EV Everywhere Grand Challenge

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Vehicle Weight Reduction
Reduce vehicle weight by nearly 30%
(Includes body, chassis, interior, electric drive components, and compounding weight reductions)

Electric Drive System
Reduce cost from $30/kW in 2012 to $8/kW
(1.4 kW/kg, 4 kW/L, 94% efficiency)

Battery
Reduce cost from $500/kWh in 2012 to $125/kWh
(250 Wh/kg, 400 Wh/L, 2 kW/kg)
• December 1, 2015
• Ameren Corporation, St. Louis, MO
• 100+ stakeholders from EV industry

Marty Lyons, Executive VP and CFO of Ameren Corporation, welcomes everyone to the Stakeholder Summit. Photo courtesy of Ameren.
400,000+ PEVs on American highways at the end of 2015
Alternative Fueling Station Locator

12,180 electric stations
30,628 charging outlets
in the United States

Excluding private stations

http://www.afdc.energy.gov/locator/stations/

12,000+ public PEV charging stations in the U.S.
Consumer education and outreach on PEVs under tagline “Best.Drive.EVer.—Go Electric!”
$100 Billion+
the amount U.S. utilities have spent over the past 10 years to modernize the grid
EV Everywhere Utility Partnership

• DOE signed MOU with Edison Electric Institute in June 2015
• Breaking down barriers to widespread EV deployment
• 10 joint activities

Tom Kuhn, President of EEI, and Ernest Moniz, U.S. Secretary of Energy sign MOU in June 2015. Photo courtesy of EEI.
Battery Cost Reduction

$264 Cost per kWh for modeled battery down from $1000/kWh in 2008.
Multi-Material Lightweight Vehicle demonstrates the feasibility of achieving 23% weight reduction and crashworthiness.
$58M funding for vehicle technology advancements...

...focusing on

- advanced light-weighting;
- advanced battery development;
- low cost electric motor development;
- enabling technologies for high efficiency engines; and
- support for EV deployment and AFV workplace safety programs.

[Links to eere-exchange.energy.gov and Grants.gov]
The existing U.S. power system has served us well...but our 21st Century economy needs a 21st Century grid.

**GRID MODERNIZATION**

**INSTANTANEOUS RESPONSE AND INTEGRATION:** The electricity grid joins the digital age with fast, reliable and secure communications that enable automated, optimized grid management. Efficiency and speed will drive down rates.

**MORE RENEWABLE CAPACITY:** A converged communications network improves reliability, reduces power outages, and increases quality while balancing demand.

**CUSTOMER ENGAGEMENT:** An integrated grid with smart meters gives customers the information and incentives they need to shift their energy use from peak to non-peak times.

Image courtesy of the Hawaii Energy Office.
Key Attributes of a Modernized Grid

**Reliable** - Improves power quality and fewer power outages

**Resilient** - Quick recovery from any situation or power outage

**Secure** - Increases protection to our critical infrastructure

**Affordable** - Maintains reasonable costs to consumers.

**Flexible** - Responds to the variability and uncertainty of conditions

**Sustainable** - Facilitates broader deployment of clean generation and efficient end use technologies
$220M Grid modernization funding over the next 3 years...

...to support critical research and development in advanced storage systems, clean energy integration, standards and test procedures, and a number of other key grid modernization areas.
SEO Actions

- Develop joint modern grid and TE alignment in your state
- Educate and engage policymakers and community members on importance of PEVs and a modern grid
- Evaluate community PEV readiness using Scorecard on AFDC

www.afdc.energy.gov/pev-readiness
• Educate and engage policymakers and utility leadership
• Inform and support community planning efforts
• Be proactive with customers—tell them about the value of PEVs and offer incentives if possible
• Install PEV charging at your worksite and join the DOE Workplace Charging Challenge

Energy.gov/everywhere
THANK YOU

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