

The background of the slide is a photograph of three wind turbines in a field. The sky is a mix of blue and orange, suggesting a sunset or sunrise. The turbines are silhouetted against the sky.

UNLV Clean Energy Forum

A Game Changing
Agenda for a
Sustainable Energy
Future

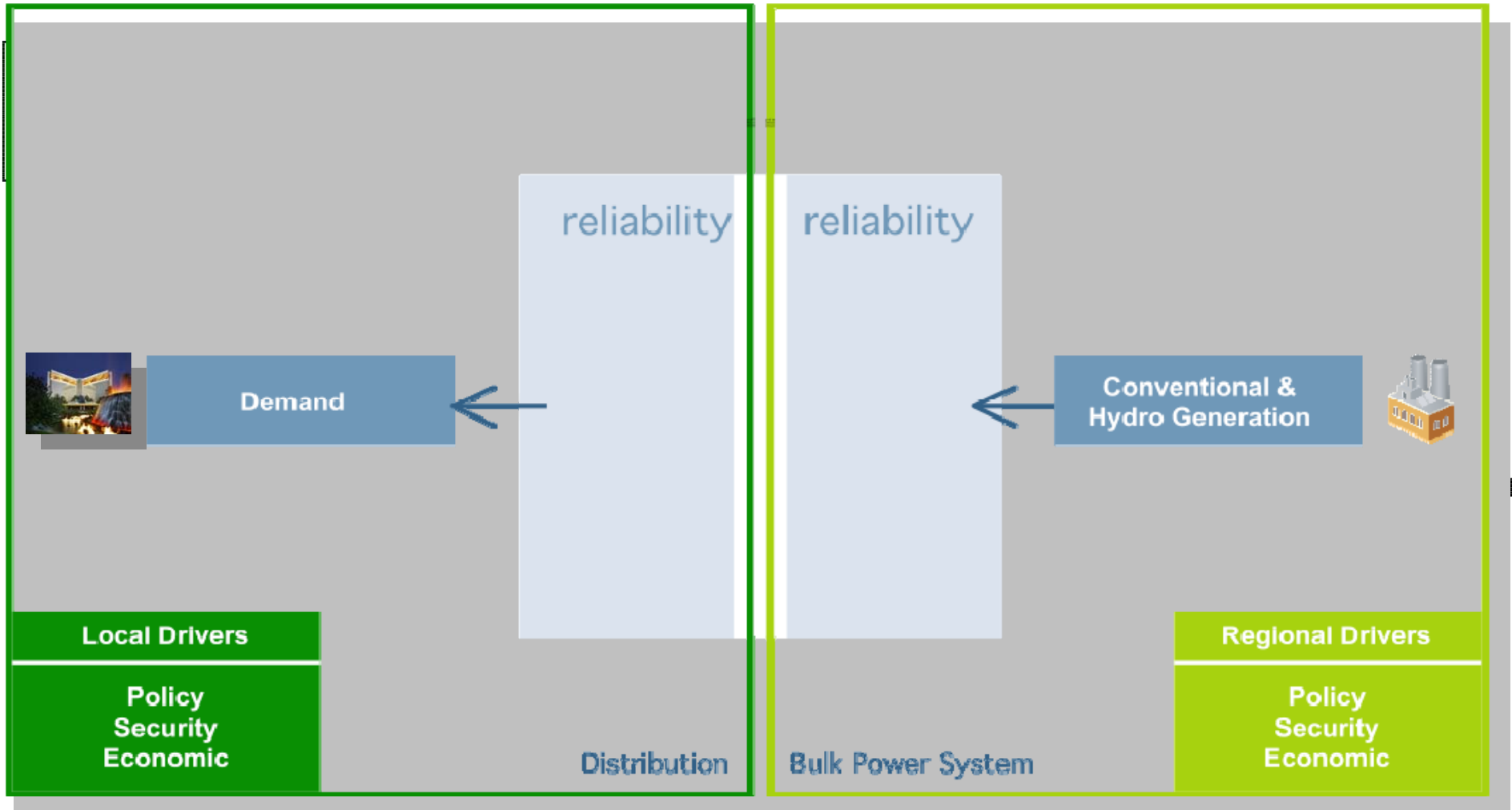
Jon Wellinghoff
Chairman

Federal Energy
Regulatory Commission

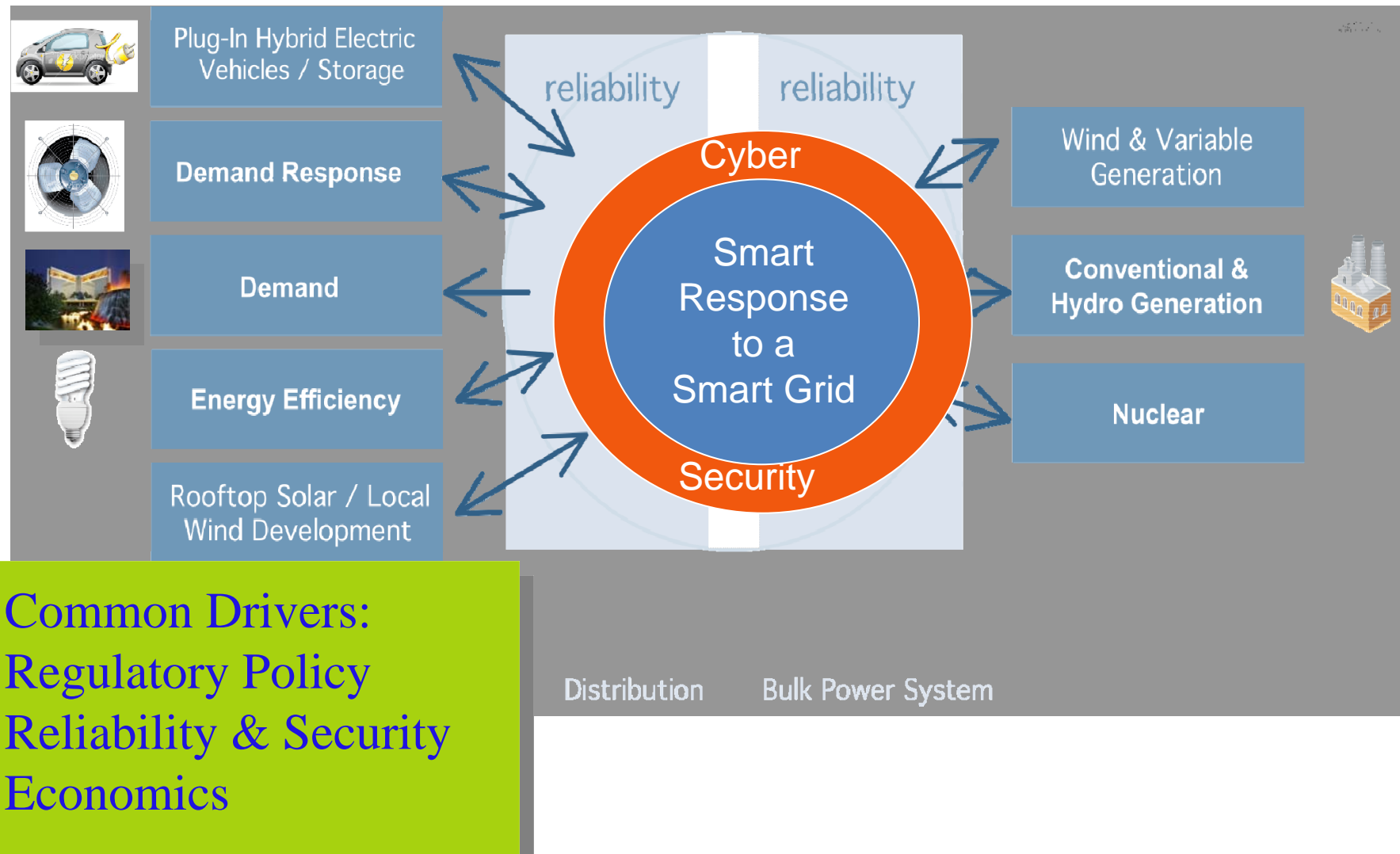
September 8, 2010

UNLV Cox Pavilion

Traditional Electric System



Smart Response Electric System

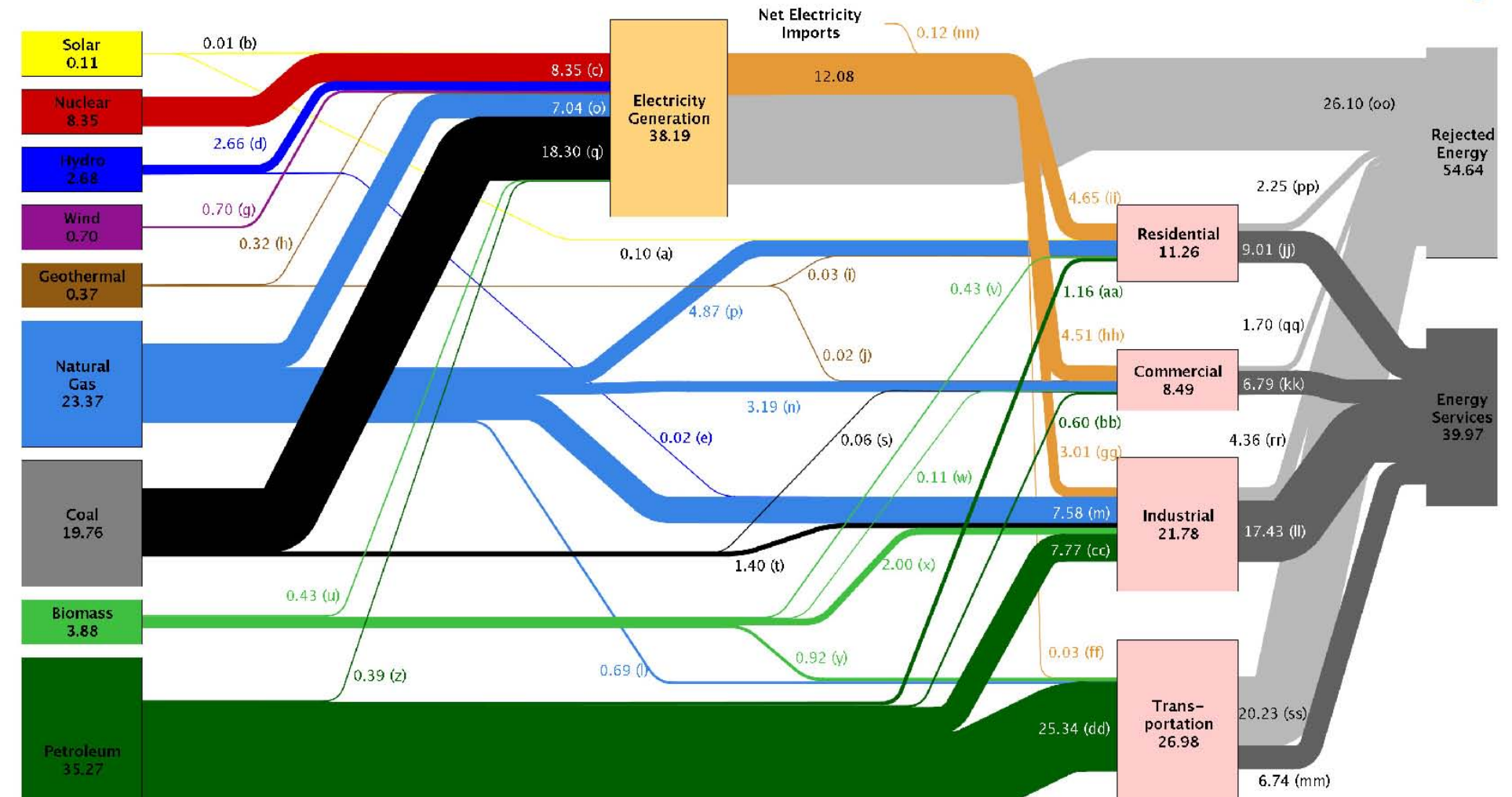


Variable Energy Resources



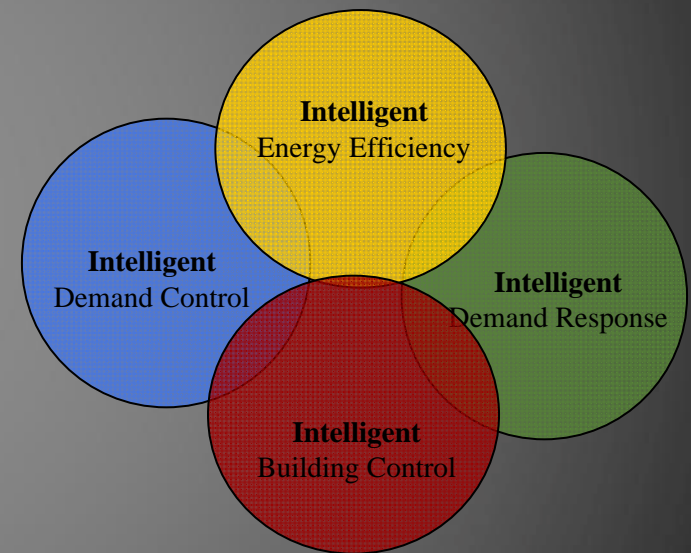
Where Does the Energy Go?

Estimated U.S. Energy Use in 2009: ~94.6 Quads



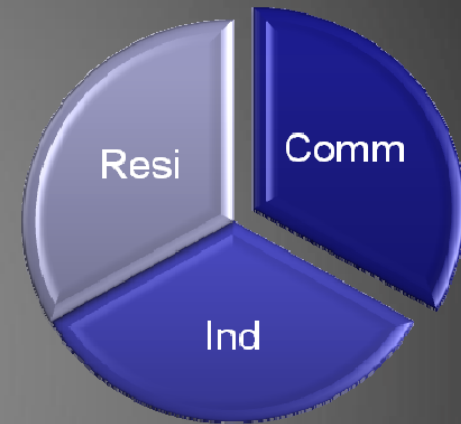
Smart Grid Solutions

- End users have many bottom line improvement opportunities: Reduce peak demand charges, improve power factor, consume less kWh, shift peak-time usage, harvest demand response programs, substitute traditional base load, etc...
- Intelligent Automation, at the user site, will allow these measures to be used without injecting risk, asking for giant leaps of faith or layering their tech investment. Adoption can be achieved.



Smart Grid Challenges

- Roughly, Commercial & Industrial sites account for **2/3** of total energy use in the United States
- *Good news:* These groups are **motivated**; tough times call for action
- *Challenge:* Their situation is tenuous; **mistakes can be fatal**
- Propositions for taking action (DR, EE, DG, M&V) must **address the details**, the “devil” is in those details

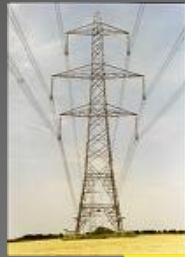


Smart Grid Challenges

- Adoption & Implementation at the end-user sites are the biggest hurdles to creating a movement, and a movement is what is needed to scale
- Smart Grid must be a risk management improvement; only then will it receive the necessary attention at the user site
- This is viewed as a “utility or supplier issue” and the key to successful Smart Grid adoption is to show massive and wildly compelling end user benefit. If this is done, then capital will come



21st Century Electric Grid



Dynamic Systems
Control



Grid
Operator



DISTRIBUTION
OPERATIONS

**TWO-WAY
FLOW OF
INFORMATION
AND POWER**



The Smart Grid Meets the Smart Store



Home Management Systems



Smart Consumer Appliances



Grid Benefits of Demand Response

Reduce Prices

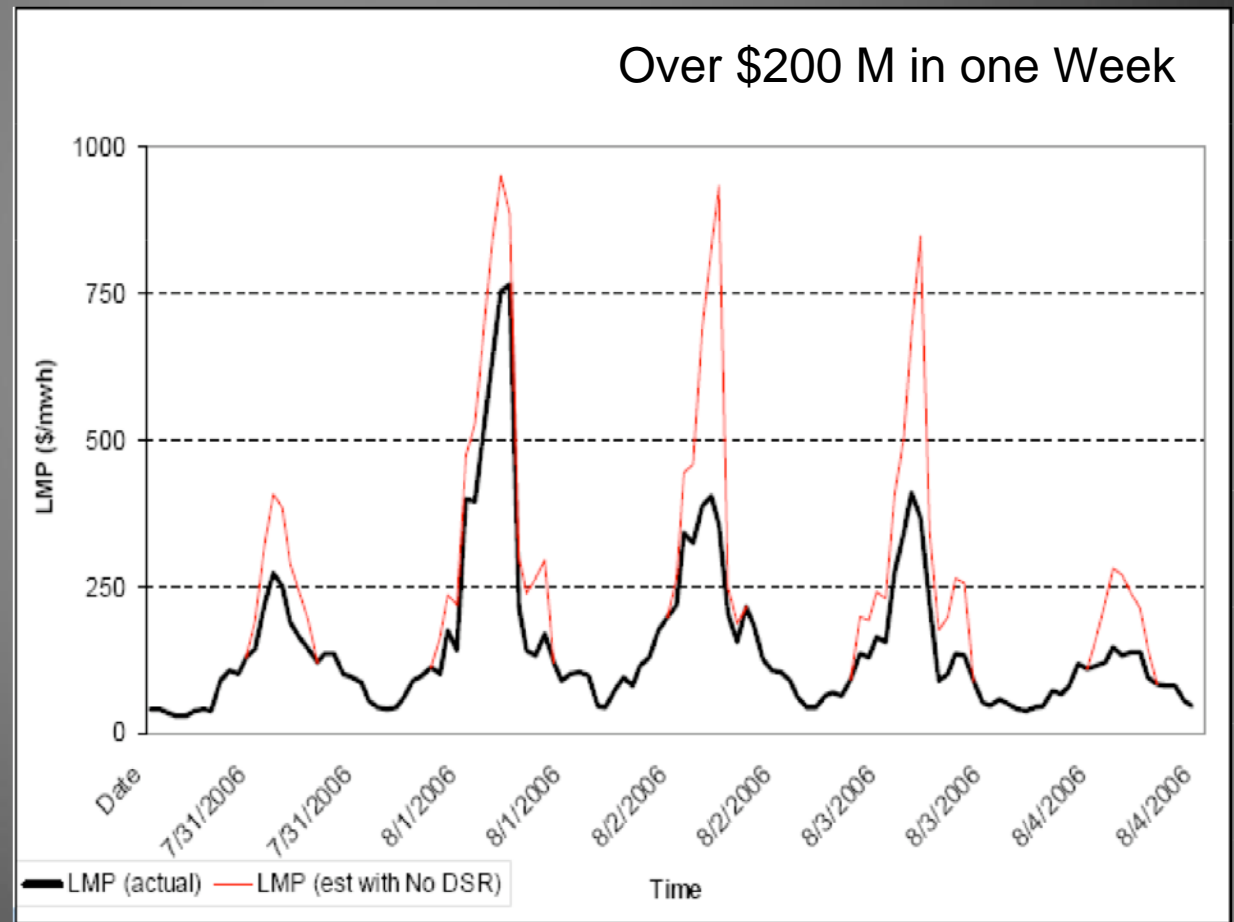
- **Lower Demand/Lower Price**
- **Flatten Load Profile Reducing Costly Generation**
- **Reduces Generator Market Power**
- **Distributed Renewables**

Additional Benefits

- **Enhances Reliability**
- **Supports Renewable Power**
- **Promotes Distributed Generation and Advanced Meters**
- **Defers G/T/D Investments**

Grid Benefits of Demand Response

- PJM Study Shows That a 3% Reduction in Demand of Top 20 Five-hour Blocks in 5 Mid-Atlantic States Could Save \$280 Million per Year
- The Brattle Group Estimates that a 5% Reduction in Grid Peak Load (757 GW) Can Result in \$3 Billion Savings Annually, for PV Over 20 Years of \$31 Billion



Economic Opportunities

- Demand Response
- Energy & Capacity
- Peak and Non-Peak
- Ancillary Services
- Regulation
- Spinning Reserve
- Var Support/Reactive Power

Electric Transportation





EV Charging Equipment

电动汽车充电桩

2

EV Charging Station

EV Charging Equipment

BYDAUTO

比亚迪汽车 BYD AUTO

电动

电动汽车充电柜

BYD

单价: 元
电量: 度
费用: 元
进度: %

BYD AUTO
Electric
24-hour service

BYD

比亚迪汽车
BYD AUTO

电动汽车充电柜





Demonstration of Regulation Services



WAL★MART
SUPERCENTER
沃尔玛购物广场



出口
EXIT

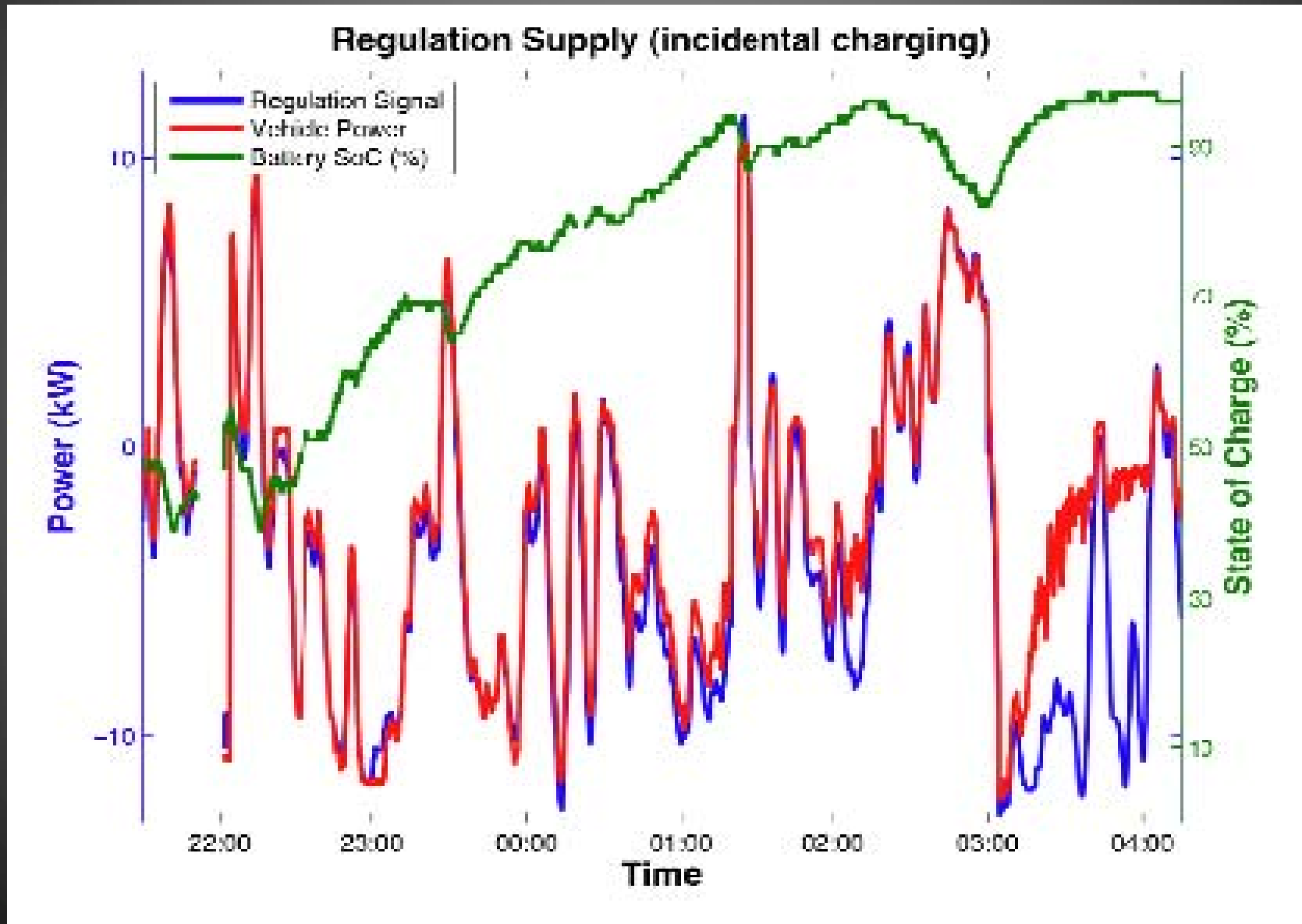
沃尔玛礼品卡，省钱省心的好选择！

《规定》实施三周年

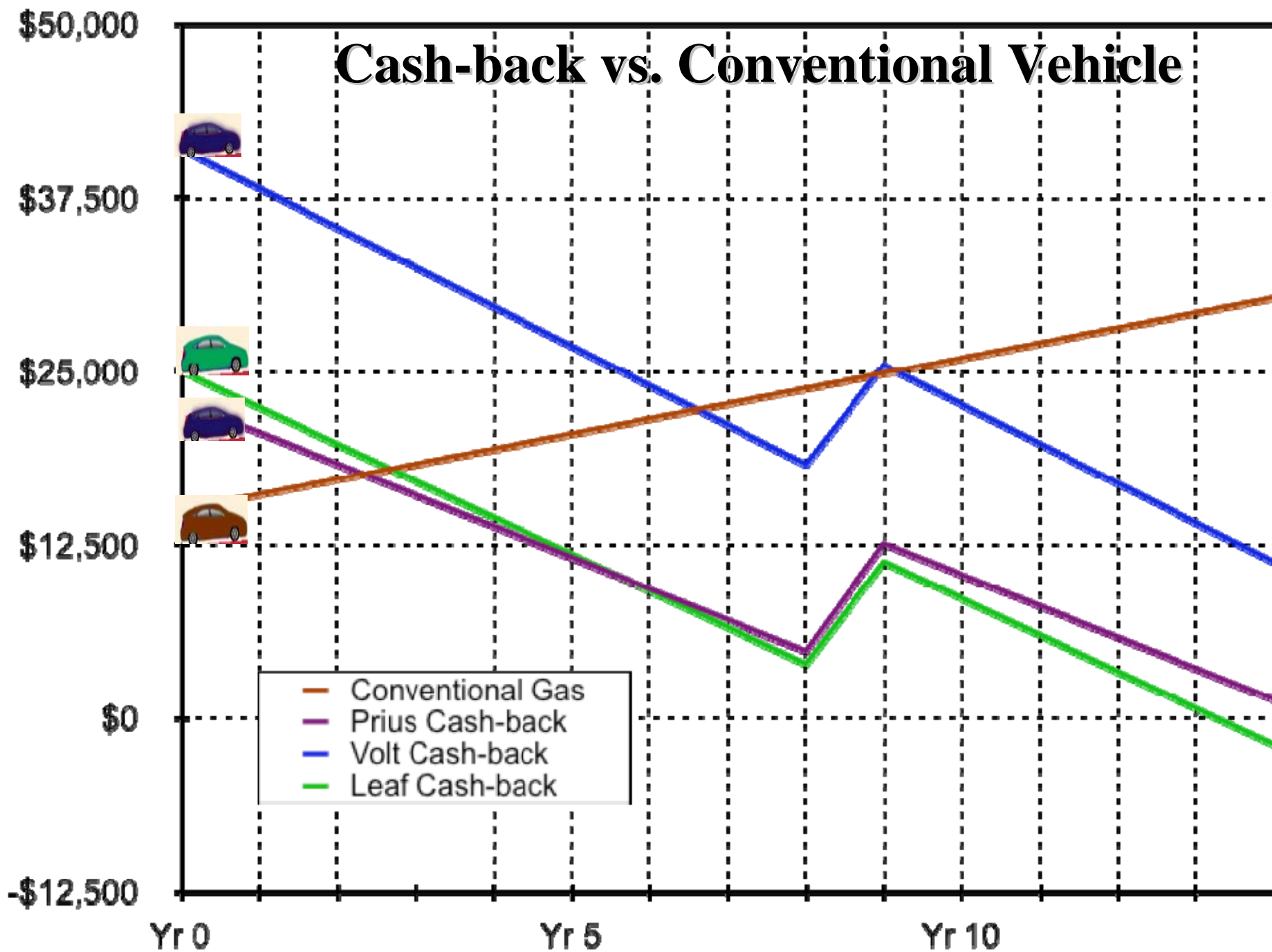
Walmart 沃尔玛
一种选择·万般心意
佳节送礼
走亲访友



Regulation Services While Charging



Cash-back vs. Conventional Vehicle







2010一点亮梦想行动

LED节能灯内部推广活动

活动时间：2010年1月至2010年3月31日
活动地点：坪山地区六和大厦4楼一单元7号会议室
对象：第七事业部、非属中心室

我们每一个人，提高环保意识，遏制全球气候变暖，是人类赖以生存的家园是我们义不容辞的责任和义务。国家、小则家庭社区，只要精心经营，处处皆可节能，也只不过是举手之劳，但若人人如此，我们将看到整个社会的水平面，消失的家园，让我们的环保行动（之原）。



高效 节能 安全 环保无污染
寿命长 维护成本低 显色性好

欢迎光临 LED 灯光体验室



BYD Lighting

A photograph of three wind turbines in a field at sunset. The sky is a mix of blue and orange, with scattered clouds. The turbines are silhouetted against the sky. The text "Thank You!" is overlaid in the center in a white, serif font with a blue outline.

**Thank
You!**