



Memorandum

To: ISO Board of Governors

From: Petar Ristanovic, Vice President, Technology

Ryan Seghesio, Chief Financial Officer & Treasurer

Date: January 27, 2016

Re: **Decision on energy management system replacement project budget**

This memorandum requires Board action.

EXECUTIVE SUMMARY

Management seeks approval from the ISO Board of Governors for funding to design, develop, test and implement a new energy management system (EMS) as well as replace aging technology infrastructure.

After the full network model expansion feature project, completed in the fall of 2014, the ISO is on track for expanding the enterprise data model to improve accuracy of the grid power flow projection, especially in modeling loop-flows. In addition, we are modeling more contingencies and need to improve the EMS system performance to handle more frequent prompt grid analysis as well as make the EMS more robust and scalable to meet the expected load. To help facilitate the need, the ISO completed a requirements analysis, issued a request for proposal, and evaluated available solutions to meet future needs.

Management recommends the following motion:

Moved that the ISO Board of Governors approves the capital project budget of \$13.5 million for the energy management system replacement project, as described in the memorandum dated January 27, 2016.

DISCUSSION AND ANALYSIS

As a result of previous history, responses to operational events, and lessons learned the ISO determined there was a need to both run grid analysis more frequently to provide operations with faster results when conditions change in real-time and expand the enterprise model to improve grid power flow accuracy and loop-flow modeling. To support these goals, Management identified the need to expand the ISO enterprise data model and upgrade the energy management system and tools, which will also support long term strategic plans.

The ISO has defined requirements that will support improved EMS performance, robustness, and future scalability while providing operations with enhanced tools to improve situational awareness and faster results when events occur.

The new EMS will provide a foundation and tools to:

- Support continued expansion of the market through enhanced performance, robustness, and integration with ISO network applications.
- Facilitate the integration of renewable energy resources, storage devices, and demand response through support for an expanded network model that provides flexibility and scalability.
- Enhance operator situational awareness through improved tools and user interfaces.
- Provide operational flexibility for more frequent enterprise data model changes to move from quarterly toward weekly and daily updates.
- Improve reliability and compliance through the introduction of new technology and critical infrastructure protection (CIP) standards.
- Provide the ability to handle the expected growth in number of analog and digital telemetry points including phasor measurement units (PMUs).

BUDGET

In December 2015, the Board authorized Management to negotiate and execute a contract with the EMS vendor that had been selected through the RFP process. Funds from the existing annual capital project budget were reserved temporarily to bridge the gap between the December and February Board meetings. The budget amount requested in this memo will be for the entire capital project and is inclusive of the contract amount discussed in December. The large size of this project warrants carving it out separately from the overall 2016 capital project budget which was set at \$16.5 million.

The cost of the project will be funded entirely from capital reserves on-hand; therefore, no additional debt financing is required. Capital reserves come from two sources: 1) remaining bond proceeds from the 2013 bonds, and, 2) cash funded capital collected as part of the annual revenue requirement. At the end of 2015, the ISO had approximately \$69 million in

uncommitted capital reserves. Furthermore, there is no negative impact to the revenue requirement and resulting grid management charge rates.

CONCLUSION

The ISO's energy management system is a mission critical grid operations decision support monitoring and control system. The ISO has evaluated EMS business and technical requirements to support implementation of a new EMS system that meets user-specific requirements for functionality, performance, usability, and accessibility, and ISO information systems requirements in application architecture scalability, flexibility, manageability, and security. Management recommends the Board approve a capital budget of \$13.5 million for the EMS replacement project.