



# **ELECTRIC VEHICLES AND THE ELECTRIC GRID**

**Trip Doggett  
President & CEO  
ERCOT**

**Senate Transportation Committee  
December 18, 2012**

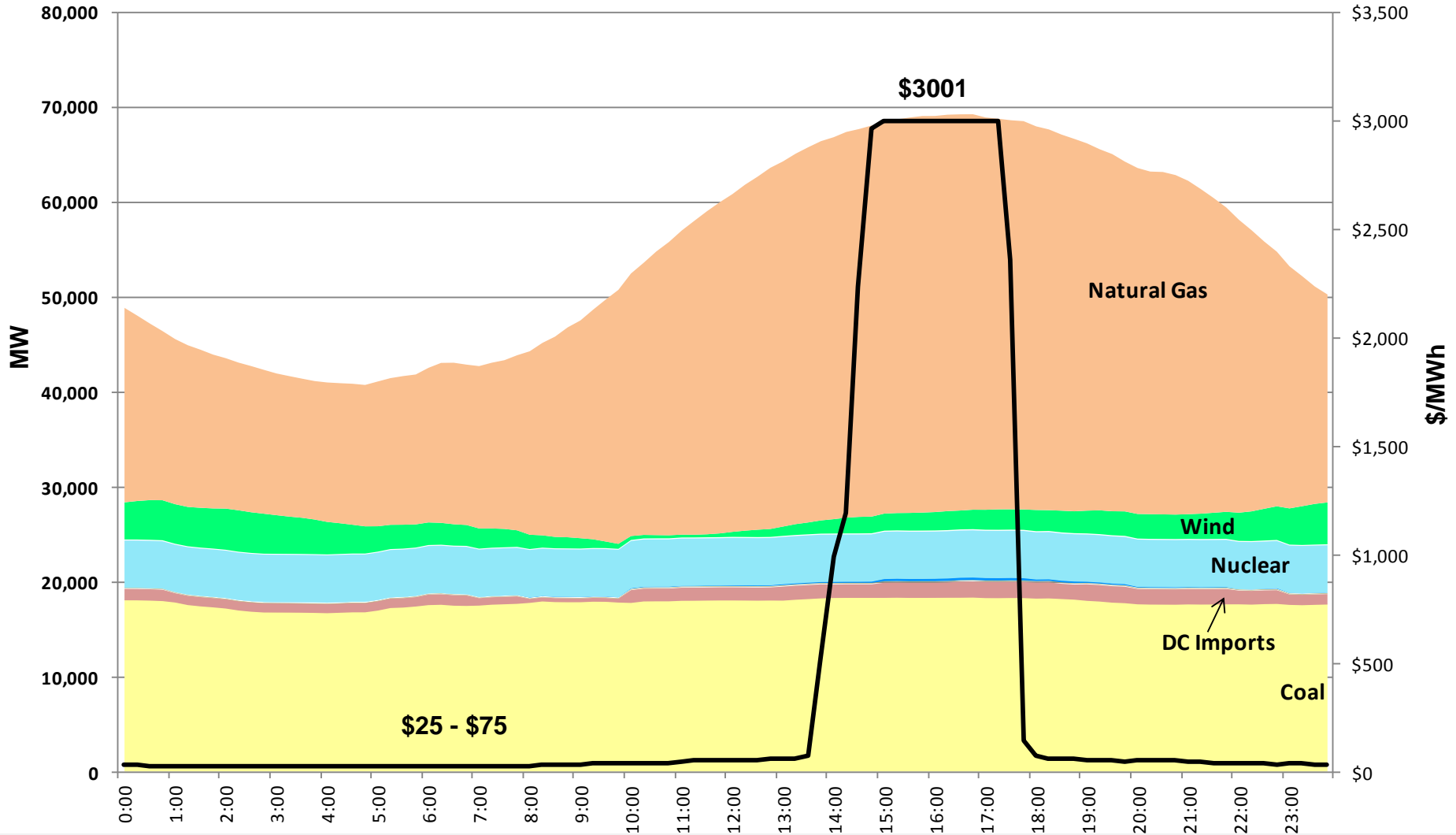
- **In the near term, widespread electric vehicle adoption should not have an impact on the bulk transmission system.**
- **However, ERCOT could see impacts:**
  - **To the distribution system (transformer loads, capacity issues during peak times)**
  - **To generation owners (increased usage may result in the need for additional capacity)**

- **Make electric vehicles or charging stations “controllable load” that can participate in demand response programs**
- **Coordinate electric vehicles to charge when renewable output is highest**
- **Vehicle default settings to charge off-peak**

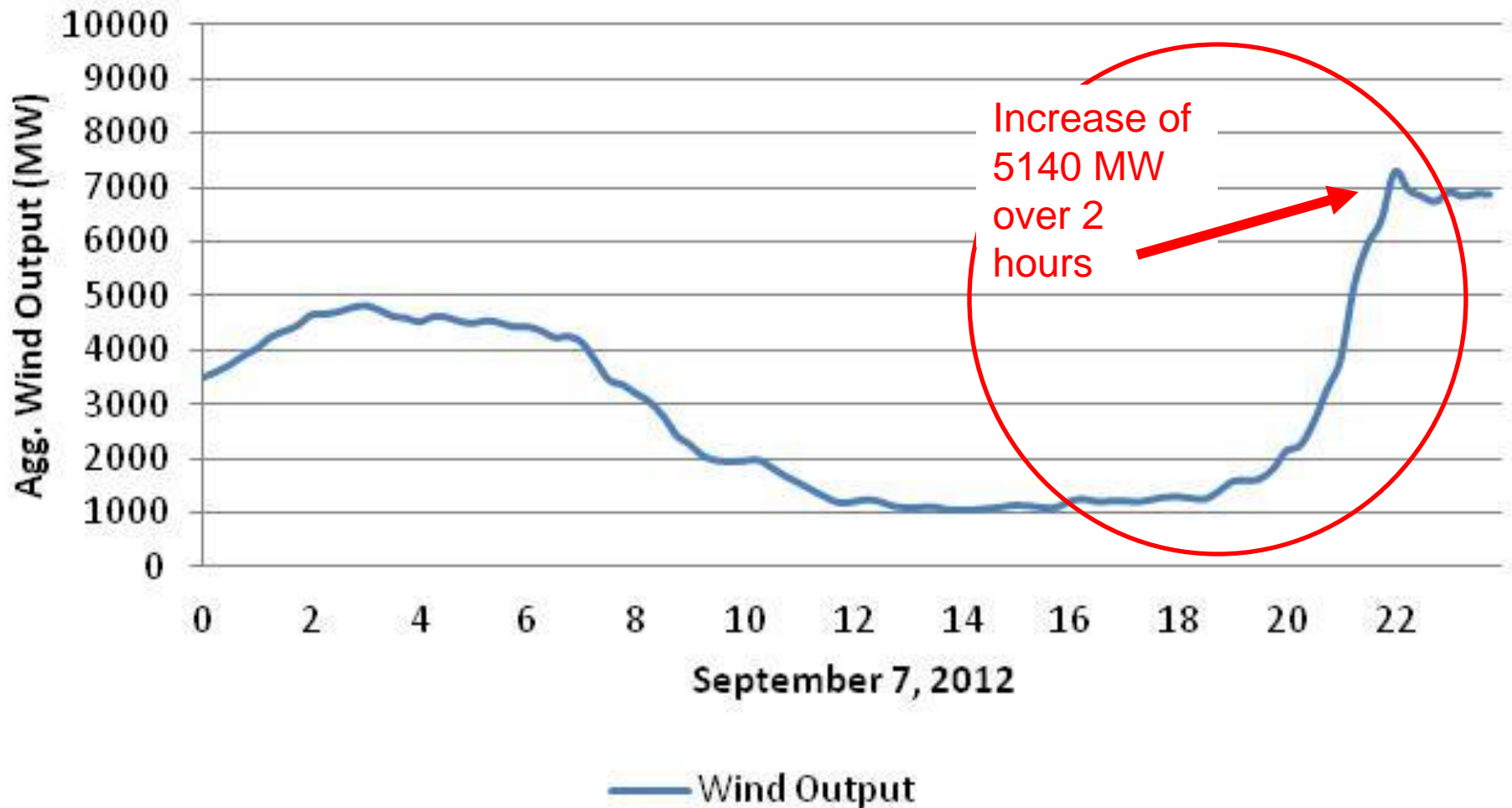
# SUMMER PEAK DAY LOAD SHAPE WITH FUEL MIX

August 3, 2011

- Natural Gas
- Wind
- Nuclear
- Hydro
- Other
- DC Imports
- Coal
- Energy Price



# WIND RAMPS



# ERCOT ELECTRIC VEHICLE RESEARCH

- **ERCOT leading a collaborative research project with Pecan Street Project, UT Austin, and The Electric Vehicle Transportation and Electricity Convergence Center (EV-TEC)**
  - **Ability to quickly change car charging rates based on grid conditions**
  - **Using EVs to complement local solar, wind**
  - **Behavioral aspects of driver charging preferences, and effectiveness of different incentives for supporting reliability/economic efficiency**



- **ERCOT is actively participating with other independent system operators (ISOs) on electric car integration issues**
- **In March of 2010 the ISOs released a report outlining the challenges and opportunities associated with electric cars.**
- **As the market progresses and technologies develop, users of this study should check observed trends against analysis assumptions.**