



***Daniel B. O'Connell***  
***Director – Fuel Cell Commercialization***

Since 1970's, GM has improved fuel efficiency of the internal combustion engine by:



**130%**  
*for Cars*



**80%**  
*for Trucks*

**GM** has **more models** that get **30 mpg** or higher on the highway than any other manufacturer





# *Powertrain Advances*

- Active Fuel Management
- Variable Valve Timing
- Direct Fuel Injection
- Homogenous Charge Compression Ignition (HCCI)
- Energy-efficient transmissions
- Improved aerodynamics
- Lighter materials



# The GM U.S. "FlexFuel Club"





HYBRID  
2 MODE



# Electrification of the Automobile





HYBRID  
2 MODE



# HYBRIDS



# HYBRID

## 2 MODE



**HYBRID**



Saturn AURA Green Line

# VUE PLUG-IN



SATURN



**WARD'S**  
AutoWorld

BMW  
The New Big Six  
Lincoln



Not a **Sensible Shoe**

GM puts design pizzazz in eco-friendly segment with Chevy Volt concept.  
On page 34

2007 NORTH AMERICAN INTERNATIONAL AUTO SHOW

7 PAGES OF COVERAGE

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2007 NORTH AMERICAN INTERNATIONAL AUTO SHOW

# Charged up

GM's Volt is an electric concept – if it's on road soon



2007 NORTH AMERICAN INTERNATIONAL AUTO SHOW

# GM POWERS UP

Awards sweep, electric car rollout give automaker jolt of energy



ALTERNATIVE FUELS :: HIGH MPG GREENCAR

# GREEN CAR JOURNAL

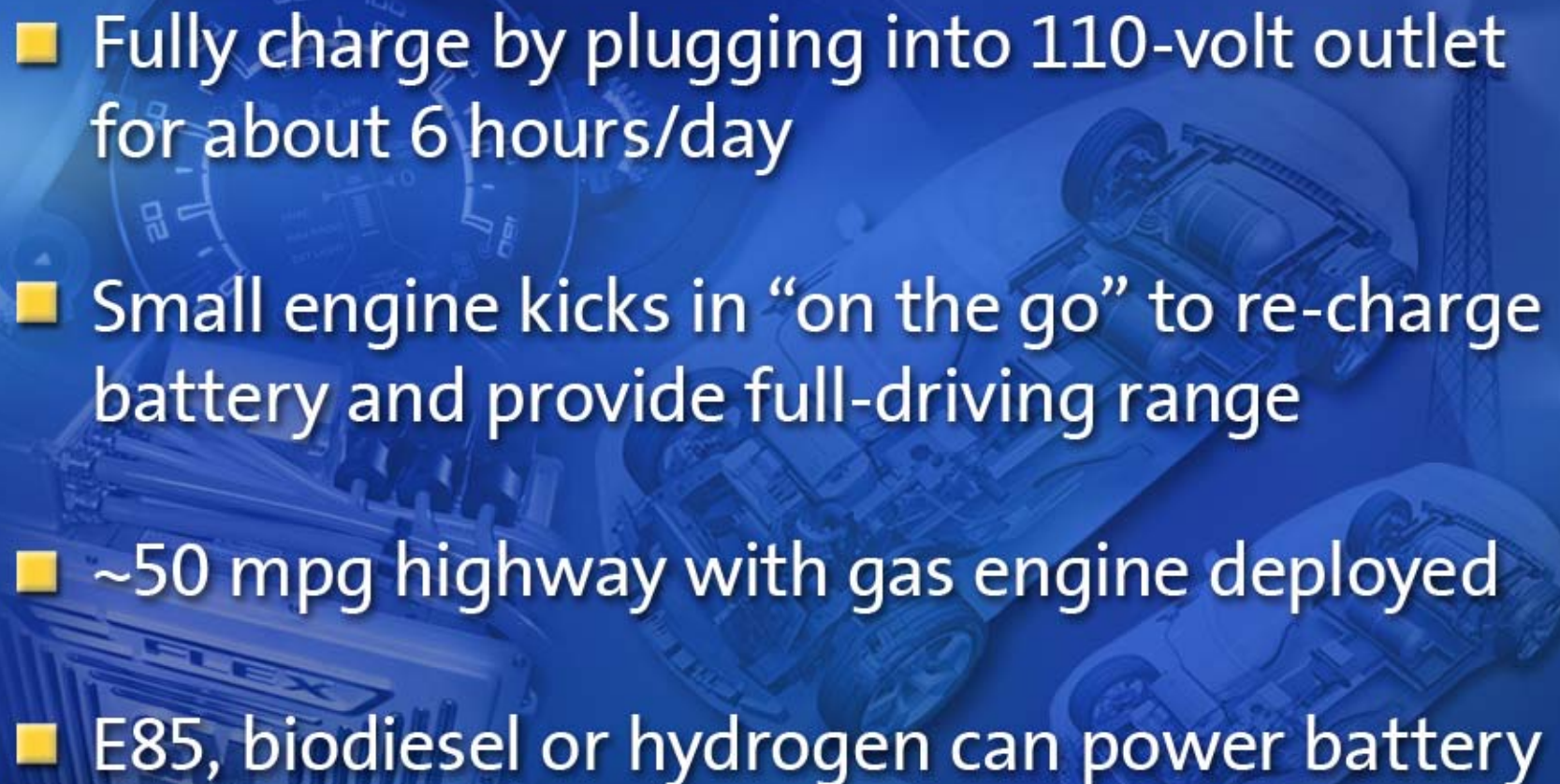
CHEVROLET VOLT!  
ELECTRIC PROPULSION IS ALIVE AND WELL AT GM



# WATT A CONCEPT

GM's Earth-friendly Volt recharges interest in electric car

# ***Volt Consumer Benefits***

- Fully charge by plugging into 110-volt outlet for about 6 hours/day
  - Small engine kicks in “on the go” to re-charge battery and provide full-driving range
  - ~50 mpg highway with gas engine deployed
  - E85, biodiesel or hydrogen can power battery
- 
- The background of the slide is a blue-tinted collage of automotive-related images. On the left, there is a close-up of a car's instrument cluster showing a speedometer and other gauges. In the center and right, there are top-down views of car chassis, highlighting the engine, transmission, and battery placement. At the bottom left, a car battery is visible with the word 'FLEX' printed on its top surface.

# EQUINOX FUEL CELL



## *Project Driveway*

- Largest fuel cell vehicle market test
- 100+ vehicles in the hands of customers



## ***Fuel Cell Benefits***

- ***No Petroleum use***
- ***Fast Refill time***
- ***Zero Emissions for long trips***
- ***Clean exportable power***

# Chevrolet Groove, Beat and Trax



