FERC March 8 Technical Conference on Principles for Efficient and Reliable Reactive Power Supply and Consumption (Docket No. AD05-1-000):

Submission of the ISO/RTO Council (IRC)

Opening comments:

- I'm pleased to represent the views of the ISO/RTO Council, whose members are the CEOs of CAISO, ISO-NE; MISO, NYISO; PJM; SPP and ERCOT from the United States and from Canada the CEOs of the AESO (Alberta) and the IESO (Ontario).
- I'm from the NYISO. I want to acknowledge the ISO/RTO speakers on the other panels: Dave Bertagnolli of ISO-NE and Andy Ott of PJM. While we will speak to different aspects of reactive power, we share the belief common to the entire ISO/RTO community that reactive power plays a critical role in maintaining reliability and that the Commission is to be commended for its current initiative to examine the current practices for managing reactive resources.
- I will present some initial comments - the IRC intends to submit a written response to the Commission by the April 1 deadline.

RELIABILITY

1. Reliability considerations must be paramount

- I want to start by stating that reliability considerations must take precedence over economic or pricing considerations in the management of reactive power resources. The reliability aspects of reactive power must be fully reflected in the design and operation of the bulk power system.
- We note that much of the Staff report is devoted to economic and pricing aspects of reactive power. The ISOs/RTOs are aware that, in a market-based environment, reliability and economics are both important and related: failure to get the economics right will create reliability challenges. But the paramount importance of reliability must not be lost on those reading the report or participating in subsequent initiatives.
- Each ISO/RTO, in developing its system reliability plans, considers the adequacy of reactive resources and establishes the best available solution for any deficiency. The potential solutions include the generation and transmission options that are fully described in the Commission staff's report. The result is that all ISOs/RTOs have in place adequate reactive resources to maintain reliability: there is no pending crisis. At the same time I want to be clear that ISOs/RTOs aren't complacent: we place high importance on ensuring the adequacy of reactive resources.

2. Reactive power assessment

- I want to move on to the report's broad recommendation #1:
  Reactive power reliability needs should be assessed locally, based on clear national standards
- We fully support the need for NERC continent-wide reliability standards on voltage control, with appropriate regional differences considered and regional standards applied.
- We note that NERC has defined reliability standards relating to voltage control and reactive power in its Version 0 standards for Communicating Between All Entities, Emergency Preparedness and Operations, Transmission Operations, and Voltage and Reactive Standards. Version 0 is a good beginning for the reliability aspects of reactive power, but more is required and will be pursued in the near future.
- We also agree that assessments must be done for each local area.
- Localities within a RTO's territory may differ significantly with respect to factors such as the relative amounts and reactive characteristics of both load and generation, and the availability and location of reactive support on both the transmission and distribution systems. It is therefore essential that there be planning and assessment for the local area that reflect this diversity.
- The ISOs/RTOs currently do assess needs on a locality basis.

3. Specific reliability matters

- A generator, and in fact any owner of a reactive power device connected to the bulk power system, must be required to follow directions regarding reactive power production/consumption from its Reliability Coordinator (RC) and Transmission Operator (TOP).
- A generator must be required to operate in voltage control mode unless directed to the contrary by its RC or TOP
- ISO-NE's load power factor correction requirements is not discussed in the report, but should be considered as a best practice:
  - New England is divided into reactive analysis zones, each of which has a maximum and minimum load power factor during peak periods. Keeping within this range is the responsibility of the local transmission owner. This requirement results in the deployment of static reactive devices on the distribution system, which is more cost effective than adding to high voltage facilities.
  - This approach is currently under consideration in New York.
- A comprehensive analysis of reactive requirements should include an evaluation of the use of reactive devices on the transmission system (e.g. shunt and series capacitors, SVCs, STATCOMs or FACTS devices.)
- There is a need for improved comprehensive testing for generators and transmission reactive equipment.

PRICING MATTERS

- I want to make a general comment about the pricing aspects. The costs of producing reactive power are, and will always be, small in relation to total energy costs. In New York, for example, the compensation to generators for reactive power is of the order of one percent of the total revenue in the NYISO's energy markets. The largest benefits to customers will not come from reducing the costs of supplying reactive power, but rather from optimal deployment, to be able to transport additional lower cost power, reduce losses and reduce congestion or out of merit costs caused by voltage constraints.

4. Efficient procurement

- Recommendation 2 states, and we agree:

  These needs should be procured in an efficient and reliable manner.
- We note that ISOs/RTOs have quite similar processes for procurement of reactive power, using cost-based compensation methodologies:
  - most compensate generators or transmission reactive providers utilizing a cost-based methodology;
  - most compensate generators for lost opportunity costs when real power must be reduced to produce reactive power;
  - most compensate both generators affiliated with transmission owners and IPPs;
  - most have established the same or very similar power factor range;
  - most have or are developing reactive power testing criteria;
  - most do not compensate generators incrementally for reactive power when the power factor is maintained with the established range.
- There are, however, differences among the ISOs/RTOs, as the report documented. In our view these differences should not be viewed as a problem to be fixed: we do not believe it would be appropriate to move to uniform practices, at least not in the near term. Current rules and contractual arrangements are extensive and inter-related, and should not be replaced unless there is a clear business case for doing so. Because of costs of reactive resources are relatively low, it is not obvious there will be such a business case.
- These differences reflect in part the fact that each ISO/RTO had a unique historical evolution and stakeholder process. There are also intrinsic differences between ISO/RTO regions, for example

in load behavior and dynamic characteristics. The important point is that despite minor differences in approach, each jurisdiction meets the objective of reliable and efficient reactive power procurement. However, we fully accept the ongoing need to review our current reactive practices and to identify and adopt best practices as applicable to each region.

5. Pricing options

- The report details the two primary pricing options, i.e. capacity payments and real-time pricing, noting that the capacity option is employed in almost all existing cases.
- We would not rule out any proposed market design at this early stage, but we recommend continuing to use a cost-based approach, at least in the near-to-medium term.
  - A reactive power market would have greater challenges than a real energy market because reactive resources are effective only in the immediate local area. Accordingly, and as recognized in the Commission staff's report, the potential for a local market power problem could be substantial.
  - The report notes that five to ten years may be required to implement market designs. This is a realistic timeframe, assuming the currently foreseen barriers, such as local market power, can be overcome.
- Real time pricing methods would likely require reactive load zones, similar to the LMP zones for real energy pricing. Given the local nature of reactive power, there may need to be far more reactive zones than real power zones. Again, we would not rule out real-time reactive pricing, but we would approach it cautiously.
- Overall, we believe ISOs and RTOs currently have a fair and effective cost-based approach in place which provides an adequate supply of reactive resources to ensure system reliability. At this time we do not see a compelling case for haste in moving to a new approach.

6. Beneficiaries pay

- Recommendation 3 states, and we agree:

  Those who benefit from the reactive power should be charged for it.
- End users pay directly or indirectly for the costs of producing reactive power. Transmission reactive facility costs are reflected in transmission tariffs, based on monthly charges incurred. Generators' costs and revenues included in ISO/RTO tariffs, such as those in Schedule 2, are reflected in the cost of transmission service and therefore in the cost of power to the end user.
- We note that while end users may be the primary beneficiaries of reactive power, generators also benefit from a resulting more stable power system, with, for example, fewer trips.

7. Non-discriminatory basis

- Recommendation 4 states, and we agree:

  All providers of reactive power should be paid, and on a non-discriminatory basis
- Compensation for a transmitter's reactive devices is the same as for any other transmission reinforcement/expansion asset. Regulators therefore can ensure there is no discrimination between transmitters.
- Generators are generally compensated in the same manner within a given ISO's/RTO's jurisdiction.
- ISO-NE is identifying mechanisms to broaden the base of supply by the introduction of load-side solutions, e.g. - load customers that would install dispatchable reactive devices.