



# Eastern Renewable Generation Integration Study (ERGIS) Kick-off



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# Webinar Objectives

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Provide ERGIS overview

Solicit feedback

Invite participation in Technical Review Committee

Identify next steps

# Background

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- Eastern Wind Integration Study (EWITS) completed in 2010
- Industry stakeholders suggested additional analysis
  1. More detailed analysis of regional impacts and results
  2. Transmission sequencing
  3. Demand response and different load scenarios
  4. Carbon emission analysis
  5. Fuel sensitivity analysis
  6. Impact of energy storage
  7. Reliability analyses including stability
  8. Impact of wind curtailment
  9. Further reserves analysis and strategies
  10. Unit commitment/optimization with high amounts of wind
- Ongoing concerns about planning/operating in an uncertain future (e.g., state and national policies, siting and timing of generation and transmission expansions)

# ERGIS Overview

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- Objectives
  - Explore grid planning and operations with significant renewable generation in an uncertain future
  - Build on earlier studies, ask new questions, examine additional stakeholder concerns
- Scope includes
  - Reserves analysis (items 9 and 10)
  - Regional and inter-regional impacts (item 1)
  - Mitigation strategies (items 3, 6 and 8)
  - Sensitivity analysis (items 2, 4 and 5)
- Task structure
  - Task 1. Study Scenario Development
  - Task 2. Reserve Strategy Analysis
  - Task 3. Production Simulation Analysis

# ERGIS Task Structure

- Task 1. Study scenario development
  - Identify renewable penetration levels & other study assumptions (e.g., policy, generation expansion) with stakeholders
  - Develop databases
- Task 2. Reserve strategy analysis
  - Data review
  - Statistical analysis of wind and load (and possibly solar) variability
  - Calculate ramps over various time frames (e.g., 10 minutes or 2 hours)
  - Explore reserve strategies to accommodate such ramps
- Task 3. Production simulation analysis
  - Apply reserve strategies to study scenarios
  - Test system robustness (e.g., to assumptions or mitigation schemes)

# Reserve Strategy Analysis

- Data
  - Wind (3 years of 10-minute data, aggregated into 100 to 1,500 MW plants)
  - Load (3 years of primarily hourly data, synthesize 10-minute data)
  - Solar ?
- Assumptions
  - Study year (e.g., 2020)
  - Load growth
  - Area definitions (ISO/RTO, balancing areas)
  - Ramp time frames (10 min, 30 min, 1 hour, 2 hours, 4 hours, 8 hours)
- Renewable generation penetration levels
  - % energy
  - By region, based on RPS or other goals
  - On-shore/off-shore mix
  - Renewable mix
  - Sorting/selection criteria
  - Persistence forecast

# Production Simulation Analysis

- Overall approach
  - Future policy options
  - Benchmark scenario (e.g., ERGIS project specific, EIPC future, etc)
- Detailed Assumptions
  - Study year
  - Load growth
  - Fuel prices
  - Carbon tax
  - Transmission system
  - Generation expansion/retirement
  - Operating areas
- Renewable generation
  - Match reserves strategy analysis
  - Siting
- Other

# Next Steps

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- Please provide feedback by October 14
  - Statistical analysis is first task up
  - Additional opportunities for feedback on production simulations
- If interested in TRC, please respond by October 14
- Action items
  - Slides are posted on NREL website (<http://wind.nrel.gov/public/ergis>)
  - Data review will begin
  - Other
- First TRC call before the end of 2011
- Next stakeholder webinar in 2012
- Face-to-face stakeholder meeting when sufficient preliminary results available
- Overall project schedule is 18 months

# Thanks!



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