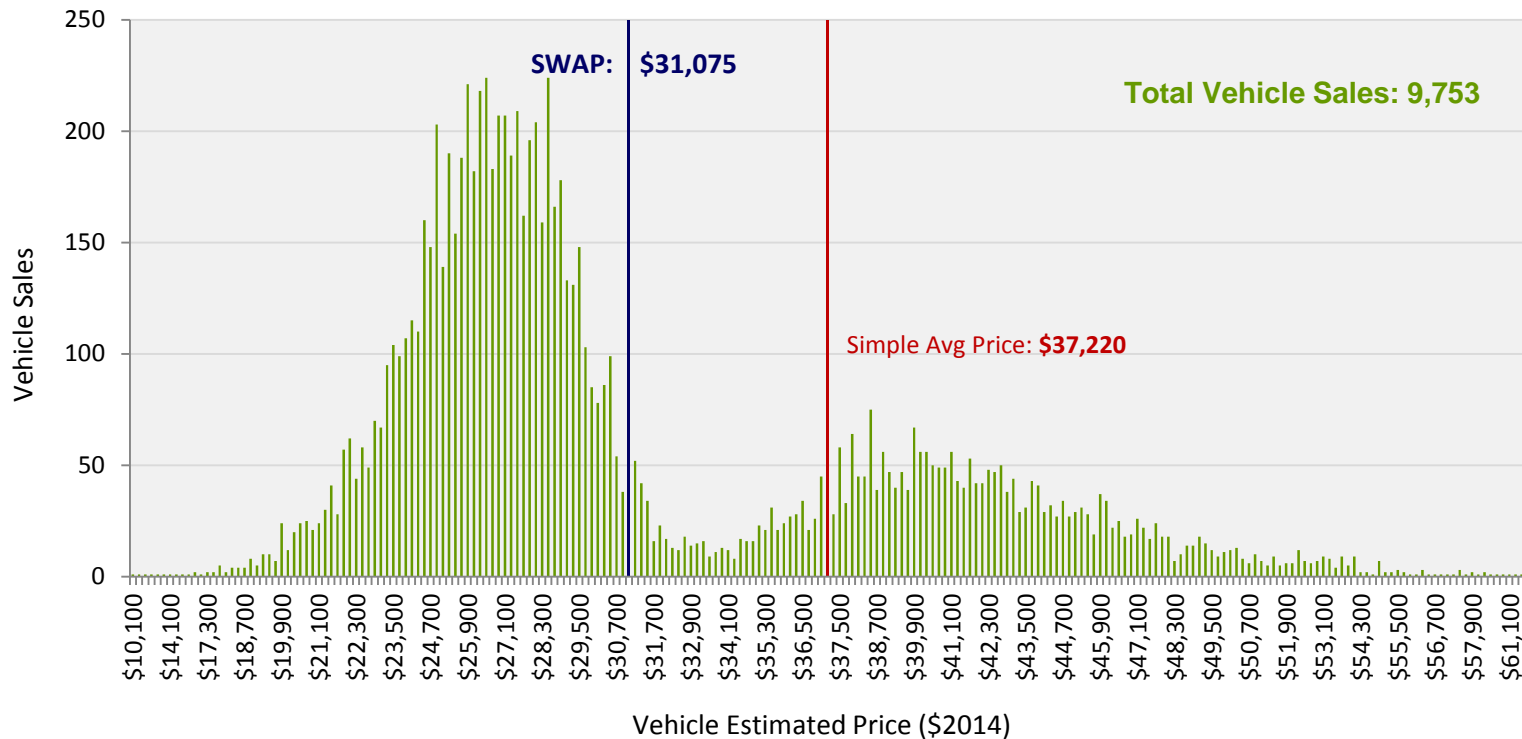
Fuels /Technologies (8)	
1	Gasoline
2	Gasoline Hybrid
3	Flex Fuel Vehicle (E85)
4	Diesel
5	Natural Gas (Dedicated & Bi-Fuel)
6	Plug-in Hybrid Vehicle
7	Battery Electric Vehicle
8	Hydrogen



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Sales-Weighted Average Price (SWAP)

Example: 2014 Diesel Car-Compact



Diesel – Compact Car Makes & Models:

VW Jetta

VW Golf

VW Beetle

BMW 328D

BMW 328XD SportWagon



New Vehicle Sales

(2010-2014)

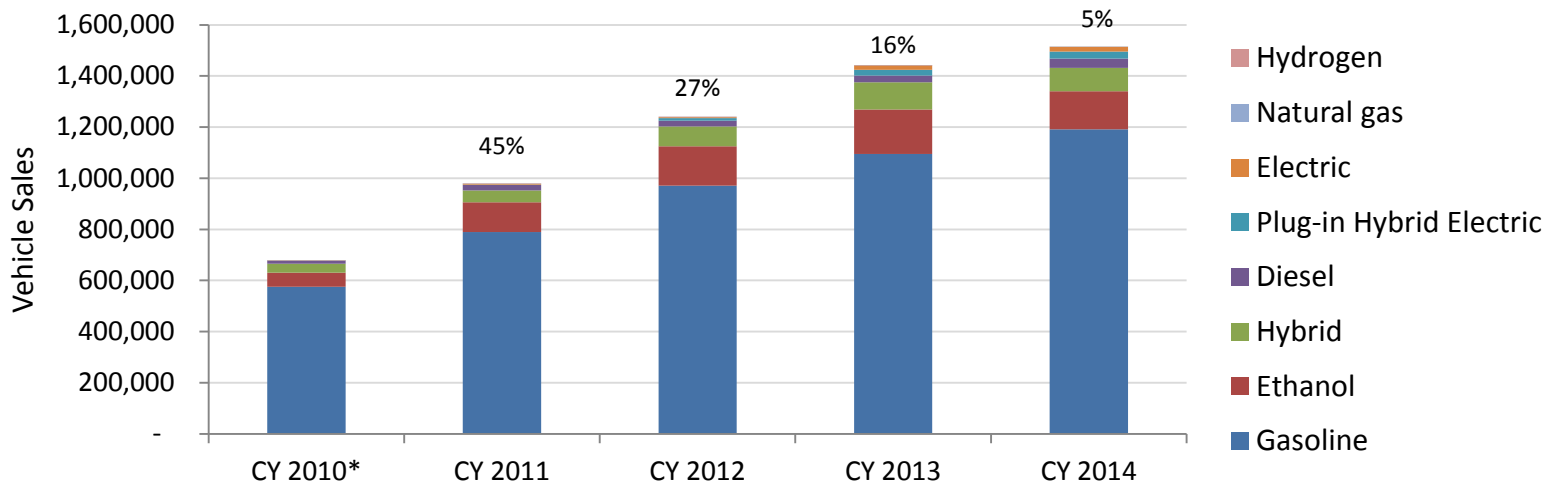
One Model Year per Calendar Year



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New Vehicle Sales

Light-Duty Vehicles – All Classes



Sales Distribution by Fuel/Technology

	2010	2011	2012	2013	2014
Gasoline	85.1%	80.5%	78.3%	75.9%	78.7%
Flex Fuel (E85)	8.1%	11.8%	12.4%	12.1%	9.8%
Hybrid	5.1%	4.8%	6.3%	7.4%	6.0%
Diesel	1.7%	2.1%	1.9%	1.8%	2.4%
Plug-in Hybrid Electric	-	0.1%	0.8%	1.6%	1.8%
Electric	-	0.5%	0.3%	1.2%	1.3%
Natural gas	0.05%	0.1%	0.1%	0.03%	0.04%
Hydrogen	0.0009%	0.002%	0.0004%	0.0003%	-

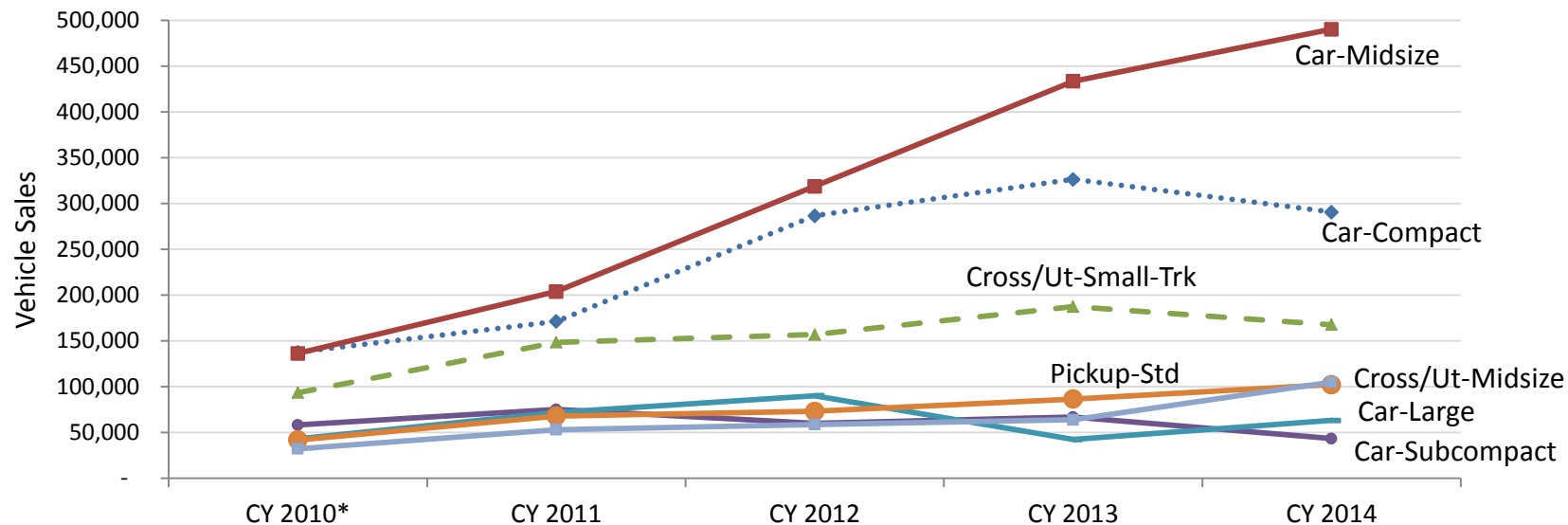
* Data available is from April-Dec 2010



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New Vehicle Sales

Light Duty Vehicle Classes– All Fuels



Sales Distribution by Class

	2010		2011		2012		2013		2014		
Car-Midsize	20.2%		20.8%		25.7%		30.1%		32.4%		Covers 80% of Total New Vehicle Sales
Car-Compact	20.3%		17.5%		23.1%		22.6%		19.2%		
Cross/Ut-Small-Trk	13.8%		15.1%		12.7%		13.0%		11.1%		
Cross/Ut-Midsize	4.8%		5.4%		4.7%		4.4%		6.9%		
Pickup-Std	6.2%		6.9%		5.9%		6.0%		6.8%		
Car-Large	6.4%		7.3%		7.3%		2.9%		4.2%		
Car-Subcompact	8.6%		7.7%		4.8%		4.6%		2.9%		
Rest of Classes	19.8%		19.2%		15.8%		16.3%		16.7%		Less than 20%

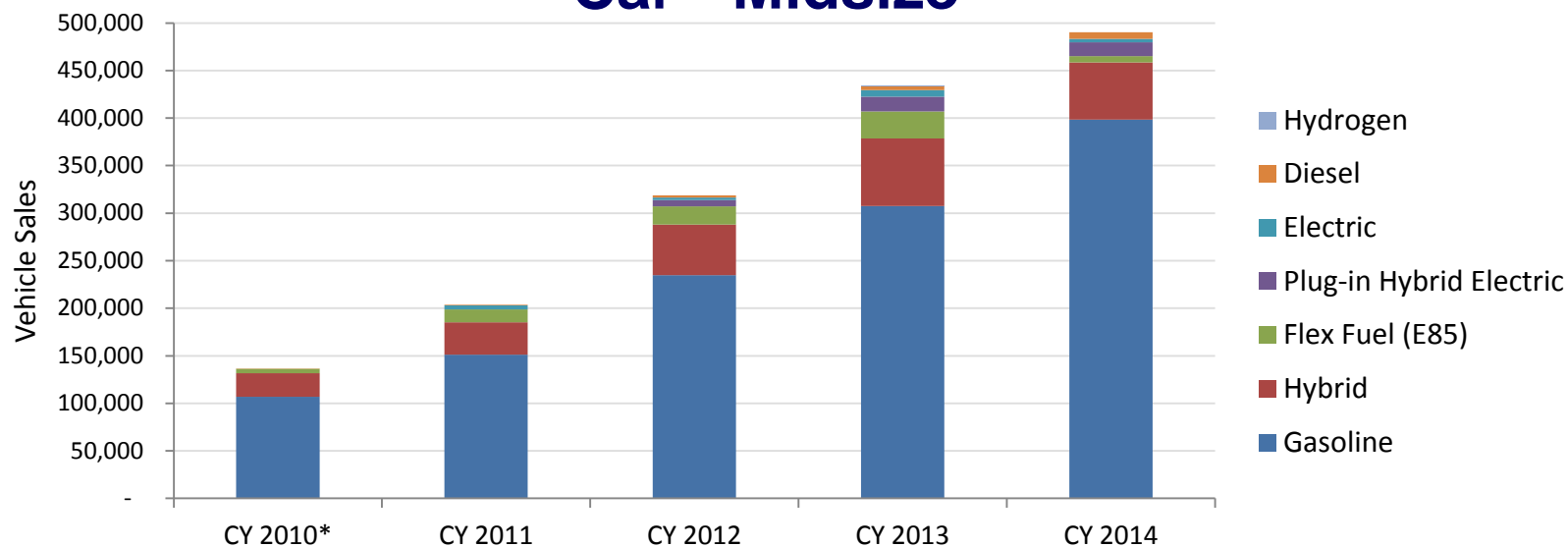


Car - Midsize



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New Vehicle Sales Car - Midsize



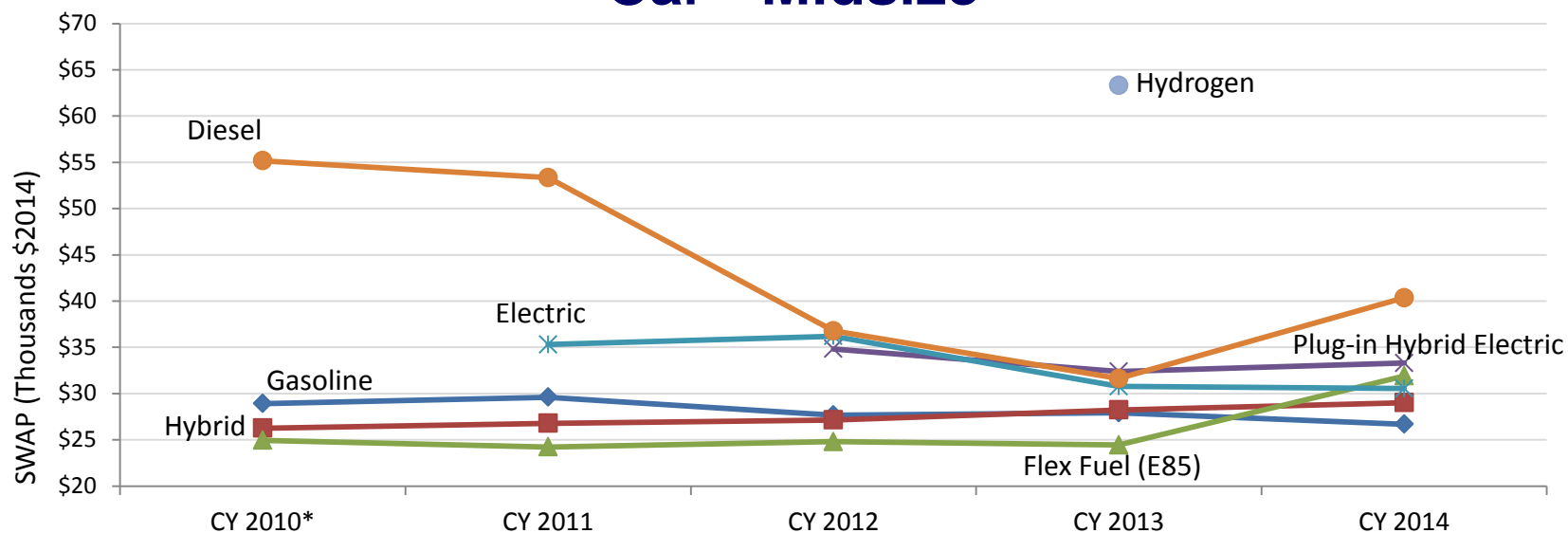
Car-Midsize Sales Distribution by Fuel/Technology

	2010	2011	2012	2013	2014
Gasoline	78.3%	74.1%	73.6%	70.9%	81.3%
Hybrid	18.2%	16.7%	16.7%	16.4%	12.2%
Flex Fuel (E85)	3.5%	6.7%	6.1%	6.6%	1.4%
Plug-in Hybrid Electric	-	-	2.0%	3.5%	2.9%
Electric	-	2.2%	0.8%	1.6%	0.8%
Diesel	0.1%	0.3%	0.8%	0.9%	1.4%
Hydrogen	-	-	-	0.001%	-



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Sales-Weighted Average Prices Car - Midsize



Incremental Price (\$) vs Gasoline SWAP

	2010	2011	2012	2013	2014
Hybrid	(2,663)	(2,821)	(514)	312	2,325
Flex Fuel (E85)	(3,972)	(5,373)	(2,875)	(3,471)	5,216
Plug-in Hybrid Electric	n/a	n/a	7,160	4,459	6,610
Electric	(28,924)	5,692	8,531	2,849	3,852
Diesel	26,235	23,742	9,101	3,715	13,653
Hydrogen	n/a	n/a	n/a	35,383	n/a

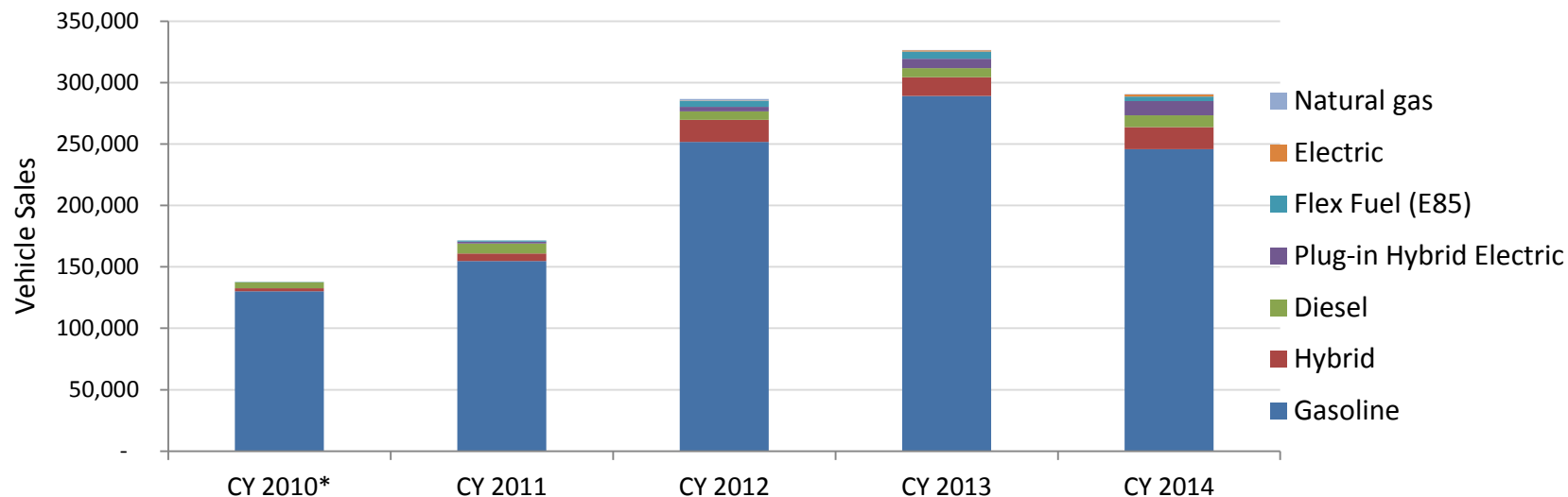


Car - Compact



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New Vehicle Sales Car - Compact



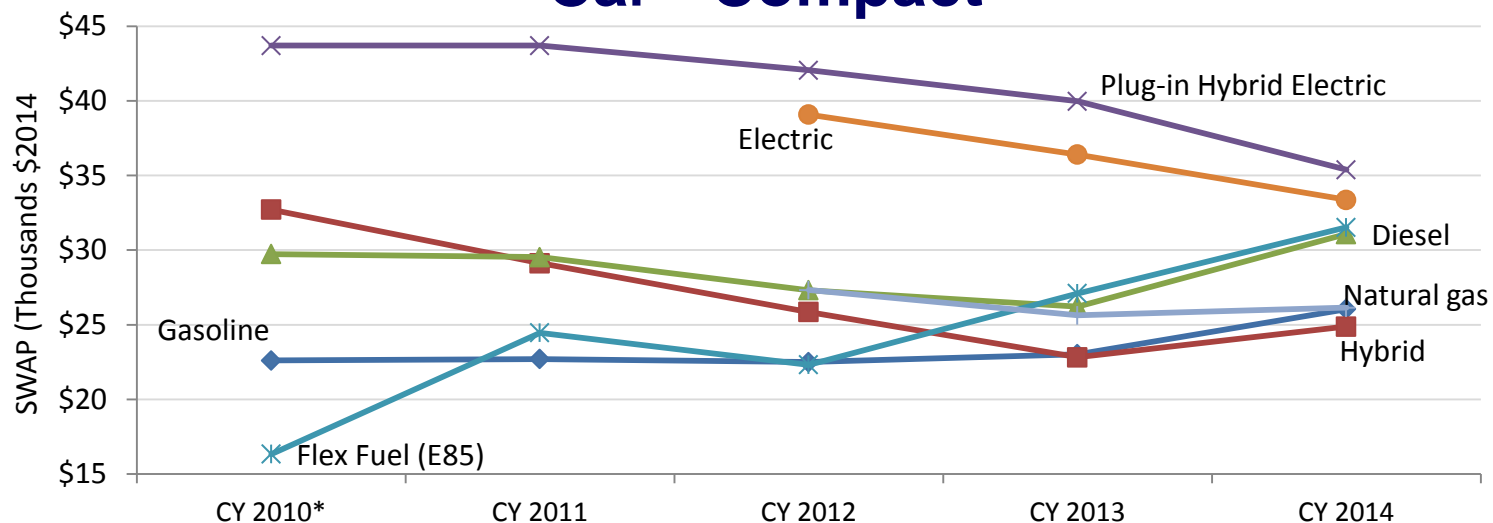
Car-Compact Sales Distribution by Fuel/Technology

	2010	2011	2012	2013	2014
Gasoline	94.6%	90.3%	87.8%	88.6%	84.6%
Hybrid	1.7%	3.6%	6.3%	4.7%	6.1%
Diesel	3.7%	4.8%	2.4%	2.3%	3.4%
Plug-in Hybrid Electric	-	0.8%	1.2%	2.3%	4.0%
Flex Fuel (E85)	0.03%	0.5%	1.7%	1.8%	1.3%
Electric	-	-	0.1%	0.3%	0.5%
Natural gas	-	-	0.4%	0.05%	0.1%



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Sales-Weighted Average Prices Car - Compact



Incremental Price (\$) vs Gasoline SWAP

	2010	2011	2012	2013	2014
Hybrid	10,106	6,417	3,351	(208)	(1,161)
Diesel	7,127	6,821	4,808	3,193	5,029
Plug-in Hybrid Electric	21,088	20,990	19,555	16,937	9,345
Flex Fuel (E85)	(6,272)	1,758	(186)	4,071	5,482
Electric	(22,612)	(22,707)	16,579	13,375	7,327
Natural gas	(22,612)	(22,707)	4,824	2,597	102

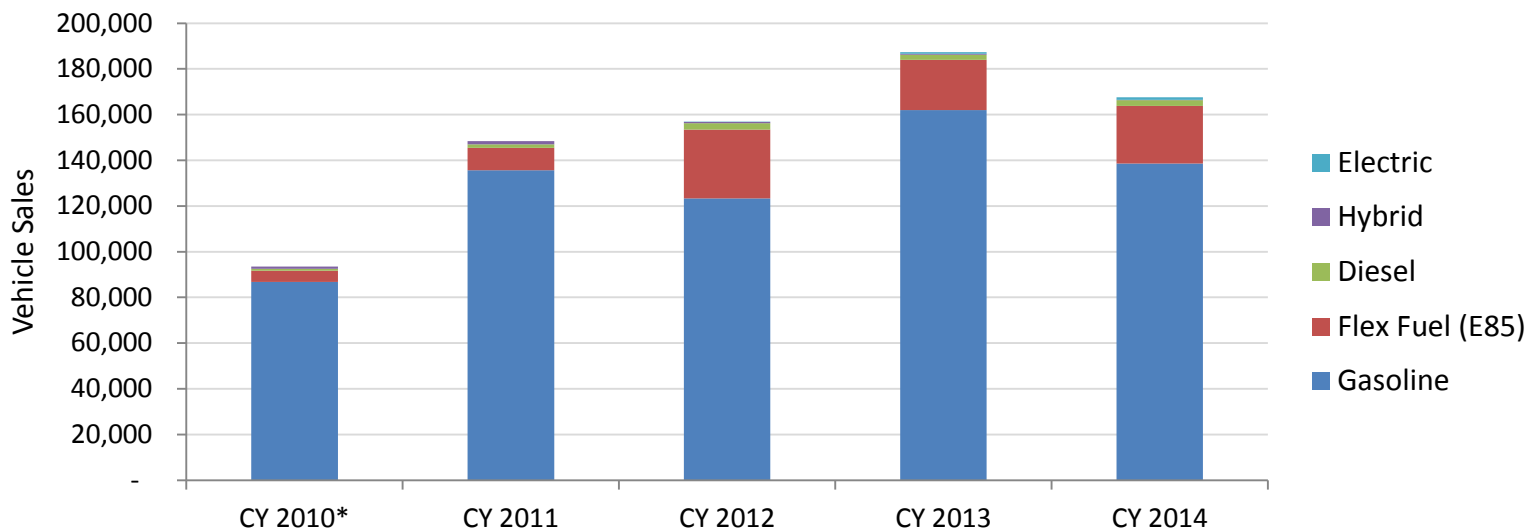


Cross/Utility Small-Truck



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New Vehicle Sales Cross/Utility Small-Truck



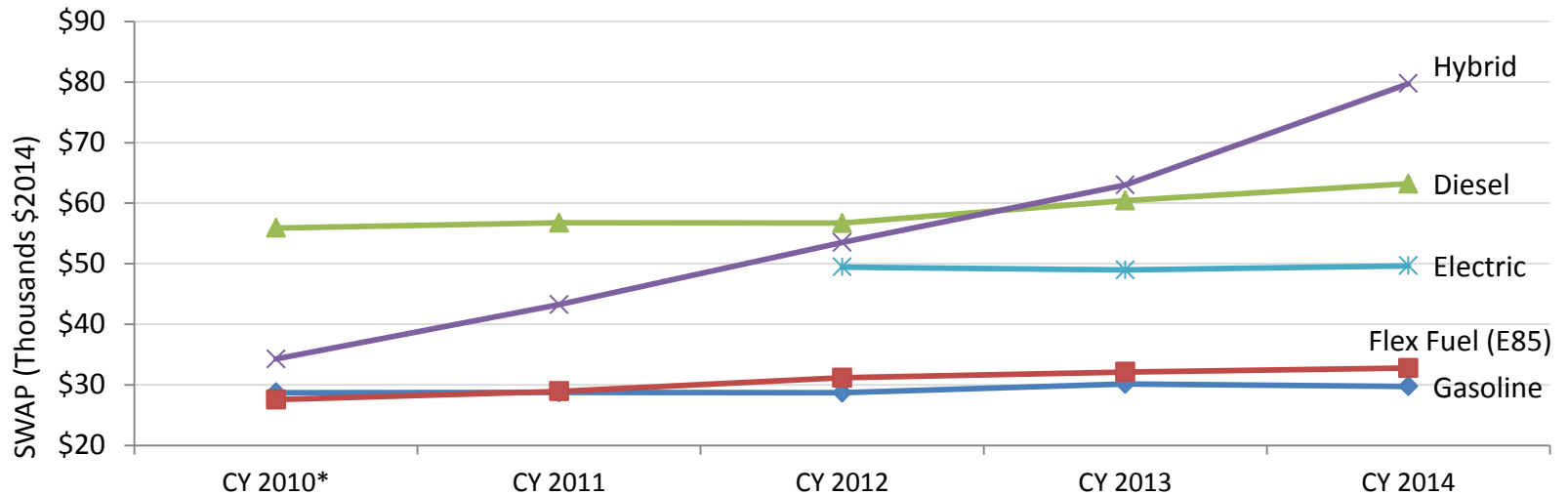
Cross/Ut-Small-Trk Sales Distribution by Fuel/Technology

	2010	2011	2012	2013	2014
Gasoline	92.7%	91.4%	78.6%	86.5%	82.7%
Flex Fuel (E85)	5.3%	6.7%	19.2%	11.7%	15.0%
Diesel	0.9%	1.1%	1.8%	1.2%	1.5%
Hybrid	1.1%	0.9%	0.4%	0.2%	0.1%
Electric	-	-	0.1%	0.4%	0.7%



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Sales-Weighted Average Prices Cross/Utility Small-Truck



Incremental Price (\$) vs Gasoline SWAP

	2010	2011	2012	2013	2014
Flex Fuel (E85)	(1,148)	186	2,476	1,981	3,026
Diesel	27,172	27,995	27,991	30,279	33,438
Hybrid	5,534	14,501	24,783	32,839	49,970
Electric			20,735	18,836	19,913



Summary

- California Energy Commission calculates Sales-Weighted Average Prices by processing and validating DMV data.
- Data used for Sales-Weighted Average Price calculations are available for the last five years (2010-2014) and only apply to Light-Duty Vehicles.
- California Energy Commission uses 15 vehicles classes and 8 different Fuels/Technologies for Light-Duty Vehicles.
- Sales-Weighted Average Prices provide a differentiation from other forecasting models since they are based on transaction prices in California.



Comments, Suggestions, Questions?

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