

**LOLP Methodologies**  
**Comparison of the**  
**Gensys vs. AURORA**  
**Modeling Tools**

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*Plan for the Un-Expected*



# *Topics Discussed*

- Merits of using multiple modeling tools
- Model Similarities
- Fundamental Differences
- Comparability of Model Results  
/Benchmarking
- Establish Relative Merits of Alternative  
Models

# *Merits of using multiple modeling tools*

- Multiple perspectives improve breadth of understanding
- Improved confidence of understanding issues and results
- Increased emphasis on subjectivity of results and not purely on belief that all results are quantified.

# *Model Similarities*

- Genesys and AURORA
  - LOLP measured by stochastic measure
  - Both attempt to simulate system operations

# *Fundamental Differences*

- Genesys
  - Extensive treatment of Hydro Operations
  - LOLP based upon exhausting available resources, specified regional imports and exports
  - Conditions of load, forced outage of non-hydro not varied between stochastic runs
  - Uncertainty of conditions included exogenous to other variables, less integration

# *Fundamental Differences (continued)*

- AURORA
  - Hydro “artfully” shaped to simulate operations, in LOLP analysis operations assume critical operation mode
  - LOLP treated as resource, dispatched based upon economic order, can be measured after all available resources utilized
  - Other changing conditions of load, forced outage on all generation allowed to vary between stochastic runs
  - Can incorporate demand response reductions based upon prevailing energy costs
  - Imports/Exports based upon economic criteria, energy flows based upon most critical hence highest value/cost

# *Fundamental Differences*

## *(continued)*

- AURORA (continued)
  - Provides more extensive treatment of uncertainty to a more comprehensive set of inputs (loads, hydro and forced outage)
  - Allows for inclusion of “value” based curtailment consistent with implied conditions
  - Recognition of value differences of loss of load among customer groups by region for different durations.

# *Comparability of Model Results / Benchmarking*

- Compare results using similar data and ranges on variables to validate comparability
- Preliminarily - varying hydro only and use same regional hourly loads, limit imports, assume similar non-hydro operations and compare LOLP results.

# *Establish Relative Merits of Alternative Models*

- Examine effect on results of including ranges and uncertainties not included in other tools.
- Measure effect of inputs and relevance to LOLP