



# **Long-Term Planning Study of the ERCOT Interconnection**

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**Long-Term Study Task Force Meeting**

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# Background

- **ERCOT completes an assessment of the long-term transmission and generation needs of the ERCOT interconnection every even-numbered year to comply with PURA requirement (39.904[k])**
- **In August 2009, U.S. Department of Energy issued requests for proposals for interconnection-wide studies of long-term transmission needs. Total grant funding available was \$60 million for the three interconnections.**
- **ERCOT applied for grant funding in September 2009. ERCOT proposed to use DOE funding to supplement the existing long-term planning process. ERCOT's application included the existing long-term transmission analysis effort as an in-kind contribution.**
- **An award to ERCOT was announced in December 2009. The total funding provided by the DOE to ERCOT is \$3.5 million.**

# Use of Grant Funding

**DOE Grant funding will allow ERCOT to enhance the existing long-term planning process. Specific changes are:**

- Increased participation from regulatory, policy-maker, and NGO stakeholders
- Evaluation of a wider range of future scenarios
- More detailed analysis of likely market resource development for each scenario
- Operational analysis of system reliability needs with high levels of intermittent generation
- Development of long-term (20-year) transmission framework for ERCOT grid

# Stakeholder/Policy Input

- **Significant DOE emphasis on increasing participation in the study development by State regulatory staff, policy-makers, and NGOs**
- **Build on existing process of stakeholder participation by establishing an Regional Planning Group (RPG)-based Task Force to focus on this study**
  - Continued participation by traditional planning stakeholders
  - Enhanced participation by representatives of state government (Governor's office, PUCT, TCEQ, SECO, RRC, TWDB, ...)
  - Facilitated participation by NGOs (environmental, landowner, consumer, etc. groups)

# Stakeholder/Policy Input

- The new RPG Long-Term Study Task Force (LTSTF) will serve two purposes:
  - Provide input **INTO** planning process on scenarios, assumptions, etc.
  - Provide insight on policymakers' need for information **FROM** planning process
- Intent is to increase relevance of long-range planning to regulators and policy makers

# Stakeholder/Policy Input Tasks

- **Task Force Development**
- **Coordination with stakeholders**
  - State Agencies
  - NGOs
  - Policy Makers
  - Market Participants
- **Issues Identification**
- **Policy Needs Identification**
- **Fundamental Driver Identification**
- **Scenario Development**
- **Results Interpretation/ Presentation**

# Scenario Development

- **Future scenarios for analysis will be developed through the LTSTF**
- **Identify fundamental drivers (economic and regulatory, e.g. fuel prices, environmental regulations, financial markets, etc.)**
- **Develop internally consistent scenarios based on agreed-upon assumptions of key drivers**
- **Scenarios will include highly likely outcomes, and also less likely outcomes that effectively bound potential future uncertainty**

## Resources/Load

- **Scenario development will include an evaluation of resource sets that would likely result from market conditions**
- **All resources (existing and potential) will be modeled using generic unit characteristics**
- **New resources considered will include traditional thermal generation, renewable generation, storage and demand resources, distributed generation, R&D technologies**
- **Impacts of energy efficiency, potential PHEV, smart meters, etc. on system load will be considered**
- **Secondary resource requirements/limitations (emissions, water needs) may be considered in resource build-out**
- **Impacts of new resources/requirements on existing unit economics and potential for capacity retirements will be considered on an aggregate technology/fuel basis**



# Resources/Load Analysis Tasks

- **New Technology Analysis**
- **Bus-bar Cost Analysis**
- **Load Forecasts Development**
  - Impacts of demand-side technologies
  - Impacts of Price Impacts on Load
- **Model Evaluation/ Development**
- **Generic Database Development**
- **Generation Expansion/ Retirement Analysis**

# System Operational Requirements

- **Evaluation of A/S requirements at renewable generation levels beyond GE Study (>15,000 MW)**
- **Scenarios will be developed with LTSTF**
- **Development of technology-neutral assessment of system reliability needs**
  - Evaluate costs/benefits of modified A/S products/definitions
  - Evaluate potential contributions of new technologies
  - Develop comparative cost/benefit analyses of alternative reliability solutions – considering overall market efficiency impacts
- **Determination of requirements for each future scenario with feedback as to what resources would be developed**
  - To ensure that scenarios include adequate resources to maintain system reliability

# System Operational Requirements Tasks

- **System Variability Analysis**
- **Forecasting Accuracy Analysis**
- **Reliability Needs Assessment**
- **Reliability Technology Assessment**
  - Cost
  - Capabilities

# Transmission Network Development

- **Development of an appropriately detailed topology to allow longer-timeframe studies (20 year) of potential transmission needs**
- **Reduced topology will allow evaluation of longer time horizon without need to develop improvements to the load-serving network**
- **Reduction methodology will be developed to maintain capability to assess the impacts of lower-voltage transmission circuits on power transfer capability of the existing system**

# Transmission Planning Strategy Evaluation

- **Evaluation of appropriate long-term transmission strategy (flexible vs. robust)**
  - Flexible Approach: Evaluate the likely long-term needs of the system under different scenarios, and use this information to inform short-term planning. Recommend transmission projects based on near-term system needs.
  - Robust Approach: Recommend transmission improvements that provide significant system benefits across a wide-range of potential long-range future outcomes
- **Identification of specific long-lead-time transmission elements (if flexible strategy) or general plan concept (if robust strategy)**

# Transmission Planning Evaluation Tasks

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- **System equivalence**
- **Assess Costs and Capabilities of Transmission Technologies**
- **System Adequacy/ Efficiency Analysis**
  - Transmission Project Analysis
  - System Voltage Analysis

# Timeline

<b>Kick-off Meetings</b>	<b>LTSA for State Legislature</b>	<b>Phase I Report due to DOE</b>	<b>LTSA for State Legislature</b>	<b>Final Report due to DOE</b>
April, 2010	December, 2010	June, 2011	December, 2012	June, 2013

# Current Project Status

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- **Final grant approval has been received.**
- **One DOE-funded position has been filled. Three others are posted.**
- **This is the first meeting of the RPG LTSTF. The second meeting is scheduled for May 21.**



# Questions?