

Potential 2011 SPSC study requests to TEPPC

December 14 webinar

Proposed steps

- Dec 14 webinar
 - Review ideas for study requests
 - Add/delete ideas for study requests
 - Is this the right scope of study questions?
- Dec 20 follow-up staff memo from the Dec. 14 webinar refining framework for each study request
- Jan. 3 SPSC member input due
- Jan 6 staff distributes draft text of study requests
- Jan 11-12 SPSC meeting
 - Approval of study requests (final topics and scope, draft text)
- Jan 31 deadline for submission to TEPPC

SPSC's 2010 study requests

1. Reference case (2020)
 - Adjusted 2020 BA loads for existing DSM policies
 - Utility IRP/resource plans 2020 generation additions
 - Completed inputs on loads, renewables, and conventional resources
2. High load sensitivity (2020)
 - Sensitivity analysis: Loads 10% above Reference case
3. High DSM scenario (2020)
 - Energy efficiency and demand response that is economically achievable
 - LBNL submitted High DSM loads to WECC Oct. 6
4. Carbon reduction scenario (2020)
 - Waxman-Markey targets for reducing GHG (Targets 17%)
 - California's AB 32 GHG policy/targets
5. Carbon reduction scenario (2030)
 - Waxman-Markey targets for reducing GHG (Targets 42%)
 - California's AB 32 GHG policy/targets
6. Breakthrough technology scenario (2030)
 - Impacts from breakthroughs on storage, PV, nuclear, IGCC, DSM, transmission , and other

NOTICE: 2011 Proposed Study Requests

- The following list of proposed study requests is an unedited list brought forth by:
 - WIEB staff, Scenario Work Group, DSM Work Group, WGA staff, and other interested parties.
- This proposed list has not been approved by SPSC.
- We seek comments from SPSC members on whether or not to pursue these requests, and to recommend changes to these proposed requests.

SPSC's Potential 2011 Study Requests

- Transmission needs assuming:
 1. Updated 10-year and 20-year Reference case (e.g., accounting for planned DSM)
 2. Prolonged Drought Scenario
 3. High DSM and Distributed Generation Scenarios
 - a. Updated west-wide High DSM/DG scenario
 - b. Geographically-targeted High DSM/DG to relieve specific transmission constraints
 4. Alternative California Import Scenarios
 5. Lower Renewable Generation Scenario
 6. Alternative Southwest Solar Development Scenarios
 7. Plant Retirements and Capacity Reductions in High DSM and Low Carbon Cases
 8. Increased Utilization of Existing Grid Scenario
 9. Variable Generation Integration Analysis

1. Updated Reference Case

- Develop Reference case load forecast that fully accounts for current IRP plans, demand-side (EE, DR) and DG policies
 - Experience shows that balancing authority load forecasts don't always reflect current DSM policies
- Update previous year's 10-year reference case load forecast to account for:
 - Changes in balancing authority load forecasts
 - DSM policy developments
- Develop new 20-year reference case load forecast
- Note: TEPPC may adopt biennial cycle for updating Reference/Base cases

2. Prolonged Drought Scenario

- WGA and Western States Water Council working with national labs on water-energy nexus as part of RTEP
 - Evaluate WECC electricity generation scenarios and their implications for water supply
 - WGA requests that SPSC sponsor this study request on drought
- Elements of the 2011 prolonged drought study request
 1. Direct impacts to energy generation (e.g. hydro, capacity factor)
 2. Impacts to water availability
 3. Impacts to energy demands associated with potentially higher temperatures
- What the study is intended to show:
 1. Identify where water may constrain new power plants
 2. Identify where water constraints will affect existing power plants
- National Labs will provide technical support

3(a). West-Wide High DSM/DG Scenario

- Refine/Expand/Update 10-yr. High DSM scenario from last year:
 - Add in high DG penetration
 - Update to reflect changes to underlying reference case forecast
 - Other modeling improvements
- Develop new 20-year High DSM/DG load forecast
 - As attention shifts to the 20-year study, it's important to make sure DSM/DG is included

3(b). Geographically-Targeted High DSM/DG Scenario

- Question: To what extent could DSM and DG obviate the need for specific transmission capacity additions?
- Approach:
 - Select specific paths with high transmission congestion in the Reference case
 - For each path, run a scenarios with High DSM/DG located only in those regions where it is likely to relieve the congestion
 - Potentially 3-5 scenarios in total, each focused on a specific congested path

4. Alternative California Import Scenarios

- Two-thirds of incremental renewable generation in the interconnection between now and 2020 is to meet California RPS requirements
- Any California RPS “deliverability” requirements (e.g., RECs) will have impacts throughout the interconnection
- Questions:
 - Should alternative policies be modeled? Look to cases modeled by the CA PUC or CTPG?
 - All in-state generation (no imports)
 - All tradable RECs (expanded out-of-state production without requirement for delivery into California)
 - Other options?
- Variable generation integration feasibility analysis would be critical under a tradable RECs case

5. Lower Renewable Generation Scenario

- What if RPS cost caps result in less renewable generation than specified in RPS?
- Other potential drivers that could lower renewable development –
 - Low gas prices?
 - Expiration of renewable tax incentives?
 - Policy changes?

6. High and low solar development in Southwest

- Solar generation is the transmission planning wild card
- Solar generation assumptions drive transmission needs in the interconnection
 - If solar is widely deployed –
 - Less wind development and less long-distance transmission; or
 - Solar could be exported from SW to distant load centers and require long-distance transmission
 - If solar is NOT widely deployed, greater reliance on wind distant from Southwest load centers

7. Plant Retirements and Capacity Reductions in High DSM/Low Carbon Cases

- SPSC task force
 - Explore options on criteria for power plant retirement and options for removing capacity without identifying specific plants
- High DSM Case
 - Lower loads lead to higher reserves and excess generation capacity that may be unrealistic
 - If we identify an acceptable method for removing capacity without identifying specific plants, implement in January in time for incorporation in 10-year transmission plan
- Low Carbon case
 - Coal plant retirement considered as tool to lower CO₂ emissions
 - Expected EPA air quality regulations (non-carbon) may induce early coal plant retirements
 - Methodology may be applicable to High DSM case in removing excess capacity

8. Increased Utilization of Existing Grid Scenario

- Limitations of current TEPPC modeling
 - Current modeling generally assumes a perfect dispatch (frictionless) world
 - To model innovations, “friction” needs to be added to the model to reflect the current operation of the system
- Test possibilities of expanding use of the existing grid by –
 - Deploying new transmission technologies (synchrophasers, volt-var optimization/conservation voltage, etc.) that reduce loads and line losses
 - Reducing institutional friction (e.g., Energy Imbalance Market, Joint Initiatives)

9. Variable Generation Integration Analysis

- For all cases that include substantial variable generation (wind and solar) –
 - Identify any system operations concerns
 - Determine if the integration of such generation is technically feasible and at what cost
 - Identify measures to mitigate technical and cost hurdles
 - *This would be analogous to the reliability analysis SPGs will be doing on current case studies*