Advanced Electric Vehicle Status and Production Update

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

COG Climate, Energy and Environment Policy Committee

November 17, 2010

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Comparison of Vehicle Technology

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- Plug-in Hybrid Electric Vehicle (PHEV) with ICE and electric drive

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Comparison of Vehicle Technology

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- Battery Electric Vehicle (BEV) with electric drive only

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Timeline of Advanced Electric Vehicle Availability

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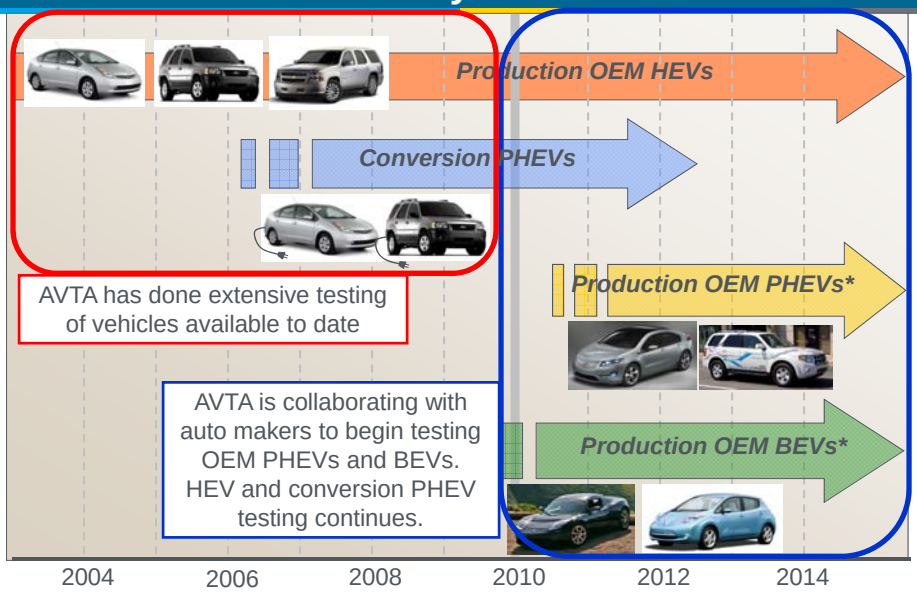

* Refers to PHEVs and BEVs produced for the mass market. OEMs have produced PHEVs and BEVs in low volume intermittently since the 1990's.

Plug-In Electric Vehicle Types, Examples

Toyota Prius Plug-In Hybrid
- Blended Mode – limited all electric capability
- Engine operates as needed while depleting battery, some EV only operation at lower speed
- Level 1 charging

Chevrolet Volt,
'Extended Range Electric Vehicle'
- Operates as an EV when charged, Gasoline engine powers as series-like hybrid when battery is depleted
- Can charge at levels 1 & 2.

Nissan Leaf
- 100% EV
- Can charge at levels 1,2, and DC fast charge (Optional)

http://www.toyota.com/about/environment/innovation/advanced_vehicle_technology/PHEV.html
http://www.chevrolet.com/volt/pictures/
http://www.jdpower.com/autos/car-photos/Nissan/Leaf/2011/

Charging Technology – Level 2

- Level 2 Electric Vehicle Supply Equipment (EVSE) is standardized by SAE J1772
  - EVSE Supplies 240 V AC at up to 40A to the vehicle through a standardized connector

  - Charger is on the vehicle, converts AC power to DC to charge the batteries

http://www.blinknetwork.com/media/kit/Blink%20L2%20Pedestal%20Charger.pdf

DC Fast Charge - Example

- Currently no standard set in US
- Some Nissan Leafs will use CHAdeMO
  - Japanese standard for DC Fast Charge
  - 480VAC 3Ø input converted to DC output (up to 450VDC), connected to vehicle,
  - Connector and charge control standardized per CHAdeMO

http://www.blinknetwork.com/media/kit/Blink%20DC%20Fast%20Charger.pdf

Announced PHEV Introductions*

Make/Model	Estimated Production Date	All-Electric Range
Cadillac XTS Platinum	2012	20
Chevrolet Volt	Late 2010	40
Fisker Karma S	2011	50
Fisker Nina	2012	
Hyundai Blue Will	2012	40
Jaguar XJ	2011	30
Land Rover Range Rover Sport	2012	20
Toyota Prius	2012	13
Volkswagen Golf	2012	31
Volvo V70	2012	31

*** Presenter makes no accuracy claim for the above information. Some info based on manufacturer websites.**

Primary source: U.S. PEV Production Status: September 16,2010. From SENTECH PEV Weekly Update

Announced BEV Introductions*

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Make/Model	Estimated Production Date	All-Electric Range
Aptera 2e	2011	100
Coda Sedan	2010	100-120
Ford Focus	2011	100
Ford Transit Connect	2011	80
Mitsubishi iMiev	2011	93
Nissan Leaf	Late 2010	100
Smart EV	2012	84
Tesla Roadster	Current	244
Tesla Model S	2012	variable
Th!nk City	2010	130
Volkswagen E-Up	2013	80

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EV Project Vehicle Deployment

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Phoenix (AZ),
Tucson (AZ),
San Diego (CA),
Los Angeles (CA),
Portland (OR),
Eugene (OR),
Salem (OR),
Corvallis (OR),
Seattle (WA),
Nashville (TN),
Knoxville (TN),
Chattanooga (TN),
Washington D.C.,
Dallas (TX),
Fort Worth (TX),
Houston (TX).

Participation Targets
5700 Nissan Leafs
2600 Chevrolet Volts
14650 Level 2 Chargers
310 DC Fast Chargers

Charging Infastructure Locations

•EV Project participants are a subset of GM and Nissan PEVs being sold
•EV Project will collect data on vehicle and infrastructure use.

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Additional Information

http://avt.inl.gov
or
http://www1.eere.energy.gov/vehiclesandfuels/avta/