Memorandum

To: ISO Board of Governors

From: Steve Berberich, President and Chief Executive Officer

Date: December 15, 2015

Re: **CEO report**

This memorandum does not require Board action.

OVERALL CONDITIONS

Normal late fall operating conditions are in evidence, typified by high morning and evening ramps and high evening loads from holiday lighting. Maintenance outages have been frequent, but are normal for this time of the year.

On the morning of Monday, November 16, a series of local power quality issues caused a fire in the Alhambra operations center, which resulted in a complete facility shutdown at the direction of the responding fire department. Unfortunately, many of the ISO systems were operating from Alhambra during that time, and the ISO market systems and EMS were impacted when the power was cut off. IT staff restored the systems in Folsom with no electric system reliability issues. However, the system downtime was longer than desired. The new Lincoln backup facility will resolve many of the system availability issues that occurred during this event.

COMPLIANCE AUDIT

During the week of November 16, the Western Electric Coordinating Council conducted the ISO's triennial compliance audit. This extensive audit covers mandatory reliability requirements ranging from transmission planning to cybersecurity, based upon a risk assessment performed by WECC. Initial feedback has indicated no findings. Huge thanks go to the entire ISO team, which has worked for over a year to prepare for the audit and ensure that the WECC team had all relevant materials to conduct a thorough and effective audit.

NV ENERGY IMBALANCE MARKET START

NV Energy began financially binding operations in the energy imbalance market on December 1. The implementation went very smoothly. Congratulations go to the NV Energy and ISO teams that worked very closely to ensure success. Initial results have been very positive with significant flows between the ISO and NV Energy, and between NV Energy and the PacifiCorp East. Those flows are the direct result of the transfer capability

between the systems, which has increased the benefits for all participants and nearly eliminated imbalances in PacifiCorp East. The ISO's next quarterly EIM benefit report will be expanded to include financial benefits as a result of NV Energy's EIM participation.

COORDINATED POLICIES

With four years remaining until California reaches or exceeds its 33% renewable portfolio standard and only fourteen years to reach California's 50% goal, it is critical to improve how we integrate renewable generation. Improvements listed below include significant changes to many aspects of the business such as how we utilize renewable generation for reliability services and a new approach to resource planning and procurement. Together, these improvements will lower customer costs across the region, minimize renewable curtailment, and reduce carbon emissions by helping decarbonize other sectors of the economy.

Procurement – Procurement to meet the state's 50% RPS goal will require careful consideration of a wide range of factors across the entire system including resource quality, transmission availability, the value of geographic and technology diversity, and operational impacts, in addition to project costs. I applaud the CPUC's move to an integrated resource planning model, which will facilitate this approach.

Distributed resources –More and more generation and other resources are being installed at the distribution level. It is important to consider how the system will evolve and how distributed resources can contribute to management of either or both the distribution system and the transmission system. We are committed to working with the utilities to find common ground on how the system will evolve and how distributed resources can be used to help manage the grid of the future.

Storage – Storage will have to become a larger part of the resource mix. It provides the opportunity to shift both demand and generation and could be a significant game changer. It will be necessary to continuously assess the economics of storage technologies versus other means to get value from excess.

Role of renewables in managing the grid – With more and more renewables being added to the grid both on the transmission and distribution system, it is essential to enable them to provide grid integration services. Renewables can assist with ramps, voltage stability and frequency management more than they do today and thus reduce the need to dispatch conventional resources.

Demand side management – As variable renewable generation on the system grows, it is increasingly important to have demand response available as an integration tool. Efforts to change pricing signals to consumers, enable demand response to address reliability issues, and encourage consumer-friendly demand-side program design are key to our future success. Time-of-use pricing to reflect seasonal conditions will be critical. The ISO has done an analysis of the changing grid and proposed a fairly straightforward approach to how pricing could be used throughout the year to incent consumption during over supply conditions and dis-incent consumption during high load conditions.

Regional coordination – This year has seen quantum leaps in regional coordination, and the value of the western energy imbalance market is now well established. EIM, though, represents just a small fraction of the value that can be realized with full integration of reliability services, transmission planning, and optimized day-ahead scheduling. We are continuing to work with interested parties to advance this effort across the region.

Retool the fleet – A conventional fleet will continue to be needed to supply power when renewables are unavailable, in addition to providing grid services and ramping capability. These generators must be able to start, stop, and ramp quickly. The need for these attributes is increasing and will have to be compensated. The ISO will play a lead role in defining market products around these needed services.

RENEWABLE GENERATION

Renewable generation records remain unchanged from the last Board meeting. Current peak production for wind remains at 4,768 MW at 5:48 PM on April 12, 2014 and peak production for solar remains at 6,506 MW at 2:01 PM on September 17, 2015.

MARKET SURVEILLANCE COMMITTEE REAPPOINTMENT

The Market Surveillance Committee is an advisory committee to the ISO Board of Governors that provides independent expertise and recommendations on market design and monitoring issues to ISO Management and the Board. The tariff requires that the Chief Executive Officer nominate members to the Board for appointment.

This year, I am pleased to nominate Dr. Benjamin Hobbs, an existing Committee member, for reappointment to the MSC. Dr. Hobbs has been a valued member of the MSC since 2002 and has provided invaluable expertise and advice to the Board, ISO Management and staff on numerous issues relating to the operation of the ISO market. Additionally, Dr. Hobbs's diverse and exceptional expertise in engineering, power systems, and economics makes him a highly valued member of the MSC.

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