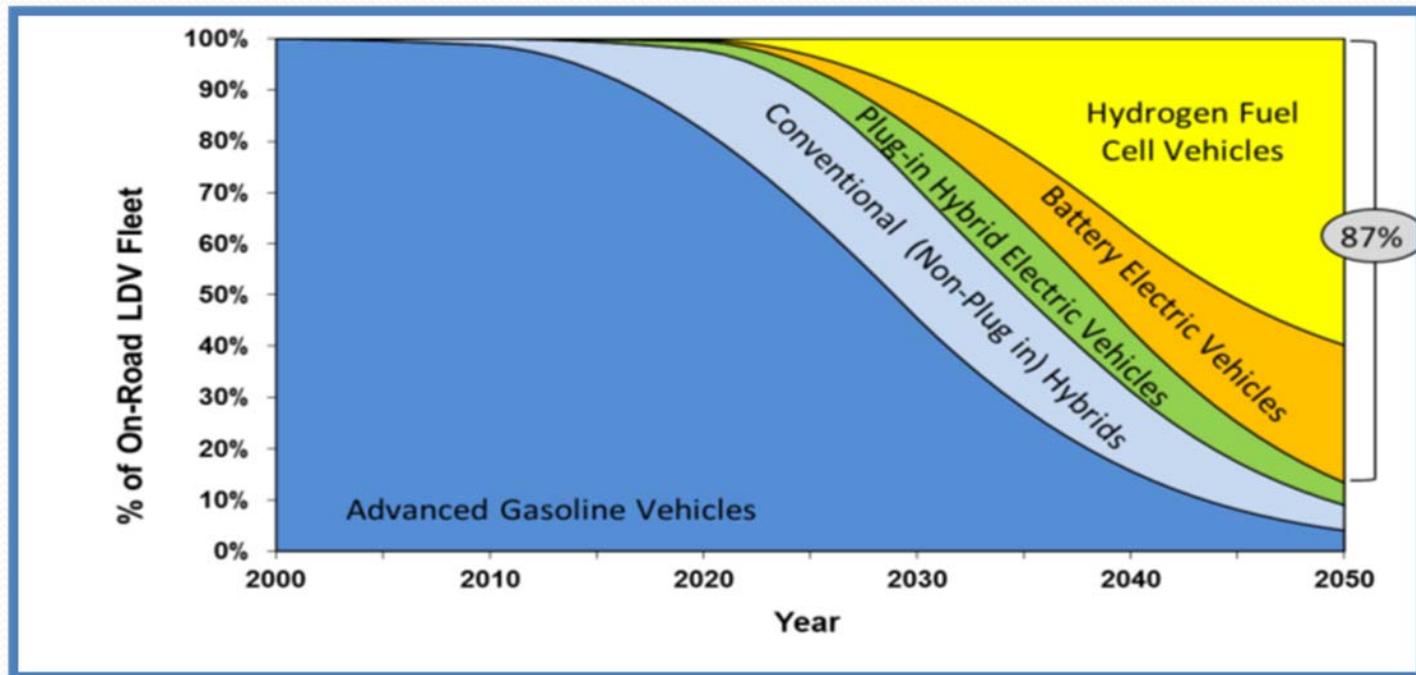


Advanced Technology Vehicles are the solution to meeting long term health-based air quality standards and greenhouse gas emission reduction targets

- *Nearly all vehicles must be zero emission by 2050*
- *Both plug-ins and fuel cell electric vehicles are needed*
- *Hydrogen is clean and will be produced domestically*
- *State investment in hydrogen has been lower than other alternative fuels*
- *Automakers are preparing to sell fuel cell vehicles*
- *Hydrogen stations needed to match vehicle rollout*
- *Hydrogen and fuel cell electric vehicles will have comparable costs to conventional vehicles*
- *Hydrogen widely used today in many industries and is safe*

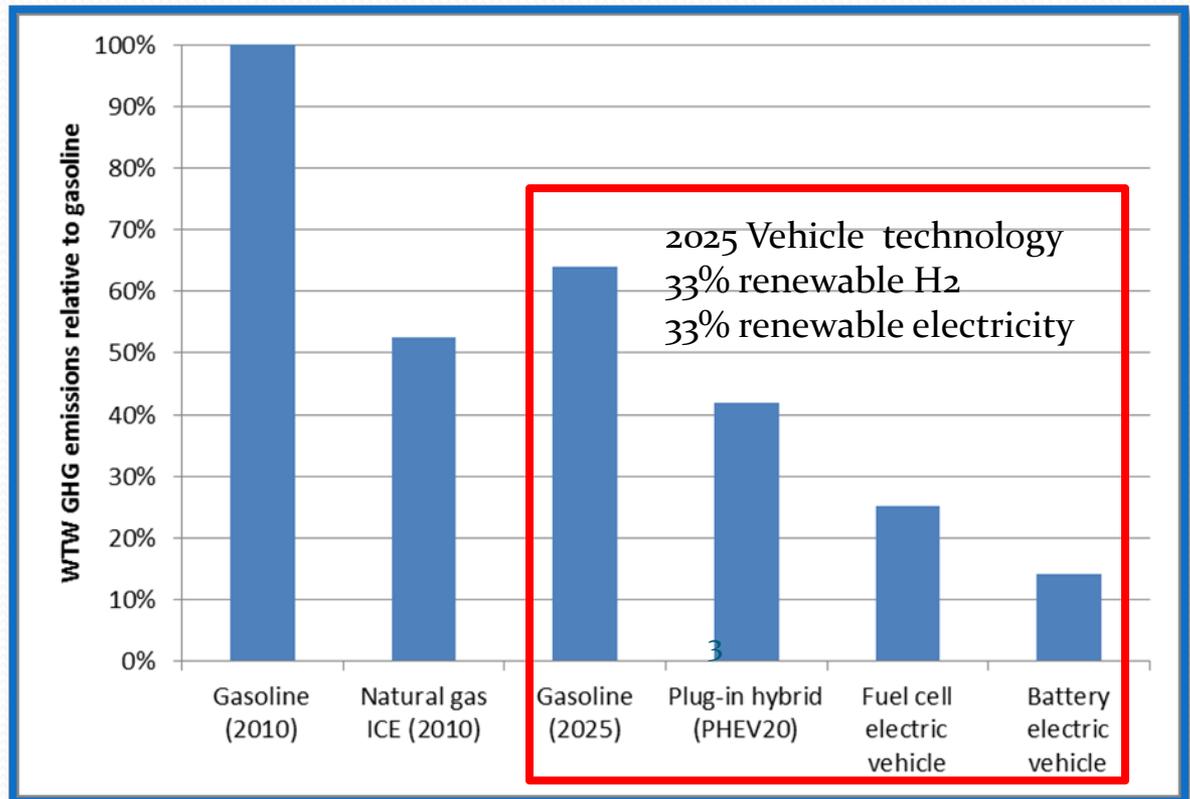
Meeting 2050 GHG reduction target long term

- Nearly all vehicles need to be zero emission by 2050



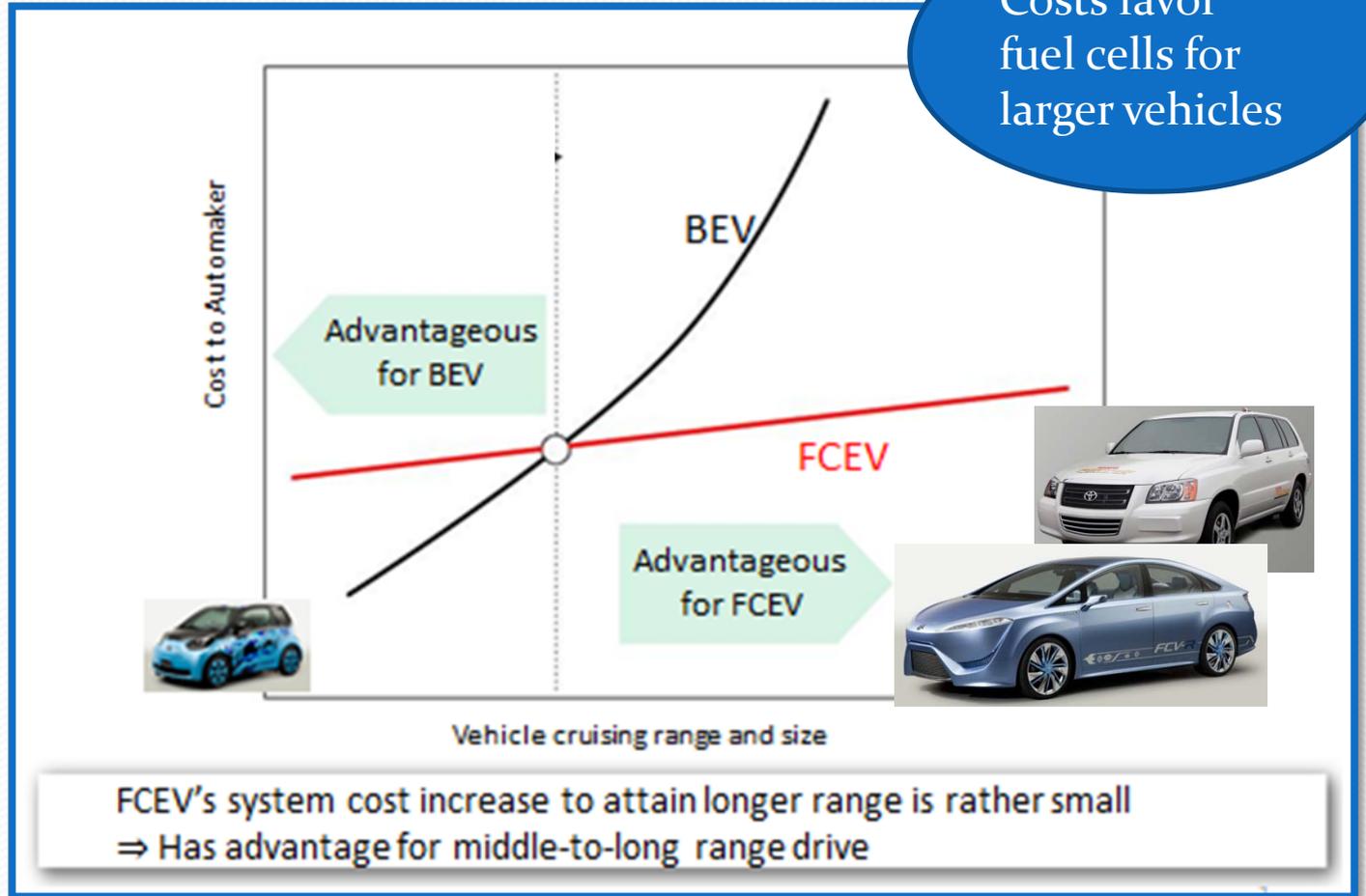
Zero emission vehicles offer significant GHG reductions

- Today's hydrogen stations, on average provide 33% renewable hydrogen
- Today's ZEVs produce lower GHG emissions than conventional gasoline vehicles
- Fuel cell and battery electric vehicles will have 75% to 85% lower GHG emissions by 2025, and will be even cleaner later on.

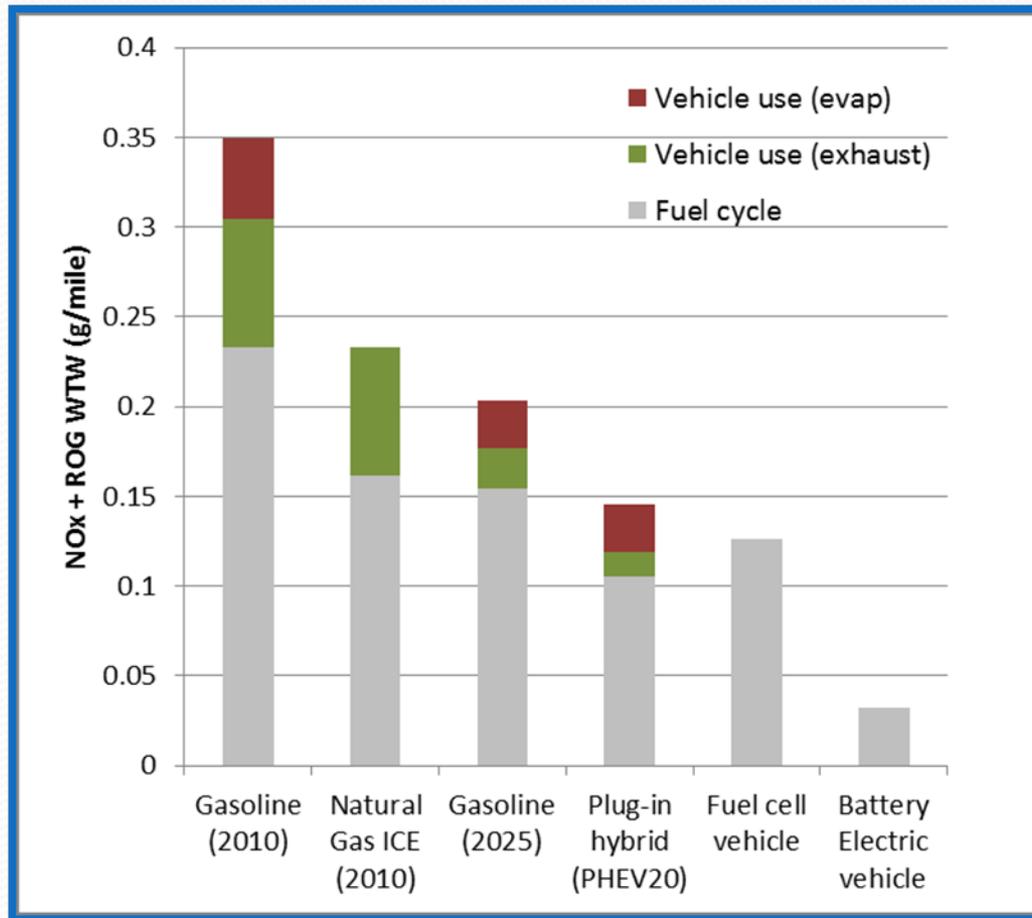


Both plug-ins and Fuel Cell EVs are needed

Car companies are developing a portfolio of ZEV technologies to match their full product lines

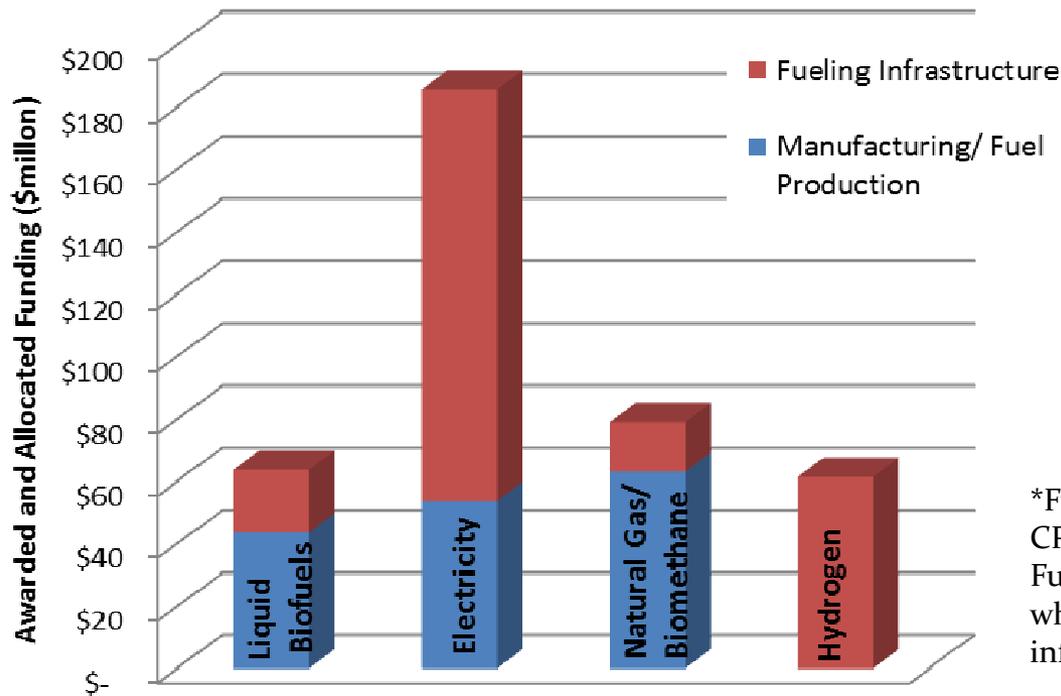


Advanced technology cars will help meet health-based air quality goals



State hydrogen investment has been lower than other alternative fuels

**Alternative Fuel Investment
2009-2013 ***



*Funding from AB118 investment plans and CPUC NRG Settlement (charging stations). Funding totals do not reflect federal funding which has favored investment in plug in infrastructure

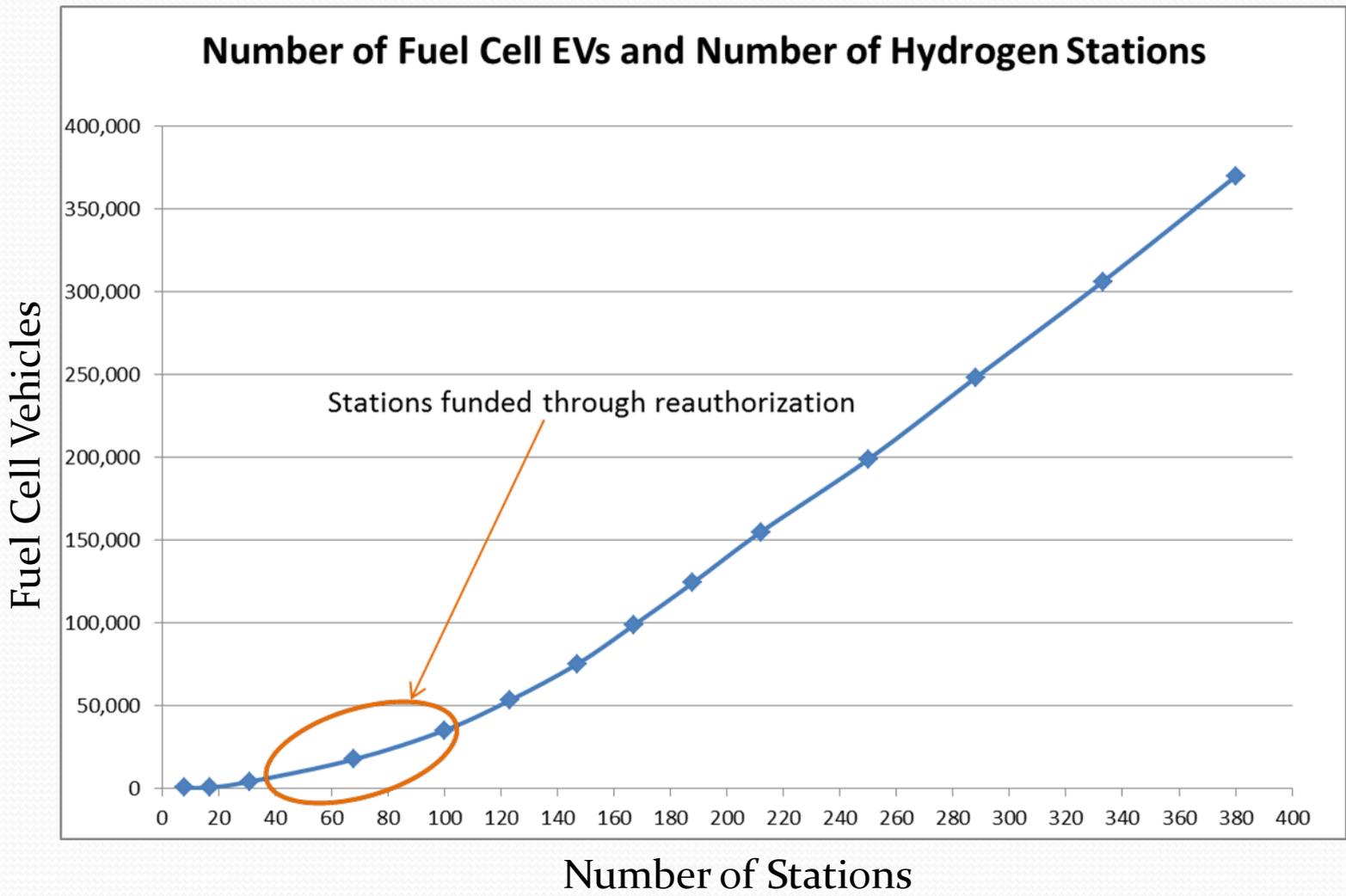
Automakers announce start of FCEV sales

“We know what we can do on the vehicle side. We need certainty on what will happen on the refueling infrastructure side.”

Steve Ellis, Manager of Fuel Cell Marketing at American Honda Motor Company

	Expected start of retail sales
Toyota	2015
Honda	2015
Hyundai	2015
GM	2015 or 2016
Nissan	2017
Daimler	2017
Ford	2017

Station Expansion Tied to Vehicle Introductions



A Comparison of Fueling Costs

FCEV
Honda Clarity
60 miles/kg



Kilograms of Hydrogen
\$8/Kilogram¹



Miles Driven
100 Miles



Cost of driving
\$13.33



Gas Car
Average 2012 midsize²
25 mile/gal



Gallons of Gasoline
\$3.65/gallon³



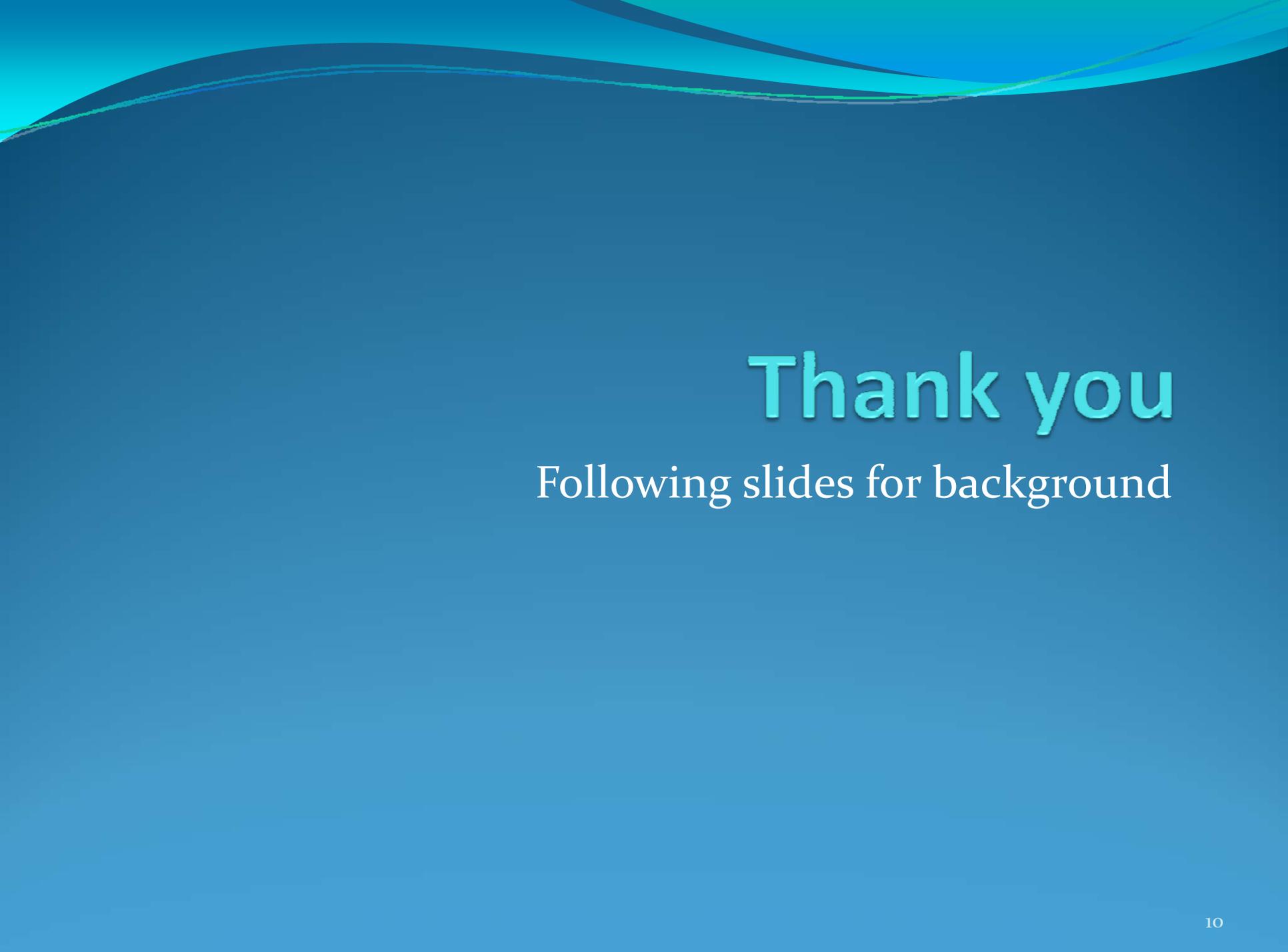
Miles Driven
100 miles



Cost of driving
\$14.60



1. Estimated retail price for hydrogen from Clean Fuels Outlet Staff Report, December 2011
2. Fueleconomy.gov
3. Average price of regular gasoline in 2012 from energyalmanac.ca.gov

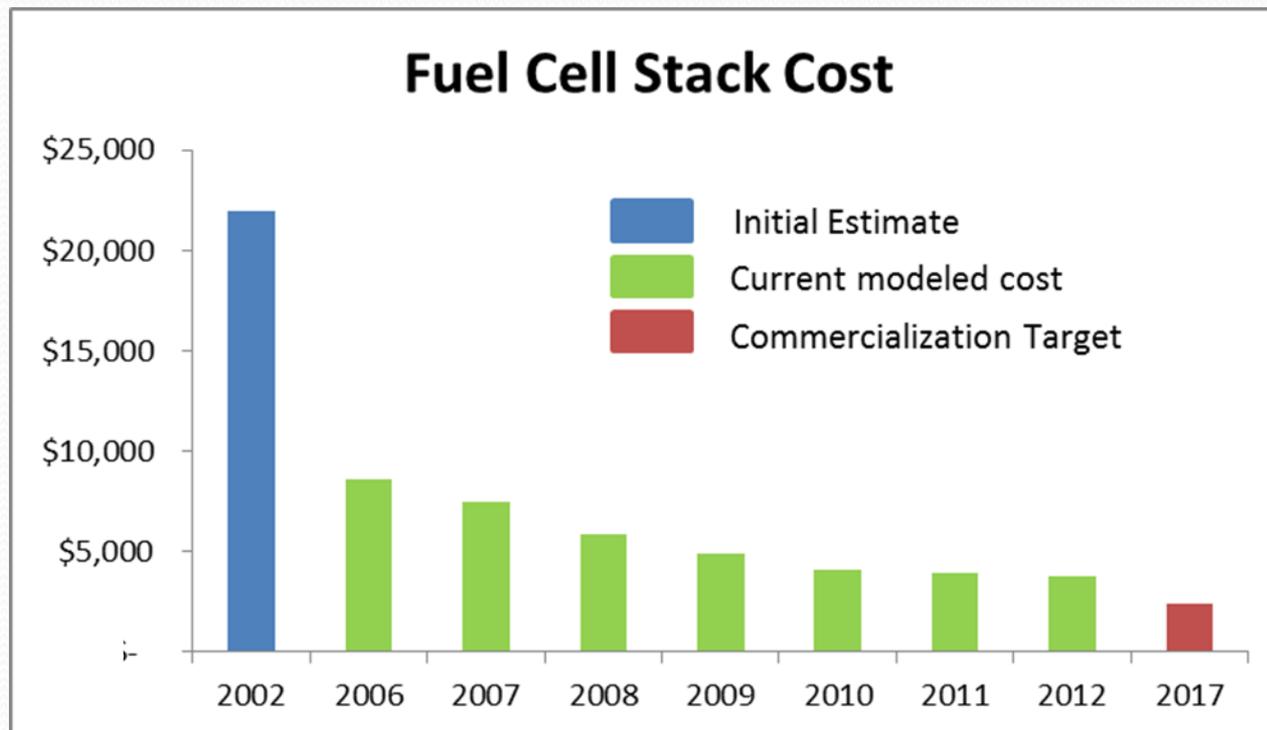


Thank you

Following slides for background

Cost of fuel cells is dropping

Department of Energy
2012 Annual Progress Report



The fuel cell stack is currently the most expensive part of an FCEV.

When cost targets are achieved, an 80kW fuel cell EV would have a \$2,400 fuel cell system bringing the cost of FCEVs comparable to gasoline cars

Hydrogen as a Transportation Fuel is Safe

- Used safely for over 50 years
- Over 23 Million kg of H₂ used in the U.S. daily
- Nonpolluting and nontoxic
- 14 times lighter than air
- FCVs are hybrids and all electric
- FCVs are subject to FMVSS and NHTSA safety standards

