



From Lab to Real World: OnStar's Smart Grid Solutions

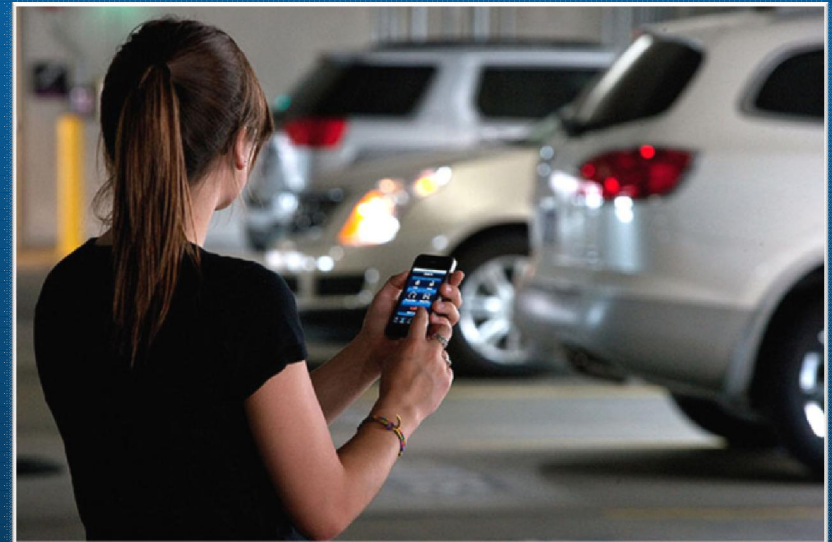
Nick Pudar

Vice President, OnStar Planning & Business Development



Chevy Volt and OnStar

- With thousands of Volts on the road, we are learning more everyday



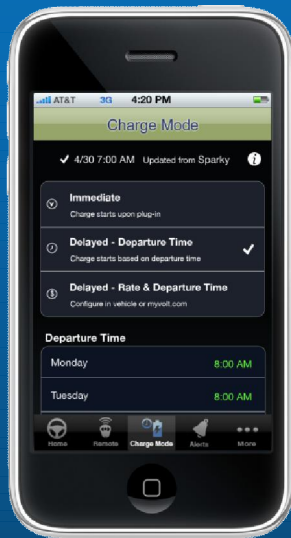
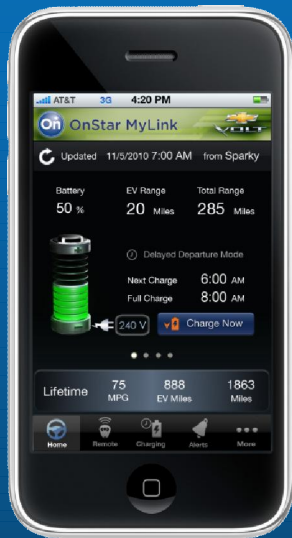


Putting the Power in Customers Hands

RemoteLink

Diagnostics e-mail

MyVolt.com



- Electric miles driven
- eMPG
- Overall MPG
- Charge status and options

Dear John Smith,
Welcome to OnStar Vehicle Diagnostics, a monthly email report on your vehicle's key operating systems. Check out our online experience to learn how to get the most out of your monthly email reports.

Log in to your account and ensure your emergency contact information is current.

OnStar Vehicle Diagnostics for your Chevrolet Volt as of 12/01/10

No Issues Found | Action Suggested | Immediate Attention

Diagnostic Information

- ✓ Volttec™ Propulsion System
 - ✓ Electric Drive Unit
 - ✓ Engine
 - ✓ Lithium-Ion Battery
- ✓ Regenerative Braking System
- ✓ Air Bag System
- ✓ StabiliTrak® Stability Control System
- ✓ Emission Control System
- ✓ OnStar System

Energy Efficiency

Fuel Economy:	241 mpg
Electric Economy:	30kW-hr/100 miles
Electric Miles:	5585
Gas Miles:	1460
Total Miles:	7045
Percentage on Electric:	70%
Estimated Gallons of Fuel Saved:	29 gal
Estimated CO ₂ Avoided:	812 lbs

GET MORE DETAIL →

Vehicle Information

2011 Chevrolet Volt
VIN: 2CNDL7E256083927
FlexFuel E85 Compatible +

Warranty Tracker
Your warranty coverage is current and active.

Volt Owners Site

Log into MyVolt.com to view complete information, get to know your Volt, check charging status and more.

LOG IN →

Settings & Preferences

Mobile Application
Access your Volt data and control settings through your mobile device.

GET THE APP →

Charge Mode

Current Profile:
Charge prior to departure.

CHANGE PROFILE →

Notification Information

OnStar Subscription
• Account #: 008-677-7900
• Directions & Connections Plan
• Expires 12/01/2015

EV Rate Special
Your local utility has a special EV rate plan available. To learn more about how that rate plan can save you money, click below:

Current Charge Mode

The Volt features three programmable Charge Modes, allowing you to control how your vehicle is charged based on your driving schedule as well as your local electric rates. Your current mode is selected below.

Note: For additional information on charging, refer to the Plug-In Charging section of your Owner's Manual available [here](#).

Charge Mode	Description
<input type="radio"/> Immediate Green	Your Volt starts charging as soon as it is connected to an electrical outlet.
<input type="radio"/> Delayed - Departure Time Greener	Your Volt calculates when to start charging based on your next selected departure time. Choosing this option helps reduce your impact on the electric grid as your Volt will most likely charge during the night or early evening when less electricity is being used. Charging is complete by your departure time as long as there is sufficient time after the charge cord is plugged in.
<input type="radio"/> Delayed - Rate and Departure Time Greenest	Your Volt calculates when to start charging based on several factors: <ul style="list-style-type: none">• Your selected departure time for the current day of the week.• Your local electric rate schedule.



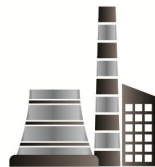
What We've Learned...

- Two thirds of Volt miles are electric
- 40 percent of Volt charges use a 240 volt outlet
- On average 1,000 miles between fill-ups





Electric Grid Supply and Demand



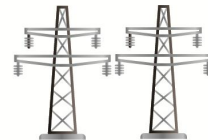
Power Generator



Transmission Substation



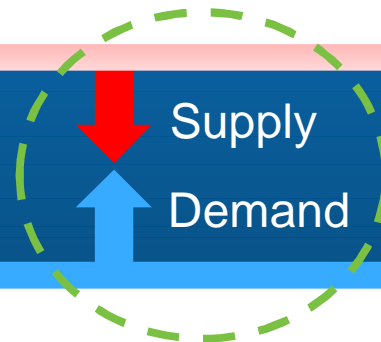
Distribution Substation



Distribution Power Electronics



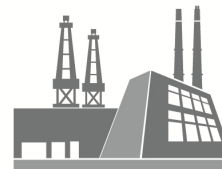
Distributed Resources



Residential Customer



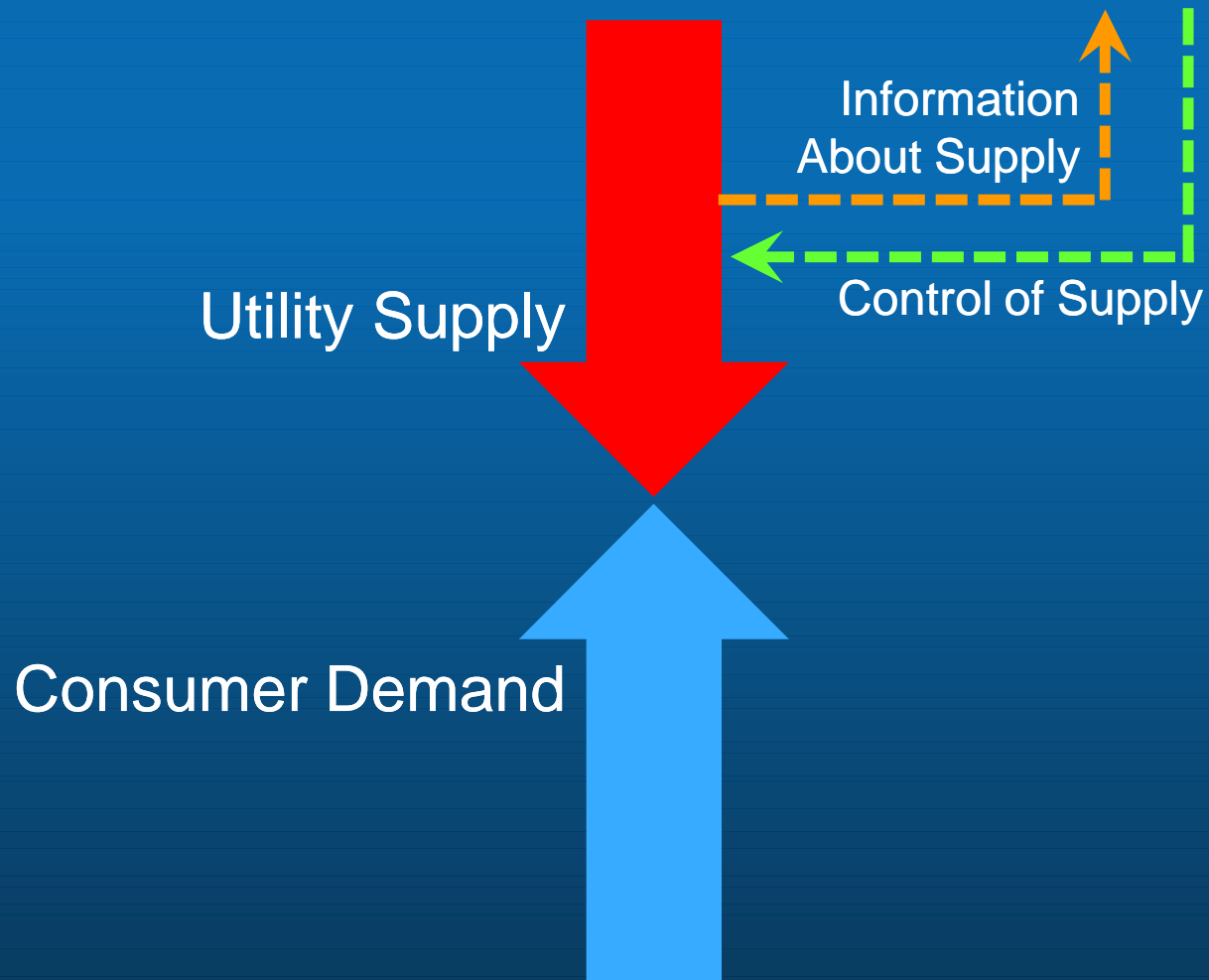
Commercial Customer



Industrial Customer

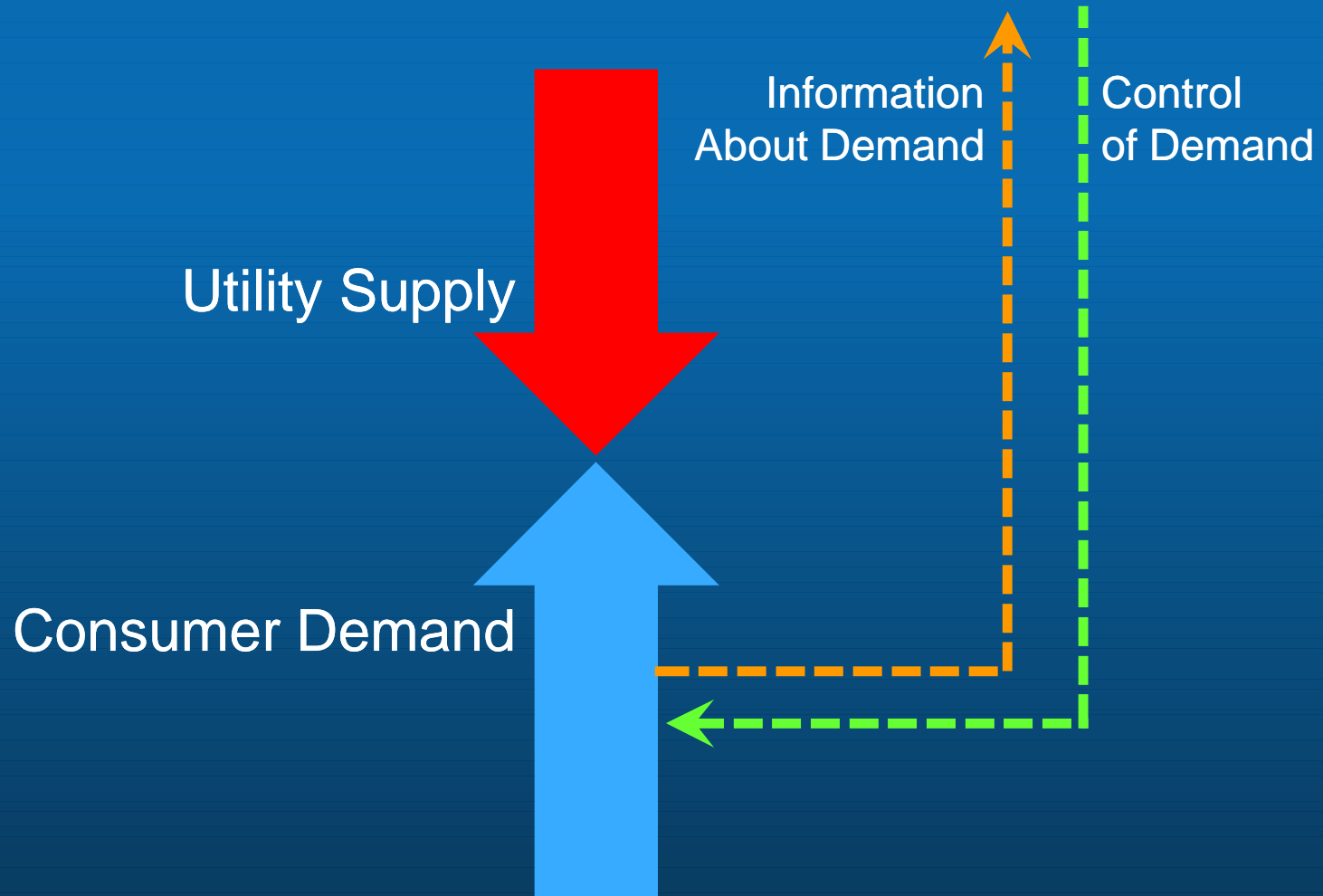


Current Grid Capability



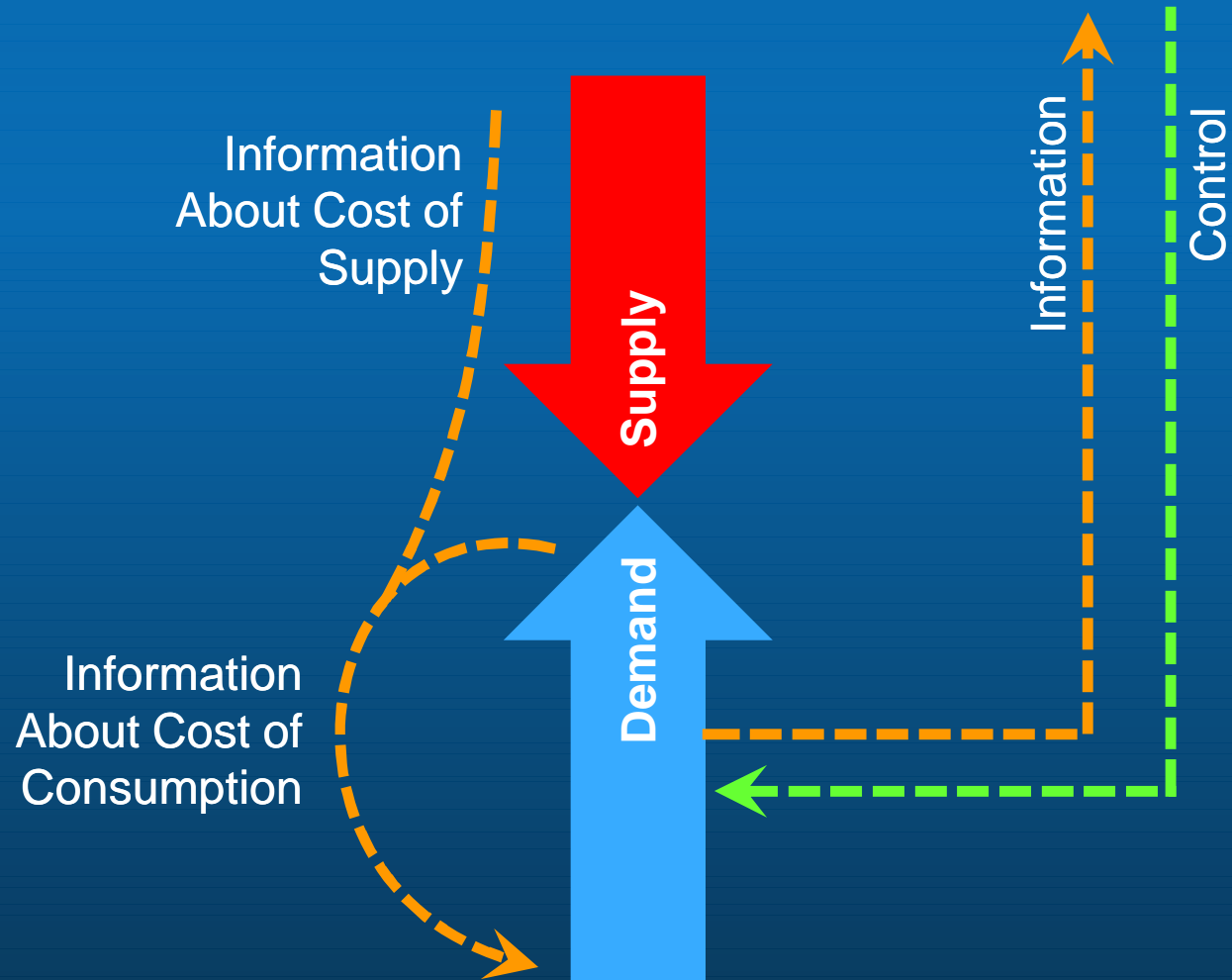


SmartGrid Capability



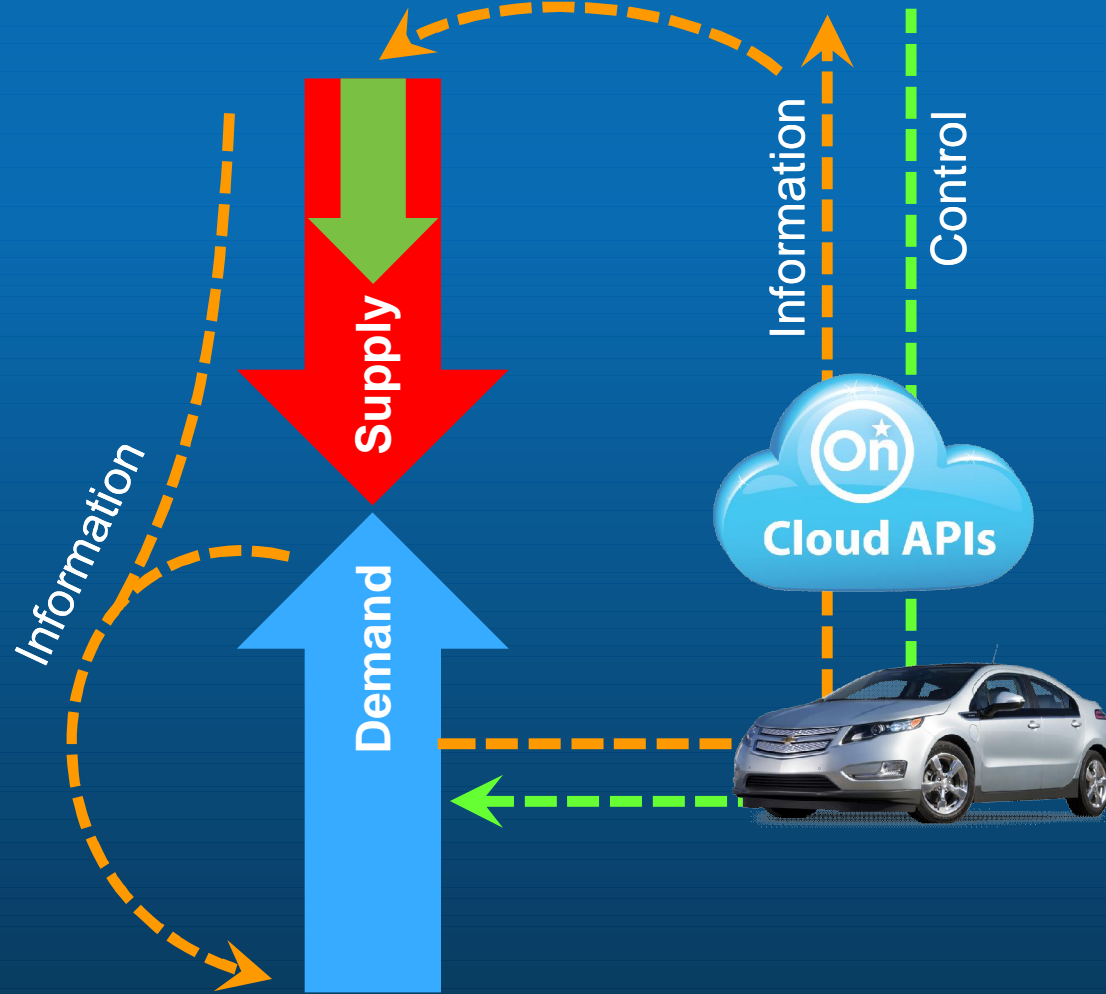


SmartGrid Capability



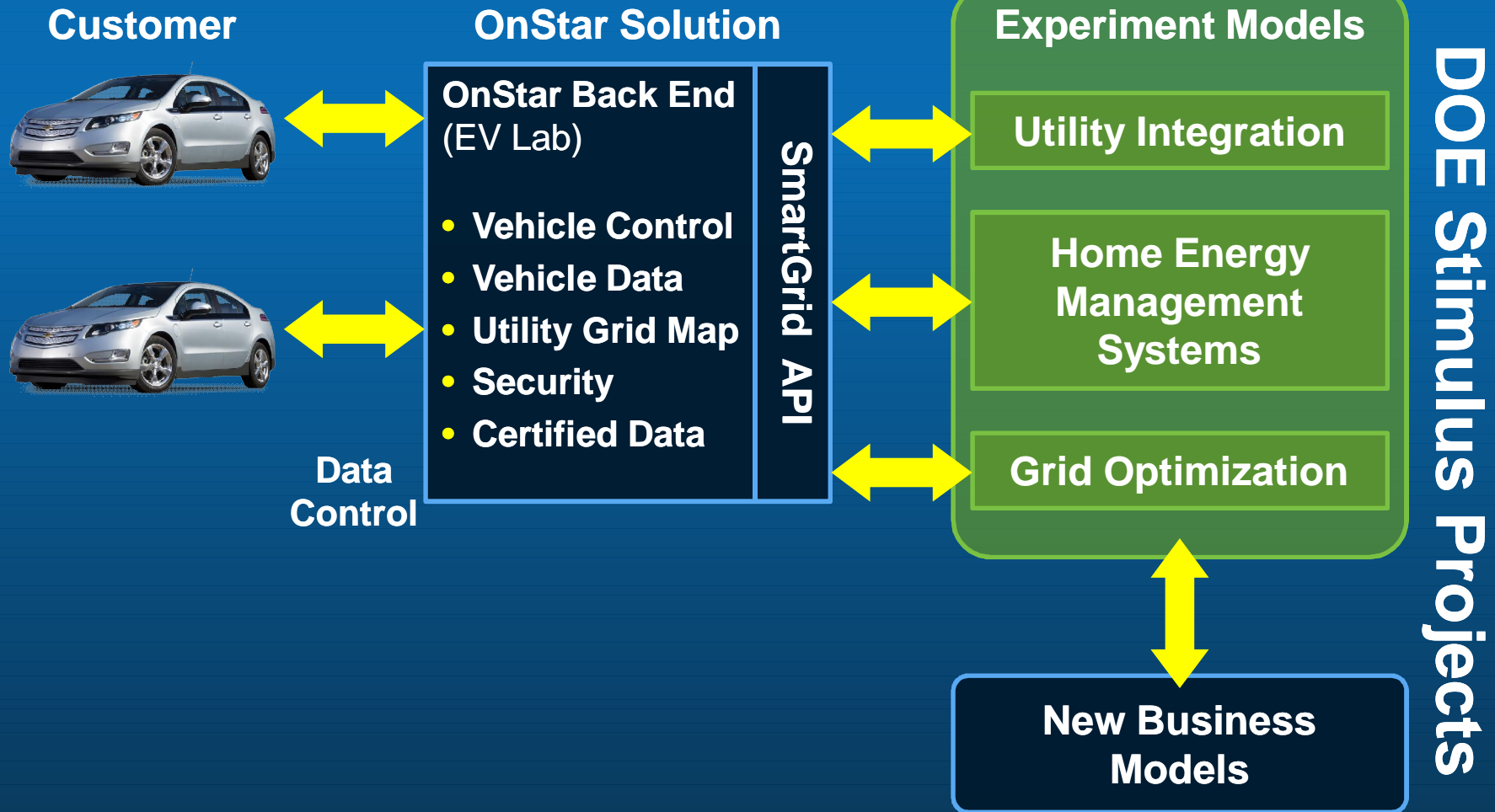


SmartGrid Capability





GM / OnStar SmartGrid Approach





OnStar's Smartgrid Solutions

Demand Response

EV Data







Benefits

For the Customer:

- Find low-cost solutions
- Address energy needs
- Leverage OnStar data capabilities

For the Utility Provider:

- Manage load demand
- Increase EV rate adoption
- Roam charge aware



Electric Vehicle (EV) Eco-System



OnStar's Smart Connectivity
is "Future Ready" Today!



First to Introduce a Real World Solution

