

Memorandum

To: ISO Board of Governors
From: Keith Casey, Vice President of Market and Infrastructure Development
Date: July 9, 2015
Re: **Update on North of Lugo High Voltage mitigation project**

This memorandum does not require Board action.

Pursuant to the transmission plan approval process in the tariff, Management intends to provide expedited approval of the installation of two 45 MVAR tertiary bank reactors and one 220 kV 45 MVAR bus shunt reactor at Kramer substation. The tariff stipulates that the Board be briefed before the expedited approval takes effect.

High voltage concerns have emerged in the North of Lugo area under light load conditions since the Coolwater generating plant retired on January 1, 2015, and three smaller generation units totaling 190 MW also recently retired in the North of Lugo area. This generation was effective at controlling voltage in the North of Lugo area by absorbing reactive power as needed. Management's expedited approval of this project is necessary to ensure that the shunt reactors can be installed as soon as possible in order to control voltage in the area.

Through technical studies coordinated with Southern California Edison, the ISO has identified a need for two 45 MVAR (rated at 13.8 kV) tertiary bank reactors to the 220/115 kV No. 1 and No. 2 transformer banks, and one 220kV 45 MVAR bus shunt reactor at Kramer substation, as the most effective solution to mitigate the high voltage issues. Due to variations in the equipment lead time, the project will be phased. The two tertiary bank reactors have an expected in-service date of June 2016, and the 220 kV bus shunt reactor has an expected in-service date of June 2017.

SCE has indicated that the cost of all three reactors is estimated to be less than \$7.5 million, well below the \$50 million threshold for management approval.

In the interim, the high voltage concerns will be managed through a range of operating measures, including operating a large amount of marginally effective generation in “buck” mode (i.e., absorbing reactive power), adjusting transformer bank tap changers, and at times de-energizing the Kramer-Cool Water 220 kV line.

A stakeholder call was held on June 25 to review the project with stakeholders. One written comment was received, seeking further technical clarifications on the issue and inquiring whether the ISO considered an alternative solution of installing a new 230/115 kV transformer at Coolwater. Management has considered this alternative and determined that it is not effective in addressing the identified need and has provided a written response to the comment as part of the 2015-2016 transmission planning process.