

ISO Metered Subsystem (MSS) Option Proposal for Western Area Power Administration – Sierra Nevada Region (Western)

[Alternative to Western Federal Control Area]

April 7, 2003

Summary

- Continued provision of ISO Control Area services (CAS) will save Western's customers the Capital and O&M costs associated with Western creating and operating its own separate Federal Control Area, \$2.6 Million annually for the ISO Metered Subsystem (MSS) Option vs. up to \$16.4 million plus the cost of ISO California-Oregon Intertie (COI) Path Operator services for the Federal Control Area option.
- The ongoing cost of ISO Control Area services, offered at the current ISO CAS charge rate of 56 cents per MWh of Load and Export, would be a lower cost than Western would incur "going it alone."
- The ISO's MSS option for continuing Western operations within the ISO Control Area will afford ISO settlements treatment to Western based upon "net" use of the ISO Controlled Grid for specific charges (i.e., it would settle the Western service area on a Net charge basis for those charges), analogous to the NCPA MSS "Aggregator" arrangement.
- Western and the U.S. Bureau of Reclamation (USBR) will have full access to the ISO's Day Ahead, Hour Ahead and Real Time Energy and Ancillary Services (A/S) markets with the advantage of the operation of USBR's Generating Units as System Units, substantial preservation of Western/USBR control over unit operations, and lower A/S requirements. The market opportunity benefit is conservatively estimated in a range of \$1.9 million to \$9.5 million, dependent upon participation in the ISO Spinning Reserve or Regulation markets.
- Continuation of the operation of the Western system within the ISO Control Area will avoid the inherent operational complexity and costs of multi-Control Area coordinated operations for California-Oregon Transmission Project (COTP)/COI, for the Pacific AC Intertie (PACI) and the Malin-Round Mountain 500 kV line, and for the integrated Western and PG&E 230 kV and 500 kV systems within Northern California.
- The Participating Transmission Owner (PTO) option, in combination with the MSS option, can save Western considerable transmission costs and partially address Western's issue of increased transmission access fees, subsequent to the termination of Western's Contract 2948A with Pacific Gas and Electric Company (PG&E).
- Western's transmission service access issues, related to continued delivery of Federal power to its preference power customers located on the PG&E grid, are independent of the consideration of the ISO Metered Subsystem vs. establishment of a Federal Control Area options. The PG&E "TO" transmission costs are common to both scenarios.

ISO MSS Proposal to Accommodate Western and USBR Requirements

The California ISO would very much like to retain Western Area Power Administration – Sierra Nevada Region as a full participant within the ISO Control Area. The ISO values the business and working relationship developed with Western since ISO start-up in 1998. Staff from the ISO's Grid Operations and Market Services Departments have worked closely over the years with Western personnel to resolve ISO and Western issues as they have emerged. Western has always been extremely cooperative and supportive of ISO Controlled Grid reliability actions, and was especially supportive during the energy crisis in 2001. We highly appreciate this working relationship.

The ISO is committed to work with Western, as it prepares its 2004 Marketing Plan and considers its options. Accordingly, the ISO formally presents a specifically tailored ISO Metered Subsystem option as a viable, and we believe superior, alternative to Western's independent Federal Control Area consideration.

The MSS alternative has resolved many of the issues municipal and other similarly situated governmental utilities have had with the design of the ISO markets. That is why three (3) other governmental power entities entered into MSS agreements with the ISO over the last year. MSS benefits include: ISO market cost allocation based on cost causation, load following facilitation, generation dispatch control, full market participation and exemption from non-contingency blackouts.

The ISO's objective is to provide Western with a lower cost alternative that meets Western's and USBR's operational needs and retains Western as an integral part of the ISO Control Area.

The following elements comprise the ISO's offer of a tailored MSS for Western and the U.S. Bureau of Reclamation.

Metered Subsystem Principles

The ISO extends the offer of benefits afforded to other governmental entities to Western as a MSS, similar to the aggregated MSS operator status provided to NCPA. Further, with an understanding that every operating entity has unique needs, the ISO is prepared to tailor the MSS agreement to Western's and USBR's specific needs to the maximum extent possible.

This MSS option provides Western with operations and generation dispatch flexibility, full market access, and settlements treatment based upon cost causation.

Key principles of the MSS proposal include:

- **MSS methodology to model Western "Bubble" or service area** - The Western MSS would likely include the City of Redding, City of Shasta Lake, Lawrence Livermore National Lab, and the Tracy pumps. In addition, the Calpine Sutter Power Plant is located within the proposed Western MSS. If it continued to operate as an independent Participating Generator, at Western's option, the Sutter plant could be excluded for purposes of the ISO's scheduling and settlements with Western. Each of these entities is located within the existing Western service territory boundaries (i.e. the Western bubble). This service territory could comprise a MSS, subject to Western's preferences. Also the COTP line could be included in the Western MSS.

- **Settlements** – The ISO would provide Western with “Net” Settlements treatment for various ISO market charges (i.e., Neutrality), as appropriate, based on cost causation principles.
- **Unaccounted-for Energy (UFE)** - No PG&E UFE charge would be applied to load within Western’s service territory.
- **Load Following** – Western would have the option to choose to follow MSS load with MSS generation without incurring uninstructed energy deviation penalties. All uninstructed deviations would be netted for the purpose of determining whether or not deviation penalties apply.
- **System Unit** – Western and USBR would have the ability to schedule customized combinations of MSS resources on a System Unit basis (aggregating resources for scheduling and settlements) to provide USBR with flexibility in dispatching individual generating resources.
- **Market Participation** – Western would have full access to all ISO markets and associated services, including the following, using the USBR System Units without the need for Western or USBR to execute a Participating Generator Agreement. In addition, the MSS option would provide USBR and Western substantial operational control over their generating resources, particularly to the extent not actively participating in the ISO’s markets.

§ Balancing Energy (Real Time Balancing Energy Market)

§ A/S Markets (AGC/Regulation, Operating Reserves – Spinning & Non-Spinning Reserve)

- **Multiple SC ID Accommodation** – Western would have an option for using multiple individual scheduling IDs, as required to facilitate and simplify Western “ISO” settlements with its “scheduling agent” customers located on the ISO Controlled Grid but external to and scheduled separately from the Western MSS.
- **A/S Requirements** – Western’s ISO A/S obligations would be based on gross load as a proportionate share of ISO A/S requirements for the entire ISO Control Area.
- **ISO Control Area Services** – The ISO would continue to provide Control Area services, using existing ISO facilities, systems, and personnel, at a cost lower than Western’s alternative of establishing a Federal Control Area operation.

ISO Control Area Services would consist of the following:

- § Coordination with adjacent Control Areas for Interchange scheduling and Checkout
- § Coordinating Inter-Control Area switching operations
- § Maintaining a back-up Control Center
- § Real-time balancing of load and resources
- § Compliance with all NERC policies and WECC Minimum Operating Reliability Criteria
- § Management of Unscheduled (Loop) Flow mitigation (particularly on WECC Paths 66 and 15), including controller adjustments with BPA, real time schedule curtailments with BPA as well as coordinated and proprietary operation of phase shifters
- § Inter-Control Area Inadvertent Energy exchange reconciliation
- § AGC/Regulation
- § Bulk System Voltage Control
- § Outage Coordination and Management
- § Dispatch Services

- § Pre-Scheduling and real-time Scheduling Services (Day-Ahead, Hour-Ahead, and real time)
- § NERC Tagging Coordination
- § Operations Planning and Engineering Studies
- § System Security Analysis
- § System Emergency Management
- § Control Area to Control Area Mutual Emergency Support

Estimated Costs and Benefits

When comparing the MSS option to the Federal Control Area option, there are several aspects of those options for which the benefits and costs of the potential options need to be evaluated. From the ISO's perspective, the primary cost savings to Western and its customers resulting from the formation of a new Control Area, as compared with the MSS option, are limited to the savings realized from not having to pay the ISO's Grid Management Charge (GMC) on load within Western's proposed Control Area boundaries and ISO charges allocated to export schedules to the Sacramento Municipal Utility District (SMUD) Control Area or the Bonneville Power Administration (BPA) Control Area.

However, any potential savings by Western would likely be overwhelmed by the capital costs and incremental operation and maintenance costs associated with Western becoming a Control Area operator, which the ISO believes will be far in excess of obtaining these services through the ISO, and the increased costs resulting from Western's need to maintain higher operating reserve levels (to cover Western's largest single contingency) and compensating the ISO for providing Path Operator services for the California-Oregon Intertie (COI).

Moreover, Western could realize substantial additional cost savings and/or benefits from potential savings in Ancillary Services costs and potential revenues from additional A/S sales opportunities associated with remaining in the ISO Control Area as an MSS.

The ISO has attempted to summarize and quantify the differential in costs and benefits to Western in choosing between the MSS option and the option of forming a new Control Area in the attached "MSS vs. Federal Control Area cost comparison" table. The attached tables also provide an estimate of ISO and Western annual costs for transmission service. (See Appendix Tables A & B.) Some of the more significant costs summarized in the attached tables are described in more detail below:

- **Control Area Operations Cost Savings** - Using an estimated annual "Gross" load of 1827 Gwh for the Western system (the Load of City of Shasta Lake (CSL), City of Redding (REDG), Lawrence Livermore National Labs (LLNL), and the Tracy Pumps), x \$0.56 / MWh, the ISO's GMC Control Area Services (CAS) charge, the cost to Western for ISO Control Area services is \$ 1,023,000, exclusive of the City of Roseville loads, presently scheduled by NCPA, and SMUD exports. Westerns' Control Area costs are estimated, at minimum, at \$3.4 million, plus the cost of ISO COI Path management services.
- **Ancillary Services (A/S) Cost Savings & Market Payment Opportunity** – Western's operating reserve requirement as an independent Control Area may be significantly higher than its requirement would be as a MSS within the ISO Control Area. As an independent Control Area, Western will need to carry operating reserves to cover loss of the Control Area's Most Severe Single Contingency (MSSC) to meet WECC Minimum Operating Reliability Criteria (MORC) requirements. Western's MSSC for its Control Area would likely be loss of the 230-kV line to the Sutter Power Plant and subsequent loss of all Sutter generation, greater than 520 MW at full output.

As an MSS, based on average ISO operating reserve obligations, operating reserve obligations associated with Western deliveries to its customers would be approximately 6.0% of Western's actual deliveries. Even when Western's schedules to its customers are near maximum levels, estimated at 1,300 MW, the operating reserve obligation under an MSS arrangement would be less than 80 MW. The incremental operating reserve requirement could potentially be in excess of 400 MW more as an independent Control Area than the requirement under an MSS arrangement.

Based on the hourly Market Clearing Prices (MCP) for Spinning Reserves in 2002, 100 MW of spinning reserve capacity for a 1 year period would have been paid over \$1.9 million in the ISO's markets, and 100 MW of upward Regulation capacity would have been paid over \$9.5 million. Western's customers could benefit significantly if the generating capacity saved by avoiding incremental operating reserve requirements resulting from Western forming its own Control Area was sold in the ISO operating reserve markets and paid the MCP for the capacity.

Reliability/Operational Benefits and Concerns and Related Matters

The continued ISO provision of Control Area services would have additional important benefits, attributable to continued integrated operation of the interconnected PG&E and Western transmission grids in Northern California, particularly given the non-contiguous nature of Western's transmission rights. Added complexity and coordination requirements that would result with the formation of a separate Control Area in the areas of system operations, dispatch, scheduling, protection, over-generation mitigation, congestion management, unscheduled flow (USF) mitigation, real-time path de-rates, will be avoided for COI and the integrated 230 kV and 500 kV systems in Northern California.

Examples of the reliability and operational and related concerns that could be avoided by the operation of Western as an MSS within the ISO Control Area – and the consequent benefits of continued integrated ISO-Western operations – include the following:

- **Avoidance of the Creation of Substantial Additional Complexity in Intertie Scheduling** – The ISO currently has 31 intertie points. With the formation of a new Western Control Area, that number could increase by as many as 15 additional points. In addition to these intertie points, Western has many hundreds of entities to which it serves power scattered throughout the PG&E service territory that will need to be scheduled. The dramatic increase in the volume and complexity of intertie scheduling that would result from the formation of the new Western Control Area would not only result in substantial additional efforts and costs to perform those scheduling activities, but it would create complexities that would raise serious concerns for the reliability of system operations – particularly in the event of system emergencies or contingencies affecting those interties.
- **Minimization of Potential Adverse Consequences in the Event of California-Oregon Intertie Contingencies** - When a component of the COI is forced out of service, causing a de-rate of the COI transmission capacity in real-time, the ISO currently is able to utilize several methods to relieve the COI overload. The methods available include circulating the Pacific DC Intertie, initiating Control Area adjustments between the ISO and BPA, accepting decremental bids in the ISO's markets, if available, or cutting schedules in real-time. In the event of the formation of a separate Western Control Area with elements of the COI in that Western Control Area, the ISO's management of those COI contingencies would be complicated substantially. The ISO would have to coordinate any remedial actions with Western and could be limited in both the timing of its response and in its ability to use all of those response options.

- **Facilitation of Mitigation of Unscheduled Flow** - The ISO currently facilitates the Western Electricity Coordinating Council (WECC) USF procedure for all COI schedules. When this procedure is implemented and fails to unload the COI, the ISO initiates further schedule reductions, circulates the PDCI if available, and in some cases makes inter-hour Control Area adjustments with BPA. In the event of the formation of a new Western Control Area, the ISO would have to undertake additional coordination with Western regarding any Control Area adjustments necessary to mitigate the COI USF.
- **Simplifying Outage Coordination** - The ISO coordinates outages of all COI components with BPA, PG&E and Western. This includes requirements that Western provide the ISO 12-month advance notice of outages, updated quarterly. Additionally, the ISO currently has the ability to apply its outage protocols to Western with regard to the COI. This type of coordination ensures that COI capacity is maximized and allows COI outages to be coordinated with other internal system resources and interties, as well as BPA facility outages that affect COI. In the event of the formation of a new Western Control Area, additional efforts would have to be made to ensure that outage coordination affecting the COI will be undertaken in a comprehensive and consistent manner.
- **Avoidance of inter-Control Area coordinated operations negotiations** - Western's operation as an MSS within the ISO Control Area would preclude the need for protracted negotiations regarding an Interconnected Control Area Operating Agreement (ICAOA) associated with inherent complexities of operating an essentially integrated Northern California Grid and single COI branch group as two separate and distinct Control Areas. Negotiations would have to address the complexities of pre-scheduling, protection, real-time path flow management, USF mitigation, Over-Generation mitigation, remedial action (RAS) schemes, and congestion management on same path using two different approaches (Western physical first come first serve vs. ISO financial mitigation). Negotiations would also need to address compensation for the COI Path Operator role.
- **Seams issues minimized and forward market congestion reduced** - Congestion merely perceived on COI, as a result of existing transmission rights (ETC) capacity reservations, would essentially disappear if ETCs on COI were converted to ISO-administered transmission capacity or through other arrangements Western might negotiate with the ISO in conjunction with operation as an MSS in the ISO Control Area.
- **Eliminates PG&E Round Mountain Substation condemnation** – The potential for protracted legal proceedings associated with any attempt by Western to exercise the power of eminent domain over PG&E's Round Mountain Substation could be avoided if Western were to operate as an MSS within the ISO Control Area. There would also be no need for Western to build redundant substation facilities at Round Mountain to interconnect its PACI leg to its Cottonwood 230 kV line.

Additional Benefits from Participating Transmission Owner (“PTO”) Status in the ISO Control Area

Although not directly related to Western's potential operation as an MSS in the ISO Control Area, an ISO transmission Access Charge (TAC) study of various PTO options or scenarios for Western indicates that, were all non-PTOs (including Western) to join the ISO as PTOs, Western's end use customers would realize a benefit of between \$0.5 million and \$1 million in annual transmission cost savings. If Western were to join but the Los Angeles Department of Water and Power (LADWP) did not, these savings would likely be even larger.

In any case, TAC calculations (based on Western's submitted data, which still includes its costs currently incurred under its Contract 2948A with PG&E) show that Western would NOT be financially disadvantaged by joining the ISO. A “cost shift benefit”, estimated at least \$0.5 to \$1.0

million per year (compared to Western's costs before expiration of the 2948A contract), could be realized by Western due to Western's ability to "roll" its entire high-voltage transmission revenue requirements into the ISO's High Voltage Access Charge (HVAC).

This cost shift benefit is created because all of Western's end use load inside the current ISO Control Area (approximately 4,000 GWh annually) would pay the ISO's HVAC without any pancaking of the ISO's and Western's own high-voltage transmission costs. In contrast, Western's 2948A customer load currently pay for the cost of Western's own high-voltage transmission facilities, as well as for the cost of using PG&E's facilities under the 2948A agreement.

The additional pancaking of costs of transmission service into California and increased balkanization of regional transmission operation would both be avoided if Western were to join the ISO as a PTO. While doing so could be perceived as relinquishing operational control flexibility, it would also provide substantial additional benefits to Western and its customers.

Other Considerations

- The ISO is under considerable scrutiny when it comes to costs. The benefits of that ought to become apparent in the coming years as the downward trend in ISO costs in the last two years is expected to continue.
- The ISO is actively revising its rate methodology to recover its costs; this area too should show efficiency and equity improvements for all entities involved in the ISO's markets.
- It is clear from recent California and federal legislative and policy developments that the ISO will continue to play a central role in the California energy sector. The strongest place to influence developments which will continue to affect Western and Western's customers, therefore, is as part of the ISO's system.

Conclusion

In conclusion, continued provision of ISO Control Area services to Western as a valued client avoids higher cost Control Area operations due to duplicative costs. ISO Control Area services are offered at our ISO Control Area Services Grid Management Charge rate. This CAS rate is presently 56 cents per MWh of Load and Export power flows.

The ISO "MSS option" would afford ISO settlements treatment based upon cost causation and "net" use of the ISO Controlled Grid, along with other benefits as depicted in the ISO Tariff for MSS, inclusive of Load following, exemption from non-contingency blackouts, and generation dispatch control. Western would continue to have full access to and benefit of the ISO Real Time Energy and Ancillary Services markets.

The ISO will negotiate, to the maximum extent possible, MSS provisions required to address and accommodate both Western's and USBR's specific needs as Federal entities associated with water management and Federal power customer loads.

ISO provision of Control Area services avoids the complexity and costs inherent in creating multiple Control Area coordinated operations for COTP/COI, PACI/Malin-Round Mountain and Western's systems within northern California.

These reasons, along with the other developments and considerations already referred to, strongly support the case for Western to continue to operate within the ISO Control Area, as an MSS.

