Comments by the OMS Resources Work Group

On a Seasonal Resource Adequacy Construct

Requested by Friday March 21, 2014

Introduction

MISO requested open comments at the March 6 SAWG meeting on the concept of a seasonal construct as it relates to resource adequacy. No particular direction was given on the structure or direction of the comments. The OMS Resources Work Group met by conference call and the staff offer the comments below. The purpose is to broadly respond, but also to provide enough detail to communicate concerns and describe the issue. These comments do not necessarily represent the view of any Commissioner or State Commission. They are the combined observations and suggestions by regulatory staff.

Why and how should MISO and the Stakeholders Review a "Seasonal Construct" at this time?

They are several reasons to assess the need of having a season construct. A few are listed below:

- Request by the Electric and Natural Gas Coordination Task Force for a reliability assessment concerning the increasing use of Natural Gas generation, pipe line contracts and operations, and winter weather events
- The recent "maintenance margin" issue and discussion at MISO stakeholder group meetings - for both generation and transmission facilities
- Current and developing EPA rules on electric generation
    - The increasing known retirement of fossil steam for MATS and suggested nuclear retirements due to low marginal energy prices
    - The longer timeframe for continued review of pollution control retrofits or retirement
- Continued reduction of summer peaks with the use of Demand Side Programs and Energy Efficiency programs
- The need to coordinate transmission and generation maintenance outages to avoid local resource zones and MISO going unnecessarily into too deep into emergency operating procedures and near firm load shedding events for a given range of expected weather events
- With demand growth less than 1% and increased load forecast uncertainty, due to weather and other metrics, reliability may be facing a higher degree of risk in a manner not experienced before

Suggested Approach of a Review

The Work Group does think some analysis of seasonal resource adequacy risk is appropriate.

The open-ended comment request motivated the group to suggest a multi-step process before acting on any change to the annual construct. Later in these comments, a discussion will address the items in the outline below. A suggested sequence could be:

1. Define the "problem" or risks at hand
    a. What is not working with the current annual construct? What expected outcomes with the current construct have not been achieved, and what unintended consequences have arisen?
    b. Are there new risks within a seasonal construct that we can assess at this point?
        i. Common mode failure
        ii. Weather sensitivity/uncertainty
        iii. Maintenance scheduling
        iv. Others?
    c. What could be the range of unknowns or uncontrolled events or circumstances associated with a season construct?
    d. Are there monetary exposures and/or load reliability issues with a seasonal construct?
2. Assess the risks of moving to a seasonal construct
    a. To generation owners
    b. To Transmission operators
    c. To Load Serving Entities
3. Develop risk avoidance or mitigation techniques
    a. Price the cost and effectiveness
    b. Investigate/analyze for unintended consequences
    c. Do the changes need to be tariff and/or BPM based?
    d. Can they be under regular NERC Long Term Resource Assessment or Seasonal Assessment?
4. Plan the cost effective, and simpler changes into the Annual Construct first before any transition to a different construct
    a. Sequence the changes to minimize disruption to the market and other contract negotiations
    b. Avoid rapid changes just because they can be executed
5. As with any implementation, review for unintended consequences, milestones, and check back
6. Check for the value of extending seasonal construct into future years, including options of:
    a. Only as a reliability assessment
    b. As an operations and market assessment
    c. Some level of voluntary information in survey form
    d. Some level of mandatory information and level of mandatory commitment

Topical Discussions

Capacity as a Product

Capacity in the Annual Construct is being treated as a fungible product, at one price, for an all-year commitment. The single pricing event may not be adequate as some of the following situations face us in the market and operations:

- the Polar Vortex hits
- the EPA sets dates for compliance outside the planning year
- extreme weather confronts generation maintenance schedules
- the natural gas pipeline market has taken on greater significance
- competing rail shipments of coal vs. oil

"Capacity" is not a product that can moved, traded with equal performance all year long. Air condition demand side programs don't perform as well off peak or not at all in the winter. Equally, natural gas generation may also not perform as well in the winter due to supply via compressor station failures, contract limits, or even fail to start on oil. Coal can have frozen or wet coal in the winter. All steam supply side units may have cooling water limitation with rivers in the summer due to drought or water temperature.

A seasonal construct can take these conditions into the analysis of need for a level of resource adequacy that could be different for each Local Resource Zone based on geography, load demographics, local generation mix, and internal zone and inter zonal transmission availability.

The "Seasonal" Period to Quantify for Risk

The seasons would likely need to be consecutive with no gaps in between. The periods would not necessarily have to be equal or match any calendar month. The likely candidates would be winter peak, spring maintenance, summer peak, fall maintenance. The load duration curves might be able to be split, to determine the level of resource adequacy risk. The LOLE "engine" could likely predict the riskier periods based on generation and load characteristics. The inter-zonal assessment would be a lot more complex and time consuming mathematically.

Previously one attempt was to limit all 1 day in 10 years risk only in the summer. We believe that is not a good premise or objective. The risk may vary throughout the year. The NERC and RTO planning and operating standards are quite clear about not shedding firm load very often. (NERC Standard BAL-502 RFC-02).

Planning Reserve Construct & New MISO Footprint

The long-term past practice and current practice is to have an annual planning reserve margin based on the summer peak risk hours, which have been around 150-200 hours in volume for a given summer. That practice in the past provided adequate room for planned generation maintenance in the shoulder months and a little less during winter peak. This may not be

adequate or cost-effective in the new MISO reliability pool. The annual construct calls for about 15% installed reserves. The daily operating reserve is about 4%. We could see a spring and fall "maintenance" reserve of say 10%. But the reserve level would be based on LSE sharing within a LRZ and between LRZ. For instance, the northern zone could peak in the winter and need more "local" resources but could be supplemented by extra resources from the south zones. The reverse could be true in the summer.

Maintenance Planning

Weather.

The recent events in Ohio last fall show that extreme weather (98 percentile temperatures) can cause load shedding in September. Limited load shedding with the 98th percentile temperature events seems appropriate. But coordinating the scheduling of maintenance generators could minimize the depth one would go into emergency operating procedures based on some reasonable variation in weather extremes and load response.

Transmission and associated Generation

Other RTOs have a longer request time for outage request for transmission maintenance outages. Many Extra High Voltage (EHV) and High Voltage transmission lines coordinate around associated generation maintenance outages. In some cases, the best time for the line outage is with the generator off-line. In other situations, with reduced generation in the area all lines may need to be in-service. We understand the current EHV practice is a 4-month notice. This could be extended with at least a request with a first-in priority. But it could help coordinate with neighboring RTOs while maintaining inter-RTO operating transfer capability for emergencies.

Transmission Line Ratings

In other committee meetings some have suggested moving to a real-time transmission line rating based on location, temperature, wind and other weather attributes to reduce congestion in the market. While technically possible, it is not without risks to reliability and equipment.

Maybe something in between the summer rating conditions and the winter rating conditions could be applied in the spring and fall season to improve transmission performance for the market and operations, but not introduce a risk to facilities and loads.

Supply Side and Demand Side Facility Ratings

Of course on the generation side and the load side having the effective seasonal value will be more accurate when estimating risk from a resource adequacy perspective.

Common Mode Failure & Weather Events

This may have already been addressed in another other forum, but some investigation of possible common mode failure of generation styles might be in order. An extreme weather event (2.5 standard deviations) could cause a significant common mode forced outage of generation in one geographic area due to cold, lack of fuel, lack of normal water, etc.

Another question for Load Forecast Uncertainty (LFU) concerns temperature. The LFU team has started to investigate temperature vs. load in MISO. Some LSEs have presented their preliminary investigations. This work should continue and check with the Purdue team's work.

Change Management

Any shift to a seasonal construct should be thought through for implications and cost of compliance. Just a rapid implementation for better results could bring unintended consequences of cost or disruption to resource adequacy planning and market functionality.

Any changes to the current construct should be viewed as a normal process improvement taking into account new market, planning, and operating forces.

State Perspectives

The states' resource adequacy responsibilities cross many of the issues noted above. With many LSE covering their gas contracts, fuel mix, location, and transmission construction siting and permits.

The OMS Resources Work Group sees value in investigating seasonal reliability risks and possible changes to the annual construct. We look forward to actively engaging in the seasonal construct review process.

Collected Comments & Notes by:

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