

Panelist Comments

Technology Session 5: Variable Generation Integration

PSERC Future Grid Forum, June 27-28, 2012

Duncan Callaway, University of California at Berkeley

1. We need to develop tools to integrate new resources (such as energy storage, responsive demand, and small DG) into grid planning and control room decisions
2. We need tools that facilitate aggregation of thousands of loads into monolithic (from the perspective of the system operator) controllable or dispatchable resources.
3. If residential and light commercial loads are to become significant resources in power system operations, we need ways to input their performance into the grid's SCADA/EMS system, at very low cost per load.
4. We need methods to understand and forecast spatial and temporal variability of distributed resources that are embedded in distribution systems and too small to meter / forecast individually
5. There is a need for analysis tools that evaluate the costs and benefits of energy storage systems to grid expansion and operations.

Hamid Elahi, General Manager, GE Energy

1. Supply: Thermal fleet flexibility...."plant like" features for renewable energy
2. Demand: Customer choice.....active participation
3. Delivery: More capacity (new corridors) and density (existing paths)
4. Fuel: Changing mix, price volatility, gas and electric market synergy
5. Markets: Harmonize a-d...continuous evolution
6. Standards: Fix old, develop new

Charlie Smith, Executive Director, Utility Variable Generation Integration Group

1. Direct coupling of renewable supply with deferrable demand, or demand management to satisfy global objectives?
2. Market design with a high penetration of renewable energy
3. Flexibility definition, probabilistic planning methods and metrics
4. Use of probabilistic wind plant output forecasts in unit commitment and production costing tools
5. Securing ancillary services from high penetration VG systems
6. Investigation of system stability in asynchronous systems

Max Zhang, Cornell University

1. Power systems responsive building thermal storage systems are needed to tap the potential in building demand response.
2. District energy systems can be designed to integrate variable generation, but incentives are needed.
3. A ramping market can be potentially effective in incentivizing integrating variable generation.
4. Technology development should aim to address the synergy among multiple energy/environmental targets and avoid unintended consequences.