Constellation Response to RA Study Stakeholder Questions

Topic 1: Resource Adequacy Study goals and scenario analysis considerations.

Section 9.15(o) of the Illinois Environmental Protection Agency Act (415 ILCS 5/) defines a series of goals and objectives for the Agencies to pursue, driving to a report that identifies prospective reliability shortfalls, defines and evaluates those shortfalls, and subsequently produces a plan to alleviate the shortfalls. Specifically, the Agencies shall develop and publicly issue a

> *"…report to the General Assembly that examines the State's current progress toward its renewable energy resource development goals, the current status of CO2e and copollutant emissions, reductions the current status and progress toward developing and implementing green hydrogen technologies, and the current and projected status of electric resource adequacy and reliability throughout the State…"*

Further, if a shortfall is identified during such examinations, the Agencies shall consider various options to alleviate the shortfall, including "*the use of renewable energy, energy storage, demand response, transmission development*", potential proposals to "reduce or delay CO2e and copollutant emissions reductions" to the limited extent necessary, or other strategies to resolve the shortfall or reliability violation.

While the statute is direct in its focus, there are likely additional goals and considerations the Agencies could evaluate beyond the objectives defined in the statute while also being supportive of the study's intent and aligned with Illinois values. These additional goals or expanded considerations may be woven into RA Study scenario development as policy considerations, important market drivers, evaluation metrics, or other similar variables. It is with this understanding that the Agencies are particularly interested in stakeholder feedback, answered through the questions provided below, surrounding goals that should be taken into consideration, key scenarios/drivers/policies that may be important when completing model development and ensuing analysis, or additional factors that are important to define at the start of the study process.

Question 1: The Agencies recognize this study process is purposefully targeted in its nature, with Section 9.15(o) providing clear goals and expectations of the resource adequacy study and resulting report. What additional goals, objectives, or evaluation metrics should be considered as part of this study process or future resource adequacy study efforts?

Constellation Answer 1:

Constellation agrees that the RA study should be focused and consistent with the requirements of Climate and Equitable Jobs Act (CEJA). Given that the study will be used to help make policy decisions, the Agencies should develop and evaluate policy scenarios that are most likely to alleviate resource adequacy concerns without undermining other state priorities which include affordable customer costs, reduced emissions, and increased economic development. In some cases, these considerations are interrelated. For example, economic development increases the customer base over which system costs can be spread.

Question 2: Which variables are the highest priority to explore? Further, are there important policies or drivers missing in addition to those outlined in the preceding stakeholder workshop that could help shape scenario development?

Constellation Answer 2:

The RA study should carefully construct load forecast scenarios that use consistent criteria for including large load additions. Given that large load additions are fairly recent phenomena at the scale of current discussion, they do not fit into traditional ISO regression models of weather dependent macroeconomic load that rely on years of explanatory history. Instead, ISO load forecasts layer on large load additions to their base macroeconomic forecast in an approach similar to the treatment of load for electric vehicle charging. However, ISO/RTOs may get their large load data from individual Transmission Operators (TOs), which often use inconsistent criteria when choosing which specific projects to include or exclude. Given Illinois' participation in both PJM and MISO, the Study should examine how both treat large load additions in the load forecasting process. Illinois should work closely with the ISO/RTOs and can facilitate information sharing between the ISOs, and/or request project level detail on interconnection requests of Illinois TOs in order to produce a forecast with consistent criteria for large load additions. The RA study can include multiple load scenarios by varying the criteria for including large load additions.

Presently, there is little to prevent large load customers from submitting connection requests with multiple transmission owners in search of the most expedient connection option, possibly across several RTOs/ISOs. Current discussions focus on interconnection reforms such as increased financial requirements for new large load customers and/or requiring site control demonstrations, and coordination amongst RTOs/ISOs to uncover double counting of demand could help improve load forecasting certainty.

The RA Study should also focus on the time period that is most relevant under CEJA. The first phase of CEJA retirements must occur by January 1, 2030 unless a resource adequacy shortfall is identified. This date is in the middle of the 2029/30 electricity delivery year (June, 1 2029 through May 31, 2030) for both PJM and MISO. So, the focus of the analysis should be on the 2029/30 and 2030/31 delivery years and the policies/drivers that have the most impact on resource adequacy in these years.

Question 3: Which of the following drivers are most critical to explore in the resource adequacy modeling scenarios and why?

a. Extreme weather
b. Demand growth
c. Thermal retirements
d. Transmission build and future needs
e. Generation resource diversity
f. Out-of-state reliance on generation resources
g. Some other driver not described above

Constellation Answer 3:

Most critical drivers to explore in the resource adequacy modeling scenarios are (b) demand growth, (c) thermal retirements – and resource additions, and (f) out-of-state reliance on generation resources.

Northern Illinois is part of PJM and southern Illinois is part of MISO, so resource adequacy in Illinois will not only be a function of supply and demand in Illinois, but also of supply and demand in PJM and MISO. The key drivers of supply will be new resource additions and retirements, in both Illinois and across PJM and MISO. The key driver of demand will be load growth in both Illinois and across PJM and MISO, see the answer to Question 2 for recommendations on designing load forecast scenarios. Resource adequacy in Illinois will be a function of these key drivers, transmission into Illinois, and the resource adequacy structure in both PJM and MISO. Given the long lead time for major transmission projects, the transmission topology in 2029/30 and 2030/31 is largely known today based on the current transmission system and projects underway. Any modeling should reflect PJM's and MISO's resource adequacy structure including transmission limitations and minimum zonal resource requirements.

The key output of the modeling should be whether Illinois meets its resource adequacy needs given that it is part of two large RTOs. As part of the RTOs, Illinois receives several reliability benefits including reduced coincident peak, lower required reserve margin to maintain resource adequacy standards due to regional resource diversity, and ability to

utilize capacity outside of Illinois when necessary. Secondary modeling outputs should be the amount of capacity that Illinois needs from PJM and MISO to meet resource adequacy needs and the coincident peak and reserve margin benefits related to being part of two large RTOs.

Question 4: Are there known or expected developments in federal or state policy that should be integrated into scenario development? Please explain in detail and provide references where possible.

Constellation Answer 4:

Potential storage procurements called for in the omnibus bill under consideration this Spring could have a significant impact on resource adequacy and should be included in scenario development. The Agencies should also model the potential impact of a state-level demand response procurement. Beyond those potential state-level policies, certain federal actions could impact new additions and retirements across PJM and MISO in the next five years. For example, after 2028, the provisions of the "One Big Beautiful Bill Act (OBBB)" related to the production tax credit received by new renewables could impact renewable deployment if not modified before then. Outside of the OBBB, emergency orders have also been issued by the Department of Energy to delay retirements, although the orders have thus far been clear that the resources are not to be considered capacity.

Question 5: How should cost implications or other findings beyond potential reliability shortfalls be presented or considered to support constructive policy decisions?

Constellation Answer 5:

The cost to customers, impact on emissions, and impact on economic development of the various strategies are important considerations in weighing alternatives and should be considered as part of this resource adequacy report and any necessary subsequent plans that are developed. The introduction to Topic 1 of this Request for Comment states: if a shortfall is identified during such examinations, the Agencies shall consider various options to alleviate the shortfall, including "the use of renewable energy, energy storage, demand response, transmission development", potential proposals to "reduce or delay CO2e and copollutant emissions reductions" to the limited extent necessary, or other strategies to resolve the shortfall or reliability violation.

If there is a resource adequacy shortfall identified under business-as-usual, the inter-agency group must develop a plan. There will likely be direct ratepayer costs related to this plan if it expands the use of renewable energy, energy storage, demand response, or transmission development. Such incremental direct costs should be estimated for any mitigation strategies included in the report.

Delaying CO2e and copollutant emission reductions will not result in direct ratepayer costs, but they will result in indirect environmental costs. The magnitude of these costs will depend on the nature and the duration of such delay. The indirect environmental costs for all proposed mitigation strategies can be quantified using a standardized approach based on the social cost of carbon.

Economic development is another important consideration in developing a plan. Certain actions, like accelerating storage to ensure an on-line date prior to planned retirements will have economic benefits. Other actions, like attempting to restrict industrial load growth, will have economic costs. At a minimum, the economic development impact should be considered on a qualitative basis and, to the extent possible, quantified in terms of jobs, GDP, and other potential effects.

Question 6: What blind spots or gaps in the RA Study process do you worry might be overlooked or otherwise not addressed?

a. Are the identified blind sports or gaps unique to customer segments, modeling scenarios, market conditions or other targeted parameter?
h. How could the identified blind sports or gaps be addressed? (e.g. through additional scenarios, targeted data inputs, utilizing specific modeling, etc.)

Constellation Answer 6:

It is critical that Illinois conducts the resource adequacy study in close coordination with PJM and MISO. Both entities have established models, rules, assumptions, and structures for evaluating and preserving resource adequacy. Insufficient coordination and inconsistent data sets could result in gaps and inconsistencies between studies.

Question 7: Have any peer jurisdictions developed scenario(s) through the completion of their own resource adequacy assessments or studies that should also be considered by the Agencies through this Resource Adequacy Study?

a. Provide details concerning the scenario(s), which jurisdiction developed the scenario, and provide a link to the supporting detail(s).
b. Is the assessment part of a broader resource adequacy assessment, or an more detailed integrated resource planning effort?
i. Are there any market conditions or policy considerations that are unique to the jurisdiction and/or the scenarios referenced?

Constellation Answer 7:

Constellation does not have any examples of peer jurisdiction resource adequacy studies to recommend the Agencies consider.

Topic 2: Analytical approach to analysis and data assumptions.

The quality and accuracy of the data used, coupled with the assumptions incorporated to support the data's infusion into scenario design underpin the modeling and analysis of this RA Study process. To begin, these data and assumptions are used in base case development, drawing from historic trends and broadly accepted projections, incorporating established policies, expected developments, and largely conservative assumptions to represent a "business-as-usual" outlook against which alternative scenarios are compared. Due to the importance placed on data inputs, assumptions, drivers, and ultimately scenarios used to test alternative opportunities and impacts, it is paramount that these inputs are also fully developed and defined. This includes fleshing out current and future market conditions and constraints, generation project development forecasts and timing, transmission and distribution system enhancements, customer-driven distributed energy resources, and demand response adoption), policy and legislative initiatives that directly impact resource adequacy inputs and results, and other similar considerations that are critical to frame scenarios and completing sensitivities. The questions below are aimed at understanding Stakeholder feedback on what key inputs (date, assumptions, and other considerations) should be considered by the Agencies through the RA Study process.

Question 8: Are there recommendations for specific data sources that could be utilized in this study?

a. Are there preferences for certain input assumptions that should be made?
j. What prior or concurrent studies could be referenced that might add value or ensure alignment with similar or adjacent work (e.g., queue assumptions, RTO projections)?

Constellation Answer 8:

PJM and MISO have information and studies related to a broad range of input assumptions, including projections and scenarios. Further, there are stakeholder groups and committees with ongoing meetings related to some of the key inputs (e.g., load forecast). The RA Study should build upon the previous and ongoing work at the RTOs and stay closely coordinated so that the RA study reflects continuing resource adequacy developments.

Question 9: Are there specific transmission constraints, expansions, or projects that should be considered and reflected in a model scenario? Further, are these transmission considerations intended to target and/or solve specific challenges? Please explain,

provide supporting documentation justifying inclusion, and provide pertinent reference materials including reports or studies.

Constellation Answer 9:

Please see Answer 8.

Question 10: Are there specific assumptions that should be considered concerning generation resources, including buildout (queue, pace, technology availability) or retirements, both in-state and regionally in the RTO markets?

Constellation Answer 10:

Please see Answer 8.

Question 11: As a component of the RA Study, the Agencies will be seeking to obtain utility and RTO load forecast projections and the underlying assumptions behind the load forecasts. In addition to these utility forecast assumptions, what additional assumptions should also be considered, either embedded in a base case or considered in scenarios? Further, what data sources should be drawn upon, supporting any load forecast modifications? (i.e. large load / electrification growth)

a. Provide details on why these additional assumptions should be considered during the modeling process?
k. Are any proposed load forecast assumptions directly impacted and/or predicated upon specific to policy, legislative, or other conditions being met and/or otherwise enacted? Please explain in detail.

Constellation Answer 11:

Please see Answer 8.

Question 12: Are there any additional considerations – data inputs, policy, drivers, or assumptions – that Stakeholders believe the Agencies should consider, not already explain[ed] in response to the preceding questions? Please explain in detail.

Constellation Answer 12:

Please see Answer 8.