UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	**)**	**Docket Nos. ER06-615- 000** **ER06-615- ___**

MOTION OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION FOR EXTENSION OF TIME TO IMPLEMENT DISAGGREGATION OF DEFAULT LOAD AGGREGATION POINTS

The California Independent System Operator Corporation (ISO) submits this motion for an extension of time[1] to further disaggregate the load aggregation points (LAPs) used for scheduling and settling demand in the ISO default markets as directed by the Federal Energy Regulatory Commission (FERC or Commission) in its order issued on September 21, 2006, in the above-referenced proceeding.[2] Based on its preliminary analysis of locational pricing trends during the first 16 months of its new market design and in anticipation of significant market enhancements likely to further alter these trends, the ISO concludes that insufficient data exist to support redefining the default LAPs at a more granular level at this time.[3] Further, the ISO's recent stakeholder process has revealed a near consensus opposing implementation of more granular default LAPs in 2012 and that this opposition rests, in part, on the value of forging greater alignment between ongoing retail rate and wholesale market design. As such, good cause exists for granting this extension as it will provide the ISO and stakeholders additional time to incorporate the potential changes to pricing

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[1] The ISO submits this motion pursuant to Rules 212 and 2008(a) of the Commission's Rules of Practice and Procedure, 18 C.F.R. §§ 385.212, 385.2008(a) (2010).

[2] *Ca. Indep. Sys. Operator Corp.*, 116 FERC ¶ 61,274 at P 611 (2006) (*MRTU September 2006 Order*); *order on reh'g*, 119 FERC ¶ 61,076 at PP 323-331 (*April 2007 Rehearing Order*).

[3] The new ISO market went into effect on the April 1, 2009, trading day. The Commission's prior orders approving the ISO's market design called for the implementation of LAP disaggregation by three years after the start of the ISO's new market design, which would be April 1, 2012.

patterns anticipated from pending ISO market enhancements into more refined technical studies and ultimately a proposal for more granular demand clearing and settlement in the ISO markets. The ISO, therefore, respectfully requests that the Commission grant this motion for an extension of time to the last quarter of 2014 for the ISO to implement greater default LAP disaggregation.[4]

I. Background

Since the start its new locational-marginal pricing (LMP)-based market, the ISO has cleared and settled the majority of demand in the ISO balancing authority area at three default LAPs, which correspond to the service territories of the three major California investor owned utilities: Pacific Gas & Electric (PG&E), Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E).[5] For each default LAP, the ISO calculates an average zonal LMP based upon the weighted average of the nodal LMPs within that LAP and the associated load is then settled at the applicable default LAP LMP. The ISO also provides the opportunity for more nodal settlement for certain types of load. For example, Participating Loads and Participating Demand Response resources are scheduled and settled at the individual nodal level or customized LAP level, rather than at one of the three default LAPs.[6] Similarly, demand under Metered Subsystems, existing transmission contracts, and transmission ownership rights are settled at a smaller aggregation of pricing nodes, or at single pricing node. Finally, exports out of the ISO system, which are a form of demand, are cleared and settled at intertie scheduling points and

[4] The new ISO market went into effect on the April 1, 2009, trading day. The Commission's prior orders approving the ISO's market design called for the implementation of LAP disaggregation by three years after the start of the ISO's new market design, which would be April 1, 2012.

[5] *See* ISO FERC Electric Tariff Section 27.2.

[6] *See* ISO FERC Electric Tariff Section 30.5.3.2.

a default LAP.[7] The congestion revenue rights (CRR) allocation process also allows for the allocation and auction of CRRs at the more granular sub-LAP level. This latter design permits entities to obtain enhanced financial protection for the final increment of their CRR eligibility in the event that no additional default LAP-level CRRs are feasible.[8]

Earlier in its development of policy for LMP-based markets, the ISO considered settling demand at approximately twenty load zones.[9] However, a large segment of stakeholders opposed this proposal, claiming that nodal pricing for load would subject them to extremely high locational marginal prices for energy based on their captive location within constrained areas of the grid. Parties further argued that such exposure to higher prices was unjust given that the constraints occurred in large part because the transmission system was designed and constructed under a different regulatory congestion management regime. Consequently, the ISO revised its proposal to allow demand in the ISO balancing authority area to settle at the three default LAPs.[10] The Commission found that the ISO's revised proposal was a reasonable approach to introducing LMP while minimizing its impact on load.[11]

Later in 2005, the ISO filed revisions to its procedures for calculating and settling energy charges. Stakeholders responded that the number of LAPs should be increased to provide for more granular settlement of energy charges and that wholesale load customers should be permitted to opt-out of the LAP pricing, and instead, calculate and settle their energy charges based upon the nodal prices. The

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7 *See e.g.,* ISO FERC Electric Tariff Section 11.4.1.

8 *See generally* ISO FERC Electric Tariff Section 36.8.3.

9 See ISO's May 1, 2002 filing, Docket Nos. ER02-1656-000 and EL00-95-001.

10 *See* ISO's July 22, 2003 filing, Docket Nos. ER02-1656-015 and EL01-68-028.

11 *See Ca. Indep. Sys. Operator Corp.*, 105 FERC ¶ 61,140 P 65 (2003).

Commission found that the opt-out feature need not be included because doing so would delay the implementation date of the ISO's new LMP-based market design.[12] Further, the Commission directed the ISO to increase the number of LAP zones and directed the ISO to work with its stakeholders to determine the appropriate number of LAP zones it should propose in its tariff filing in support of its new LMP-based market design.[13]

This policy grew out of several lengthy iterations of stakeholder consultations and extensive consideration and re-evaluation of issues raised by the stakeholders, advisors, as well as the Commission itself in declaratory orders preceding the ISO's submission of its tariff in support of the new market design in 2006.[14]

Accordingly, after taking into account stakeholder comments regarding the number of LAPs in the context of additional studies conducted by the ISO's consultants on the expected LMPs and Congestion Revenue Rights, on February 9, 2006, the ISO requested the Commission's acceptance of its tariff for the ISO's new LMP-based market design containing the requirement that demand be primarily settled at the three default LAPs as previously proposed, without opt-out features but with the ability for certain qualified load settlement at more granular nodal custom LAP levels.[15]

The Commission approved the ISO's three default LAP settlement structure for demand, finding that the ISO's approach provided a reasonable and simplified

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[12] *See Ca. Indep. Sys. Operator Corp.*, 112 FERC ¶ 61,013 (2005); 113 FERC ¶ 61,151 at P 1 (2005).

[13] *See Ca. Indep. Sys. Operator Corp.*, 112 FERC ¶ 61,013 (2005).

[14] *See* California Independent System Operator Corporation Electric Tariff Filing To Reflect Market Redesign And Technology Upgrade, FERC Docket No. ER06-615, submitted February 9, 2006, Transmittal Letter at p. 18.

[15] *See MRTU September 21 Order* at P 616.

approach for introducing LMP pricing into the ISO markets, while minimizing the impact of the potential for higher prices under a nodal model and understood the ISO's interest in addressing such concerns as it transitioned to LMP-based markets starting point.[16] However, the Commission only accepted this construct for demand settlement as a starting point and ordered the ISO to increase the number of LAPs for demand settlement within three years after the start of the ISO's LMP-based markets, *i.e.*, April 1, 2012.[17]

II. Recent ISO and Stakeholder Efforts Considering Further Disaggregation of the Existing Default LAPs

Consistent with the Commission's *MRTU September 21 Order*, on September 1, 2010, the ISO issued an issue paper launching its stakeholder process to consider further disaggregation of the existing three default LAPs.[18] The purpose of the initial issue paper was to initiate a discussion with stakeholders to determine the best approach for bidding, scheduling and settling load on a more granular location level. The issue paper provided background on and description of the issues, and identified key criteria and objectives to be considered in evaluating potential solutions. The ISO did not commence this process with a pre-determined level of further disaggregation and instead set the stage that this stakeholder initiative could result in a proposal that either retains the existing three default LAPs, or go so far as

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[16] *See MRTU September 21 Order* at P 611. *See also April 2007 Rehearing Order* at P 19.

[17] In the *MRTU September 21 Order* the Commission directed the ISO "to increase the number of LAP zones for Release 2." In its MRTU tariff filing, the ISO stated it anticipated that Release 2 of its LMP-based market enhancements would be launched within three years of the implementation of the original market design (*i.e.*, Release 1). *See MRTU September 21 Order* at P 33. Therefore, the Commission's reference to Release 2 indicates the Commission's directive that the required changes be implemented by April 1, 2012, three years after the launch of the ISO's LMP-based markets.

[18] *See* Issue Paper, Load Granularity Refinements, California Independent System Operator Corp., September 1, 2010 (http://www.caiso.com/2804/2804d95a19f90.pdf) (*Issue Paper*) (included in Attachment A)

disaggregating all load bidding, scheduling and settlement down to the roughly 2,300 load nodes that exist in the ISO balancing authority area. In this initial issue paper, the ISO also provided an ISO timetable for the stakeholder process that would have resulted in a proposal for the ISO board of governors in March 2011. This would have allowed the ISO to submit its compliance filing and any necessary associated tariff amendments by April 2011 with the expectation of a Commission order in summer 2011 to provided sufficient time for system changes and market simulation, if necessary, for implementation of any further disaggregation by April 1, 2012.

In this initial issue paper, the ISO also stated some key evaluation criteria the ISO believes are important in considering further disaggregation and sought stakeholder input regarding these criteria. The ISO stated that the proposal should: 1) provide more spatially accurate price signals to provide incentives for demand response and investment; 2) enable increased ability for market participants to more precisely hedge against congestion costs; 3) enhance the efficiency of day-ahead energy market solutions by eliminating the large default LAP constraints on load distribution factors; and 4) balance the identified benefits against implementation considerations. With respect to the fourth criteria the ISO believes it is important that stakeholders evaluate for themselves the implementation costs and issues they anticipate with regard to their own systems and bring this information to the stakeholder discussions. Because implementation costs may vary depending on the degree and nature of further disaggregation, the ISO expects this assessment will also evolve as various proposals are considered.

On September 8, 2010, the ISO conducted a stakeholder meeting to frame the policy issues and orient parties towards the intended goals of the initiative. Stakeholders submitted their initial comments on September 20, 2010, and on

October 8, 2010, the ISO Market Surveillance Committee (MSC) held a discussion with stakeholders to discuss issues related to this effort, to which ISO policy staff also participated. In addition to conducting this public stakeholder process, the ISO conducted significant stakeholder outreach with the various affected sectors. These meetings proved to be useful in obtaining a better understanding of the issues each of the industry sectors face.

To inform the stakeholder process, in the initial issue paper, the ISO also described the technical study it would conduct to assist in defining the new load zones. The technical study was to analyze historical LMP data to help determine how best to capture the intended benefits of the disaggregation of the three default LAPs and how the load zone geographies should be drawn.[19] Preliminary results of the technical study results were discussed with stakeholders at the October 8, 2010, stakeholder meetings. In addition, the MSC conducted its own price analysis measuring spatial price variation based on the three existing default LAPs, using ISO LMP data from April 1, 2009 to August 31, 2010.

The ISO received significant feedback from stakeholders, both formal and informal, regarding the issues discussed in its issue paper and technical studies.[20] Overwhelmingly, stakeholders commented that based on existing evidence and the implementation and financial challenges further disaggregation would pose, the ISO should delay further disaggregation of the default LAPs beyond the targeted 2012

[19] The ISO considered two basic approaches for the technical study to determine the load zone boundaries to be considered. The first would consist of an analysis of the correlation of historical nodal prices, (*i.e.*, since the start of the LMP-based market). Alternatively, the ISO could conduct an analysis of congestion trends based on the the current transmission network taking into consideration additional information on near-term improvements to the network.

[20] Written comments submitted by stakeholders are all available on the ISO's website at: http://www.caiso.com/2818/2818999032540.html.

date, if at all. Numerous stakeholders indicated that any further disaggregation of default LAPs for settlement of demand pose significant implementation hurdles, including the need for load serving entities to develop load profiles for different geographies.[21] In particular, certain load serving entities noted that the timing of the installation of smart meters may pose a hurdle to developing load profiles for smaller load zones, and that this obstacle must be evaluated more closely before proceeding with any disaggregation. Load serving entities expressed concern over the ability to accurately forecast load for smaller geographies and many noted that the need to ensure adequate metering for more nodal load zones.

Load serving entities, community-choice aggregators, direct access providers, and marketers all indicated the need to ensure that any further disaggregation of load zones should be carefully coordinated with state policy and programs established by the CPUC. CPUC-jurisdictional entities indicated that because their retail rates are averaged over their service territories regardless of the granularity of wholesale prices, the benefits of more granular price signals are lost.

Certain stakeholders insisted that before even considering any further LAP disaggregation the ISO must conduct an assessment of both the benefits and costs of LAP disaggregation to justify further disaggregation, in which the ISO would, ideally, include information about stakeholders' costs and benefits as well as costs and benefits for the ISO and the market as a whole. Some stakeholders noted that more nodal load settlement is expected to send more accurate price signals, which would in turn guide decisions about transmission investment and investment in demand response technologies and programs. Stakeholders argued that the

[21] Load-serving entities that are under the jurisdiction of the California Public Utilities Commission (CPUC) indicated that any new load profiles must go through a CPUC-approval process, which must be considered in the process of any further disaggregation.

existing market design, which includes posting of sub-LAP nodal prices, already provides these price signals, negating the need for further disaggregation for settlement.

Stakeholders also requested that the ISO balance more carefully the need to expend significant resources towards developing more nodal load zones at a time when the ISO is faced with the potential for other more necessary market enhancements for the integration of variable energy resources. Some expect that the implementation of proxy demand resource and convergence bidding are major market changes that target some of the same benefits that are anticipated from LAP disaggregation. Some argue that nodal supply and demand prices from convergence bidding activity will supply nodal demand price signals, which may lessen the need for further load disaggregation. Stakeholders also contended that the need for responsive demand may be met by the proxy demand resource and participating load programs at the wholesale level, and by programs administered at the retail level. Stakeholders further argued that until the ISO has had an opportunity to evaluate the impact of convergence bidding and proxy demand response on the ISO market pricing trends, any analysis of historical prices will not be reliable. Because another expected benefit of disaggregation is load's improved ability to hedge against congestion charges, stakeholders argued that, while not perfect, the current release of CRRs at the sub-LAP level in earlier tiers of the allocation/auction process fulfills their hedging needs.

While the ISO had intended to post a straw proposal on November 12, 2010, in response to stakeholder comments, the ISO changed its course and instead issued an interim proposal on December 9, 2010, in which it introduced the notion of a delay in implementation of more granular load zones beyond the April 2012 date

required by the Commission.[22] Given that at this time, the ISO's new market design is fewer than two years old, and in the advent of significant new enhancements such as convergence bidding, multi-stage generation modeling, and increased participation in participating demand response, the ISO concluded that there is not sufficient data to determine the number or boundaries of more disaggregated default LAPs. Therefore, the ISO proposed to continue to analyze pricing trends one year after the start of convergence bidding (*i.e.*, February 1, 2011) as they are likely to change with the implementation of upcoming enhancements, and with the increasing experience of the ISO and its participants in using those enhancements. Accordingly, the ISO announced its intent to file a motion for an extension of the implementation timeline currently dictated by the Commission's September 21, 2006 MRTU.

III. Motion for Extension of Time for Compliance Filing

The ISO hereby respectfully requests that the Commission grant the ISO an extension of time of the *MRTU September 21 Order* requiring the ISO to further disaggregate its default LAPs by April 1, 2012. The Commission grants requests for extension of time to comply with a prior Commission directive upon a showing by the moving party that good cause exists to grant the requested extension.[23] Here, two

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[22] Interim Proposal, Load Granularity Refinements, California Independent System Operator Corp., December 9, 2010 (http://www.caiso.com/2867/2867c62170920.pdf) (*Interim Proposal*) (included in Attachment B).

[23] 18 C.F.R. § 385.2008(a) (2010); *Northeast Utilities Service Co.*, 126 FERC ¶ 61,052, at P 12 (2009) ("It is well settled that the Commission has the authority to waive its rules or regulations upon a showing of good cause. Indeed, the Commission has frequently granted extensions of time or waivers of deadlines to provide parties with additional time to comply with requirements in our orders or filing deadlines."). This "good cause" standard only applies, however, in cases where the request for an extension of time is made prior to the expiration of the period prescribed. In cases where the request for an extension of time is made after the expiration of the period prescribed, part (b) of Rule 2008 applies and the Commission will only grant the request only upon a showing of "extraordinary circumstances sufficient to justify the failure to act in a timely manner." 18 C.F.R. § 385.2008(b). In

primary justifications support good cause. First, the ISO's analysis of pricing trends in the first 16 months of the ISO's new market provides no compelling basis to impose further disaggregation by 2012.[24] This conclusion is buttressed by the reality that current ISO market price trends may provide only a suspect approximation of future market performance in light of significant pending ISO market enhancements, including, but not limited to, convergence bidding. Second, stakeholders overwhelmingly oppose further LAP disaggregation in 2012 both because of the lack of evidence in support of more granular LAPs and because of their estimated costs and burden associated with implementing further disaggregation. Nevertheless, the ISO acknowledges the Commission's directive that further LAP disaggregation be pursued by including with this motion a road-map that leads to a LAP disaggregation proposal by the last quarter of 2014.

A. Analysis of pricing behavior over the past 16 months does not reveal compelling evidence to support any lower level aggregation of LAPs.

At the start of the stakeholder process, the ISO conducted a technical study of pricing trends within the existing three default LAPs since the start of the ISO's LMP-based markets. The ISO's study consisted of an analysis of the correlation and dispersion of prices at the constituent pricing nodes of a default LAP and the LAP price.[25] Early in the stakeholder process, the ISO also engaged the MSC to assist in

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this case, the "good case" standard applies as reflected in part (a) of Rule 2008 given that the ISO is filing this motion over a year ahead of the due date for the pending compliance requirement for further disaggregation of LAPs prescribed in the September 2006 Order.

[24] The rationale for targeting implementation for the end of the calendar year is to align LAP disaggregation as closely as possible with the timeline for the annual release of CRRs.

[25] The ISO could also analyze congestion patterns based on alterations of the current transmission network based in additional information on near-term improvements to the network. The network-based analysis is a forward-looking and informs the appropriate level of definition of load aggregation points based on expected state of the grid. On the other hand, the historical price data analysis is by definition backward looking. Recognizing that the pricing trends in past months may

defining what metrics are appropriate for evaluating potential zones and quantifying potential benefits. The MSC also assisted in the price analysis by conducting its own analysis of pricing trends.

The ISO found that the data produced by its analysis did not demonstrate significant price divergence between constituent pricing nodes and the default LAP. Prior to the launch of the LMP market, the ISO used its LMP studies to define a sub-LAP geography which consists of 23 zones: one in the SDG&E LAP, 6 in the SCE LAP and 16 in the PG&E LAP. The sub-LAP geography was used for the purposes of CRR allocation and as such was designed to have relatively homogeneous congestion conditions. Thus, the sub-LAP geography was a familiar and reasonable starting point for an analysis of the spatial price dispersion in the ISO market. The ISO analyzed the differences between the default LAP prices and the sub-LAP prices by on-peak and off-peak hours of the day, and by month for April 2009 through August 2010. The ISO found that the overwhelming majority of average price differentials were less than or equal to $2/MWh during off-peak hours, and less than or equal to $3/MWh during peak hours.[26] The notable exception is the Humboldt region, which is transmission constrained. The fact that the Humboldt area settles at the default LAP price rather than at a more local price means that the other areas of the PG&E LAP are essentially subsidizing the Humboldt area. These results do not provide sufficient support for the redefinition of more granular LAPs.

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have been driven by grid constraints that may no longer be relevant in the future, the ISO chose to conduct the historical analysis at this time because it enables the ISO to focus on its stated goal of defining LAPs within for areas in which prices are homogenous.

[26] See Tables summarizing ISO study results in Attachment C. http://www.caiso.com/2827/2827a161143e0.pdf , http://www.caiso.com/2827/2827a1f31a700.pdf

The MSC also provided an analysis of spatial price patterns and similarly found that there was not a large price divergence to "chase." The method of analysis undertaken by the MSC was to look at the extent to which nodal prices vary together. The formulation of the question is as follows: if pricing nodes are like elements in a financial portfolio, are they diversified? If they are diversified, then their movements offset or dampen one another – one LMP moves up while another moves down, or one moves up a large amount while another moves up only a little. Their analysis showed that, at the nodal level, most prices vary together, and that the distribution of differences between nodal prices is in a fixed proportion, indicating that they are not offsetting or dampening one another. If they were, it would make sense to carve out the offsetting and dampening nodes and price them separately.

The MSC analysis also shows that pricing nodes with higher average prices and those with lower average prices are mixed and scattered rather than being spatially segregated and tend to be in electrically disconnected areas. If, instead, pricing nodes with higher average prices were spatially grouped together, and pricing nodes with lower average prices were grouped together, drawing of load zones more granular than the existing default LAPs would be intuitive. Based on these results the MSC suggested that it would be difficult to argue against full nodal pricing to load on market efficiency or equity considerations. However, the ISO concluded that these results provided little support for any new lower level definition of load zone boundaries at this time where each zone would contain pricing nodes with prices that reflect relatively homogeneous congestion conditions.

B. The ISO proposes a delay in implementation of more granular load zones in response to stakeholders' current objections to more granularly defined LAPs.

As discussed above, in the initial round of stakeholder outreach and meetings stakeholders overwhelming opposed further disaggregation of load zones in 2012 and in some cases ever. This opposition contributed to the ISO's decision to seek an extension of the Commission's directive for more granular demand pricing. Most recently, after the ISO issued its Interim Proposal proposing the delay of more granular load zones, stakeholders overwhelmingly supported the ISO's decision to seek the extension. However, most stakeholders commented that the ISO's proposal to delay implementation only to 2013 was too aggressive as it did not suffice for proper determination of future load zones, and requested a longer deferral of the disaggregation proposal. In part, this additional deferral reflects the stakeholders desire to have the opportunity to further align retail rate design through existing and potential CPUC proceedings and the Commission's wholesale market design efforts. The ISO considered this stakeholder input and believes parties have not raised sufficient justification for delaying implementation for granular load zones beyond 2014 and that its proposal addresses concerns raised by stakeholders.

A number of parties requested the extension of further LAP disaggregation beyond three years and requested that the ISO not commence the stakeholder process prior to 2014. Participants seeking a longer delay argued that the ISO should allow for greater time to conduct a more thorough analysis of not just pricing trends within the ISO markets, but also a thorough analysis of the costs and benefits of any further disaggregation. Such parties raise the concern that further disaggregation will impose substantial transitions costs both from a systems perspective as well as from the perspective of state level regulatory requirements that must occur prior to implementation of greater demand granularity at the wholesale level. Two of the largest load serving entities argued that the ISO's

proposal inappropriately concludes that further disaggregation is necessary, albeit at a future time. These parties argued that the ISO should not reach that conclusion at this time and that a deeper cost benefit analysis may demonstrate that the benefits of further disaggregation are outweighed by the costs associated with such transition.

A smaller group of stakeholders supported the ISO proposal and requested that the ISO not seek a delay of more than 12 months after the date directed by the Commission. These parties argued that more granular load zones will provide greater market efficiencies as contemplated by the Commission at the start of the ISO's new market design. In contrast, a number of stakeholders expressed a concern that turning to the the task of defining more granular load zones too soon will inappropriately divert stakeholder and ISO resources away from more important initiatives necessary to integrate renewable resources and providing more important market enhancements.

The ISO believes that restarting the stakeholder process after approximately 18 months of convergence bidding experience is adequate to provide sufficient data and time for conducting its analysis of this data. The proposed delay will enable the ISO to commence the price patterns analysis in the third quarter of 2012 and conduct a six month stakeholder process to provide parties with sufficient time to analyze the data and assist in the design of the appropriate load zones. The ISO recognizes that the full array of benefits from more granular LAP pricing are not attainable until there is better alignment between wholesale and retail rates, and that there are a host of issues that would need to be worked through on retail rate design before that can happen. However, the ISO believes that there are material benefits

and efficiencies to be gained in the wholesale market even in the absence of such alignment, which the ISO sees no reason to delay until the retail issues are resolved.

An almost thirty month delay is also sufficient to allow participants sufficient time to consider any necessary system enhancements resulting from greater load granularity. While it is difficult to surmise the full scope of impact any further granularity may have, the ISO believes participants should commence to consider what additional system changes will be necessary and consider adopting changes that provide some degree of flexibility. The ISO expects to complete its stakeholder process at least a full year prior to implementation, providing sufficient time for parties to evaluate and implement necessary systems changes.

Because the existing pricing trends are likely to be further altered by the implementation of convergence bidding and greater participation of proxy demand resources in the ISO markets, the ISO believes waiting an additional 18 months before the ISO resumes its analysis will provide more reliable geographic pricing patterns to help shape the new load zones. Convergence bidding is expected to lead to more price convergence between day-ahead and real-time prices and not between LAP and pricing node price, which may also reveal alternative pricing patterns to be considered in any new definition of load zones. Also, increased penetration of proxy demand response resources will have a direct impact on demand bidding practices, which may also affect pricing patterns at load locations. Designing and fixing new load zones based on the pricing data collected from ISO market experience without convergence bidding could result in the adoption of load zones that fail to capture pricing trends that may be in existence when the new LAPs would be put in effect.

The ISO agrees with stakeholders that the pricing analysis should reveal a certain degree of market efficiencies to be gained to justify requiring parties to transition to more granular load zones given that, as stakeholders have indicated, such transition will pose significant costs to load serving entities. While it is difficult to determine what degree of pricing dispersion justifies such transition, the ISO believes that waiting to conduct the next pricing analysis until the ISO has had sufficient experience with the recently adopted market design changes will lend greater support to the adoption of further granularity.

C. Roadmap to Future Compliance Filing and Implementation of More Granular Load Zones.

With the Commission's approval of an extension of this timing, the ISO proposes to recommence its pricing studies and develop a technical study aimed at defining the new load zones in the third quarter of 2012, after a full 18 months worth of pricing experience under convergence bidding and further participation of proxy demand response resources. The ISO will elicit input on the proposed methodology prior to beginning its analysis of the prior 18 months' pricing data. The ISO recognizes that stakeholders have varying interests and concerns regarding the degree of load granularity to be adopted. Therefore, the ISO intends to consider stakeholder input on the analysis to be conducted right from the start.

Subsequently, the ISO will present the results of the study and will seek input on its analysis of the results. The ISO will then proceed with stakeholders to develop a proposal for the appropriate level of disaggregation and the load zone boundaries. The ISO expects to complete this stakeholder process by the middle of 2013 and shortly after that submit the outstanding compliance filing to the Commission.

At this time, having not yet determined the appropriate level of greater granularity, it is difficult to propose a specific date on which the ISO will implement new load zones. The ISO is therefore requesting an extension of time to the last quarter of 2014, expecting that the start date will be during that time frame. In developing its new proposal, the ISO will explore with stakeholders the appropriate date for such implementation and will include in its compliance filing a proposed implementation date for any new load zones.

IV. Conclusion

For the foregoing reasons, the ISO respectfully requests that the Commission grant this motion for an extension of time, until the fourth quarter of 2014 to comply with the directives in the *MRTU September 2006* Order to implement more granular load zones in the ISO's new LMP-based market.

Respectfully submitted,

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ATTACHMENT A

Load Granularity Refinements
Issue Paper

Issue Paper

Load Granularity Refinements

September 1, 2010

Load Granularity Refinements

Prepared for Discussion at a Stakeholder Meeting – September 8, 2010

1 Introduction

The design of the ISO markets based on Locational Marginal Pricing (LMP) includes the bidding, scheduling and settlement of most internal load at three large default load aggregation points (LAPs) that follow the boundaries of the service territories of the three investor-owned utilities in the ISO balancing authority area. The rationale for this design was that more granular pricing for internal load could expose wholesale load to locational price impacts due to the existing grid topology, to which they could not adequately respond given the limited demand response products in the market at the outset of the LMP market. Although the Federal Regulatory Energy Commission approved the LMP market design with load at the three default LAPS, the Commission ordered the ISO to disaggregate the three default load aggregation points (LAPs) by Release 2, which is three years after the initial launch of the new ISO markets.[1, 2]

The rationale for this disaggregation is that more granular load zones can provide more accurate price signals to load which can then in turn provide incentives for increased demand response and investment in generation and transmission infrastructure. Furthermore, granular load bidding, scheduling and settlement will enable improved congestion hedging by improving the availability of congestion revenue rights aligned with load's exposure to congestion charges. Moving away from averaging wholesale prices for load across large area with heterogeneous nodal prices will help eliminate the subsidization of high-price areas by low-price areas. Importantly, the disaggregation of the default LAPs will result in more efficient day-ahead market outcomes as the market clearing mechanism is freed from the constraint of fixed load distribution factors over large geographical areas.

The purpose of the present issue paper is to initiate a discussion process with stakeholders to determine the best approach for bidding, scheduling and settling load on a more locationally granular basis. As such, this paper does not offer ISO recommendations for how to resolve the issues. Rather, it aims to provide the background and description of the issues, and to identify key criteria and objectives to be considered in evaluating potential solutions.

A note on terminology: since a key element of this stakeholder process is to develop criteria by which a new, more granular geography for load will be established. We don't yet know what that outcome will be – only that there will be more than the current three default LAPs, and that there will be no more than the roughly 2,300 load nodes in our system. Throughout this issue paper, therefore, the more granular load geography will be referred to as "the new load zones," or simply "load zones."

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1 Paragraph 611 of FERC's September 21, 2006 *Order Conditionally Accepting the California Independent System Operator's Electric Tariff Filing to Reflect Market Redesign and Technology Upgrade* (Docket No. ER06-615-000).

2 Links to additional background and reference materials are provided in the appendix to this issue paper.

2 Process and Timetable

Through this initiative, the ISO and stakeholders will work toward identifying appropriate changes to the load zones in the wholesale market to capture the associated benefits, while addressing challenges associated with the disaggregation of its default load aggregation points (LAPs). FERC's mandate is that the ISO implement its first step in the disaggregation of the default LAPs by three years after the launch of the new markets – that is, by April 2012. In light of this mandate, the ISO currently plans to take the proposed disaggregation plan reached through this policy initiative to its Board for approval in March 2011. The intent of this timeline is to provide stakeholders with ample time to adapt their systems and processes to the new load zones.

The table below summarizes the key steps in the stakeholder process on load granularity refinements, starting with the release of this issue paper and ending with submission of the ISO management proposal to the Board. The ISO invites stakeholder input on any and all topics discussed in this issue paper.

Event	Date
Issue Paper posted	September 1, 2010
Policy framing discussion	September 8, 2010
Stakeholder comments due *	September 20, 2010
MSC Meeting	October 8, 2010
Straw Proposal posted	November 12, 2010
MSC/Stakeholder meeting	November 19, 2010
Stakeholder comments due *	December 1, 2010
Revised Straw Proposal posted	December 20, 2011
Stakeholder call/meeting	January 7, 2011
Stakeholder comments due *	January 17, 2011
Draft Final Proposal posted	February 3, 2011
Stakeholder call	February 10, 2011
Stakeholder comments due *	February 17, 2011
ISO Board of Governors	March 30-31, 2011

* Please e-mail comments to the initiative mailbox: LGR@caiso.com

3 Key Criteria for Evaluating Potential Solutions

This section provides some key evaluation criteria the ISO believes are important. Stakeholders are invited to identify other criteria that should be considered in assessing potential solutions.

- Provide more spatially accurate price signals to provide incentives for demand response and investment.
- Enable increased ability for market participants to more precisely hedge against congestion costs.
- Enhance the efficiency of day-ahead energy market solutions by eliminating the large DLAP constraints on load distribution factors.
- Balance the identified benefits against implementation considerations. In this regard, it will be important for this initiative that market participants evaluate the implementation costs and issues they anticipate with regard to their own systems and bring this information to the discussions.

4 Benchmarking

Southwest Power Pool

In the Southwest Power Pool market, there are over 7,000 pricing nodes. For load settlement, those nodes are aggregated into about forty zonal prices using load weighting. Demand response resources are modeled as generators at specific nodes and receive the pricing at those nodes. When load serving entities register their load, they identify all the busses to which load is attached. If a buss is shared with another LSE, then the parties identify the percentage of the buss that is mapped to each LSE. Those data are used to create the aggregate prices for the load. SPP does not require LSEs to aggregate the load, so if the LSE wishes to have nodal prices, they are registered in that manner.

Midwest Independent System Operator

In the Midwest ISO, virtual bidders can bid/offer at any commercial pricing node, whether it is a hub, interface (tiepoint) load or generation node. For load pricing points, market participants representing load can create their own pricing points, based on their actual withdrawal points on the transmission grid. If two or more LSEs agree, they can use the same aggregation of elemental pricing nodes to settle their energy withdrawals, but it is up to them. Market participants can choose to disaggregate their load into multiple pricing points, again based on where they actually withdraw energy; some do this based on state boundaries where they serve customers in different states, while others do this based on rate/tariff structures they have, where a subset of customers may be on dynamic pricing.

New England Independent System Operator

Across its six states, the New England ISO has eight load zones. They match up to state boundaries with the exception of Massachusetts which is divided into three load zones. The boundaries were drawn in this way out of response to political pressure to have consistent wholesale prices related to retail rates within each load zone. There was not an effort to define load zones based on the correlation of nodal prices, and changes over time in the correlation of prices across nodes has not led to any corresponding evolution of the load zones.

Load node prices and the weights used to aggregate those nodal prices into zonal prices are published. While most load is still settled at the zonal level, some large industrial customers have sought nodal load pricing upon seeing those load node prices. To accommodate this, those customers need real-time telemetering so that their load can be removed from the weighting scheme for the load zone in which their node is located.

Although New England's load pricing is at eight relatively large load zones, transmission investment has occurred within and between the zones which has equalized some of the price disparities between those load zones.

PJM Interconnection

The majority of the load in PJM settles at the zonal level, and those eighteen zones correspond to the service territories of the utilities in the PJM footprint. Within the load zones, there are custom aggregations of nodes in particular circumstances such as a service territory crossing state boundaries, or retail choice programs that are available in only a part of a particular load zone.

Since the outset of their LMP market, load in PJM has extended to load servicing entities the option of having their wholesale load settled at the nodal level. The settlement of load at custom aggregations of nodes is not uncommon, but there is not currently load settling at a nodal level in PJM. Nonetheless, an LSE's election to settle at geography smaller than the default load zones is done after agreement with the corresponding electric distribution utility on the correct electrical location at which to model the LSE's load.

Benefits of load pricing granularity, namely more accurate price signals, mainly accrue to retail entities and state regulatory entities in PJM. As noted above, states within the PJM footprint support flexibility of load settlement because it enables PJM to readily implement aggregations of nodes to accommodate any retail competition mechanism the states would like to implement. PJM continues to rely on intra-zonal wholesale price differentials to provide incentives for the evolving demand response side of their market.

New York Independent System Operator

In the New York market there are eleven load zones at which wholesale load settles. Those zones were created based on the transmission zones that came out of the days of vertically integrated utilities prior to the ISO's inception in 1999, and have not changed with updates to the NYISO's system topology. There are no custom aggregations of load nodes available; all load settles at the zonal price for the zone it which it is served.

In the NYISO balancing authority area, Manhattan is a single load zone (Zone J). The NYISO has seen tremendous investment in generation and merchant transmission facilities in Zone J which has

prices that are generally higher than the other load zones. In addition, the ISO sees a significant amount of demand response in that area.

5 Description of the Issues

Some of the issues described below highlight the objectives and benefits of going to more granular load pricing, while others are focused more on hurdles or design questions. These are discussed below. The ISO welcomes the opportunity to explore other issues identified by stakeholders.

5.1 Accuracy of price signals

Improved accuracy of wholesale load prices is intended to have the benefits of increasing the incentive and ability for wholesale load to respond to prices, to reduce cross-subsidization, and to provide price signals for generation and transmission investment. The ISO's LMP markets were initially launched with load bidding and settling at the default LAPs out of recognition of the fact that: (1) wholesale customers in load pockets had limited ability to respond to price signals, (2) higher prices in these areas were a consequence of infrastructure investment approaches that differed among three major participating transmission owner service territories, and (3) the initial use of these large default LAPs for load bidding and settlement would not undermine the substantive benefits of LMP markets derived from use of an accurate market model of the grid and application of nodal prices to supply and participating load resources. FERC found that "the CAISO's approach to calculating and settling energy charges for load based upon three LAP zones provides a reasonable and simplified approach for introducing LMP pricing." However, the Commission "direct[ed] the CAISO to increase the number of LAP zones for Release 2" stating that they "continue to believe that increasing the number of LAP zones will provide more accurate price signals and assist participants in the hedging of congestion charges." [3]

Because there is heterogeneity of prices with the default LAPs but wholesale load still settles at the default LAP, those areas with lower priced nodes subsidize areas with higher priced nodes. Smaller load zones with more homogeneous prices will remove this subsidization. In doing so, lower price areas will enjoy lower wholesale prices, and the higher price areas will have increased incentives for demand responsiveness at the wholesale level, as well as for infrastructure investment.

5.2 Congestion Hedging

There are two important benefits anticipated from the disaggregation of the three default LAPs with respect to congestion hedging. The first was articulated by LECG in their February 23, 2005 *Comments of the California ISO MRTU LMP Market Design*.[4] In particular, LECG brought up the circumstance of a vertically integrated load serving entity located within a high-priced area of a default LAP that also has generation sited to meet its load within that constrained region. In that

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[3] See FERC's September 21, 2006 *Order conditionally accepting the California Independent System Operator's Electric Tariff Filing to Reflect Market Redesign and Technology Upgrade* (Docket No. ER06-615-000), paragraph 611, at the following link: http://www.caiso.com/1878/1878f9725ef80.pdf

[4] See pages 22-23 of the report, which is appended to Harvey's testimony: http://www.caiso.com/1798/1798f66c6a150.pdf

circumstance, "the LSE would be paid counter-flow charges for scheduling its generation to meet its load, although those schedules would actually have no impact on congestion." This scenario is important relative to congestion revenue rights (CRRs) because "to the extent that such vertically integrated LSEs receive counter-flow payments for financial schedules that provide no counter-flow on the real transmission system, the number of CRRs that can be allocated to other LSEs is reduced, raising their costs." LECG concludes that these cost shifts, or cross-subsidization, can be avoided by defining load zones that are more homogeneous with respect to prices, and correspondingly, with respect to congestion.

The second benefit is that disaggregating the larger default LAPs would allow for the release of more CRRs in the tier 1 and tier 2 of the annual allocation process with better alignment of LSEs' CRR awards with the congestion exposure of the load they serve. When determining how many CRRs to release in each tier, the optimization software (the "simultaneous feasibility test" or SFT) applies fixed load distribution factors (LDFs) to the pricing nodes (PNodes) that make up the sink or load location of each nominated CRR. If the sink is a large default LAP, particularly if there is heterogeneity of prices over the default LAP, then it is more likely that a binding constraint that affects a single constituent PNode of the default LAP will limit the CRR awards in that tier. Using more granular load zones with more homogeneous prices within each load zone as the sinks of nominated CRRs will thus eliminate these large area default LAP constraints and thereby allow more CRRs to be allocated in tiers 1 and 2. In recognition of this fact, the current CRR allocation process allows LSEs to nominate "sub-LAP" sinks in tier 3 of the annual process and in the monthly allocation process,[5] to enable a larger quantity of CRRs to be awarded. This sub-LAP provision is somewhat of a compromise, however, because although it allows more CRRs to be awarded, those CRRs will settle based on sub-LAP prices that do not align accurately with default LAP-based congestion charges that will be applied in settlement of the load. Thus moving to more granular and more price-homogeneous load zones will both increase the amount of CRRs that can be released and eliminate the current misalignment of sub-LAP CRRs with load settlement.

Moving to more granular load zones raises a number of CRR issues that this initiative will need to address. The ISO invites stakeholder comments on the issues below and identification of any other issues that need to be included here.

- Many LSEs hold long-term CRRs that sink at a DLAP, which will no longer align accurately with load settlement once the increased granularity takes effect. Should there be provisions to enable holders of long-term CRRs to convert them to CRRs that sink at the new load zones where their load will be settled? If so, what would be the best approach for doing this?
- LSE CRR nominations in Tier 1 of the annual allocation process, known as the priority nomination process (PNP), are restricted to those CRR source-sink combinations that were allocated to the LSE in the previous annual allocation. Without some modification to this rule, LSEs would be required to nominate DLAP CRRs in the PNP for the initial CRR seasons when load settlement will be based on the new load zones, (i.e., 2012 seasons 2-4),

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[5] A recent revision to the monthly tier 1 allocation was made to enable LSEs to nominate CRRs at the sub-LAP level. See the ISO's July 12-13, 2010 filing with FERC (Docket No. ER10-1756-0000) on enhancements to the CRR process. http://www.caiso.com/2403/24037c20669e0.html

because those were the CRRs they were allocated the previous year. How should PNP nomination requirements be revised to address this issue?

5.3 Load Forecasting and Zonal Load Clearing

In order to bid their load into the DA market at the new load zone level, LSEs may have to forecast their load at a smaller geography then they do currently. As is the practice today, the ISO understands such forecasting by LSEs to be an element to inform their bidding decisions, and does not intend to require LSEs to submit these forecasts for the purpose of verifying day-ahead load scheduling.

Note that more granular load zones will improve the solution of the integrated forward market (IFM) optimization, which is an important benefit the RUC and real time markets will reap as a result of increased load granularity. Currently, the load distribution factors (LDFs) are based on historical information for the three large default LAPs. These LDFs are used to distribute forecasted load down to the nodal level so that demand can clear against supply bids at the node. The solution is then rolled back up to the LAP level. In order for that rolled-up solution to be feasible (that is, on the original LAP-level demand bid curve), when the market software solves at the nodal level, it must constrain all nodal load to move up and down together in proportion to the LDFs. In other words, nodal load moves up and down in lock step until, given that constraint, all the load and generation at each node clears. This puts a significant constraint on the optimization. Once the large default LAPs are disaggregated, we will have the same methodology, but the constraint will be enforced over smaller geographies which can move independently. Their ability to move independently is the key to the optimization reaching a more precise solution within each individual load zone.

In the event that the LDFs used in the day-ahead market optimization don't true up to the distribution on load seen in the real-time, imbalance energy is needed to keep supply and demand in sync. The cost of that imbalance energy is spread across the whole default LAP. Disaggregation of the large default LAPs will have the significant benefit of more efficiently allocating these imbalance energy costs to the market.

5.4 Demand Response, Participating Load and Convergence Bidding

Proxy Demand Response

Consistency with proxy demand response geographies may be an important factor in determining the boundaries of the new load zones. PDR-based demand response is the combination of load that is scheduled by the Load Serving Entity (LSE) using the Default LAP and a portion of that same load that is bid to be curtailed by either the LSE or a separate Demand Response Provider at a custom aggregation of nodes. The defined custom aggregation of nodes may be as small as a single node but no larger than an ISO defined SubLAP. This results in the LSE paying the Default LAP price for energy in the day-ahead while demand response, in the form of PDR, gets paid the nodal price to curtail. LECG, in their "*Comments on the California ISO MRTU LMP Market Design"* identified gaming concerns in the case when demand response dispatches are not settled at the same location

as the underlying demand schedules.[6] LECG pointed out that this design creates an arbitrage opportunity between the day-ahead and real-time markets that, rather than improving market efficiency, simply takes advantage of this disconnect between the load and PDR geographies and provides the opportunity for demand response resources to get paid for doing nothing. The Market Surveillance Committee echoed this concern in their *Opinion on Proxy Demand Resource*[7] which was provided to the ISO Board of Governors in September 2009. In their opinion they state the following: "There is no sure-fire way to eliminate this money pump given the existence of a LAP pricing areas that are large enough so that real-time LMPs can be predictably and significantly higher than the day-ahead LAP price at some buses in that LAP. One solution is to define and implement much smaller LAP areas within which LMPs are fairly uniform; in other MSC opinions, we have argued for expedited definition of sub-LAPs within present LAP zones, and this artificial arbitrage opportunity is another reason to do so."

The ISO recognized that disaggregating load in its entirety from the Default LAP into smaller geographies for the purpose of providing demand response represented a significant barrier for LSE's to bring demand response currently participating in retail demand response programs into the wholesale markets. Therefore, while recognizing these concerns raised by LECG and the MSC, the ISO made the decision to move forward with PDR with this design limitation in place with the intent to eventually minimize this concern through disaggregation of the Default LAPs.

Thus, disaggregation of the default LAPs will provide a benefit in the form of increased efficiency and efficacy of PDR as the price paid to and by proxy demand resources are at more comparable or the same geographies.

Participating Load

Participating load will have an increased incentive to participate in the ISO as load faces more granular wholesale pricing. Currently, areas with high nodal prices are insulated from those nodal prices by being settled at an aggregated load price across the whole default LAP. By becoming a participating load in the ISO markets, loads at high-price locations would have to give up this settlement benefit. As a result, such areas have a disincentive to engage in the participating load program. Settling wholesale load at smaller geographies with more homogeneous prices would, in this scenario, remove that cross-subsidization thus removing the disincentive for load in that load zone to provide the ISO market with price-responsiveness.

Additionally, the disaggregation of the LAPs into smaller load zones is likely to ease logistical constraints to becoming a participating load in the ISO market. Currently, the ISO requires load, in order to qualify as a Participating Load, to bid and settle in its entirety at a custom aggregation of nodes. The custom aggregation of nodes may be as small as a single node or as large as an ISO defined SubLAP. The ISO requires that 1MW minimum out of the total load be curtailable. Market participants advised the ISO that this requirement to disaggregate load from the Default LAP in its entirety was a significant barrier to entry to demand response in the wholesale markets and is the main reason PDR was created. Therefore, through the disaggregation of the Default LAPs, if load is required to forecast, bid and settle at smaller granularities it should make it easier for more load to qualify as Participating Load. For example, if the ISO were to disaggregate the Default LAPs to the

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[6] Page 62 of "Comments on the California ISO MRTU LMP Market Design"

[7] MSC Opinion on PDR is available at: http://www.caiso.com/239f/239fc54917610.pdf

existing ISO sub LAPs, the load would already be maximum granularity allowed to be a Participating Load.

Convergence Bidding
Convergence bidding, which is scheduled for implementation in the ISO market in February, 2011, is in part designed to achieve the benefit of providing the market with an improved load forecast through those purely financial transactions. While convergence bidding will allow LSE's to take more granular positions on a financial basis it may still be desirable for participants to have the flexibility to take more granular positions on a physical basis as well.

It has been noted that more information on the functioning of the ISO markets after the implementation of convergence bidding may be valuable in assessing the extent to which price differences between the day-ahead and real-time markets are arbitraged away thus obviating LECG's concern that, if "market participants have better forecasts of the real-time distribution of load than that used by the ISO to calculate DAM prices, the ISO's DAM prices will be subjected to arbitrage by market participants and the real-time settlements may be revenue inadequate on average."[8] It is important to observe, however, that while this is true, convergence bidding will not, in fact, change the granularity at which physical load, including proxy demand resources and participating load, is settled.

5.5 Load Metering

Load serving entities determine how they meter load, validate those data, develop estimates for unmetered load, how they aggregate the values, and how they develop and apply load profiles (subject to approval by the LSE's Local Regulatory Authority) as necessary. This "settlement-quality meter data" is then submitted to the ISO at the default LAP level.

In order to submit the settlement-quality meter data to the ISO for different load zones, these processes will require revision. The ISO requests that stakeholders inform this policy development about the extent and timing of required changes, and about the hurdles to and/or timing of improved metering capability.

5.6 Settlement

The ISO expects that costs currently allocated system-wide will continue to be so. The disaggregation of the default LAPs does not alter the reasoning for the system-wide allocation of costs. In particular, the reason for spreading those costs across the system is because it is not possible, practicable or meaningful to determine more granular cost causation for these costs.

Unaccounted-For Energy is allocated to the Service Areas which correspond to the investor-owned utility (IOU) territories, metered sub-systems (MSSs), and utility distribution company (UDC) areas. Specifically, a Service Area is defined as "[a]n area in which an IOU or a Local Publicly Owned Utility is obligated to provide electric service to End-Use Customers." Generally speaking, UFE is calculated by taking the difference between aggregate values for the load and generation meters

[8] See pages 20-21 of the report, which is appended to Harvey's testimony: http://www.caiso.com/1798/1798f66c6a150.pdf

within the Service Area. This requires meters at the boundaries of the Service Area. MSSs and UDCs have boundary meters and manage any UFE within their area themselves. The ISO calculates UFE for the three IOU territories and UFE is applied to those market participants accordingly. An open question for consideration is the extent to which there is value to stakeholders in assessing UFE at a more granular level. Note that any area at which UFE is calculated will need to have boundary meters.

Although load will be settled at new load zones, the ISO understands that stakeholders may have a desire to have a "rolled-up" statement or some other billing service and welcomes input to that effect.

5.7 Retail rate design

Development of policy with respect to retail rates for electricity is entirely within the purview of the California Public Utilities Commission and other local regulatory authorities (LRAs) and as such, retail rate design is outside the scope of this initiative. This initiative is focused on developing the policy for the disaggregation of the three default LAPs to achieve wholesale market benefits, and as such will provide improved congestion hedging, more accurate price signals to wholesale load, consistency of settlement for proxy demand response, incentives for participating load, and improvements to the ISO's day-ahead market solution. These changes will improve the efficiency of the wholesale electricity market in California. None-the-less, there are important links between the wholesale and retail electricity markets; we will make a concerted effort to bring those links to light with the help of the CPUC and LRAs as key stakeholders throughout this initiative.

5.8 Information Publication

The ISO will publish the same information for the new load geography as it does today for the three default load aggregation points. In particular, OASIS will display the actual load for the new load zones, and will have prices for each of those zones. The geographical level to which the ISO's forecast is published needs to be determined based on stakeholder needs and confidentiality concerns on the ISO's side.

Please note that prices for the twenty-three sub-LAPs are currently posted on OASIS, and can provide some insight into differences between wholesale prices for a smaller geography than the three default LAPS, but much coarser that the 2,300+ load nodes.

5.9 Definition of the new load geography

As described, there are some important benefits and hurdles that need to be considered when designing the policy with respect to increased granularity of load zones. Each of those benefits provides insight into what would be the most appropriate basis for defining the new load zones. As the following discussion will reveal, the ISO has identified two basic conceptual approaches for defining load zones: homogeneity of prices based on historical data, and electrical or network considerations. The ISO invites stakeholder comments to help identify the pros and cons of these two conceptual approaches and their variants, and to identify any other promising approaches.

As a bit of context, the ISO has some existing geographies that were developed for other applications:

Local Capacity Areas
The ISO defines local capacity areas (LCA) for the purpose of determining local capacity requirements (LCR), i.e., how much resource adequacy capacity is needed in particular constrained areas of the grid. The process for defining these areas is based on an analysis of the actual transmission grid topology, which aims at determining the required capacity in those local areas in the event of specific contingencies (that is, transmission or generation outages). These zones do not completely cover the ISO control area; rather, they characterize "pockets" in which it has been determined that minimum amounts of capacity are needed to enable the ISO to maintain reliable operation under those contingencies.

Sub-Load Aggregation Points
Prior to the launch of the LMP market, the ISO used prices from LMP studies to draw boundaries for twenty-three sub-LAPs that nest within the existing three default LAPs. Because these areas were designed to be used for the allocation and auction of congestion revenue rights, the criterion for the aggregation of the pricing nodes into these sub-LAPs was that the nodal prices within each sub-LAP be correlated. The rationale for this is that correlated prices reflect similar congestion conditions, and thus sourcing or sinking to one of these sub-LAPs is a good approximation for sourcing or sinking to an individual node within the sub-LAP. The impetus for defining the sub-LAPs was to enable the ISO to release more CRRs to LSEs than would be possible if the LSEs were restricted to nominating CRRs that sink at the DLAP. The rationale for this is that the allocation from the three default LAPs does not provide sufficient CRRs to the market since, over those large areas, one small binding constraint would cut off the quantity of CRRs that we could offer.

As described above, this geography is also used for proxy demand response and Participating Load. The ISO desired to have more granular location specific demand response than the default LAP level. Since the sub-LAPs are designed so as to have little internal congestion and were already defined, they were a good fit for the ISO to use, at least initially for demand response.

Pricing Nodes
Ultimately, the finest load pricing geography that can be considered is a nodal implementation at the roughly 2300 pricing nodes in the full network model. Although this option has the appeal of providing consistent bidding and settlement points between load and generation, and of providing highly disaggregate price signals to the wholesale market, there may be considerable implementation hurdles associated with such an approach, such as the availability of settlement-quality metering.

As described in the "benchmarking" section above, investigation into the practices of other ISO/RTOs with respect to load pricing shows that they do offer some optionality with respect to load zone geography. In some markets, large industrial customers may opt for nodal settlement of their load in the wholesale market. As another example, LSEs in some markets can split their load into two zones when their service territory crosses state boundaries.

The divisions described above that are provided as an option to participants in some of the other ISO/RTOs are analogous to the optionality provided by the custom LAPs the ISO defines today for metered sub-systems, participating load, and existing transmission contracts.

The ISO anticipates that existing geographies such as metered sub-systems and custom LAPs will not need to change as a result of LAP disaggregation.

The ISO is striving to inform the development of the new load zone boundaries by performing an analysis based on LMP prices, analysis of the grid topology, and with consideration of existing settlement-quality metering capabilities.

6 Technical Study

The ISO is working to develop a technical study aimed at defining the new load zones. Through a technical study, the ISO will analyze historical LMP data to help determine how best to capture the intended benefits of the disaggregation of the three default LAPs. As such, we assert that the new load zones will need to be comprised of fewer nodes with more homogeneous congestion conditions and thus more homogeneous prices. The results of the technical study and this stakeholder process will determine how the load zone geographies should be drawn.

There are two basic approaches to determine the load zone boundaries that the ISO would like to consider. First is through analysis of the correlation of historical nodal prices, (i.e., since the launch of the LMP market). Second is by way of an analysis of the current transmission network with additional information on near-term improvements to the network. In addition to the obvious pricing versus network bases for these two approaches, there is also the noteworthy distinction that the pricing approach would utilize historical price data and the be backward-looking, whereas the network approach would be more forward looking by utilizing the most up-to-date network topology and market model. In other words, prices from the earlier months of a two-year span of historical data may have been driven by grid constraints that are no longer relevant. The strength of using historical price homogeneity as the basis to define load zones, however, is that it focuses directly on the stated objective of the initiative, namely, to implement load zones whose prices closely reflect all the individual PNode prices that make up each zone.

Either methodology relies, of course, on currently available information and so, an additional issue for this initiative is how and how frequently the boundaries of the load zones will need to be re-evaluated based on new information and changes to grid conditions. The ISO suggests that the technical analysis behind the definition of the new load zones be updated to inform adjustments to the load zone boundaries on a fixed timeline, for example once every three years.

The ISO is currently assembling the necessary information for this study, and working with Market Surveillance Committee to formulate metrics to evaluate current and potential new load zones in light of the targeted benefits of LAP disaggregation. The study design and any available preliminary results will be presented and discussed at the October meeting of the MSC.

Another important facet of this issue to consider is the implementation challenges faced by stakeholders. The ISO will rely on input from stakeholders as to the implementation considerations,

especially costs and time requirements, they face as we move toward more granular pricing of wholesale load.

7 Conclusion

The ISO invites stakeholder comments and discussion on the issues raised within this paper as well as other issues that should be examined. Please send written comments to LGR@caiso.com by close of business on September 20.

The ISO will conduct an initial policy framing meeting in which we will review this issue paper on September 8, 2010. That dialog will serve to refine the issues considered in this paper, and to augment the paper with additional policy or implementation concerns brought to light as we move toward the development of a straw proposal.

8 Appendix A – Background Materials

- LECG's February 23, 2005 *Comments of the California ISO MRTU LMP Market Design*. See pages 13-25, and 118-119 of the report, which are on pages 48-60, and 153-154 of the pdf at the following link. http://www.caiso.com/1798/1798f66c6a150.pdf

- Lorenzo Kristov testimony that was submitted with the ISO's March 2006 MRTU filing (ER02-1656). See pages 26-39. http://www.caiso.com/1798/1798f5a45efa0.pdf

- Scott Harvey (LECG) testimony also submitted with the March 2006 MRTU filing. See pages 5-8. http://www.caiso.com/1798/1798f66c6a150.pdf

- FERC's September 21, 2006 order on the March 2006 MRTU filing. See pages 171-178. http://www.caiso.com/1878/1878f9725ef80.pdf

- FERC's April 20, 2007 order on requests for clarification and rehearing. See pages 117-123. http://www.caiso.com/1bcb/1bcb7bd7f40.pdf

ATTACHMENT B

Load Granularity Refinements
Interim Proposal

Interim Proposal

Load Granularity Refinements

December 9, 2010

Load Granularity Refinements

Prepared for Discussion on a Stakeholder Conference Call – December 16, 2010

1 Introduction

The design of the ISO markets based on Locational Marginal Pricing (LMP) includes the bidding, scheduling and settlement of most internal load at three large default load aggregation points (LAPs) that follow the boundaries of the service territories of the three investor-owned utilities in the ISO balancing authority area. The rationale for this design was that more granular pricing for internal load could expose wholesale load to locational price impacts due to the existing grid topology, to which they could not adequately respond given the limited demand response products in the market at the outset of the LMP market. Although the Federal Regulatory Energy Commission (FERC) approved the LMP market design with load at the three default LAPS, FERC ordered the ISO to disaggregate the three default LAPs by Release 2, which is three years after the initial launch of the new ISO markets.[1]

The rationale for this disaggregation is that more granular load aggregation points can provide more accurate price signals to load which can then in turn provide incentives for increased demand response and investment in generation and transmission infrastructure. Furthermore, more granular load bidding, scheduling and settlement will enable improved congestion hedging by improving the availability of congestion revenue rights to be aligned with load's exposure to congestion charges. Moving away from averaging wholesale prices for load across large areas with heterogeneous nodal prices will also reduce the subsidization of high-price areas by low-price areas. Importantly, the disaggregation of the default LAPs will result in more efficient day-ahead market outcomes by reducing the frequency of uneconomic adjustments as the market clearing mechanism is freed from the constraint of fixed load distribution factors over large geographical areas.

ISO and MSC analyses as well as feedback from stakeholders on the *Issue Paper* for this initiative have led the ISO to seek a deferral of the implementation date for the disaggregation of the three default LAPs. The project timeline previously indicated that a proposal for the disaggregation of the three LAPs would go before the ISO Board of Governors for approval in March of 2011, and that the design would be implemented in April of 2012. The purpose of this *Interim Proposal* is to describe the ISO's proposed change in the project timeline and the rationale for that change.

2 Stakeholder Feedback

All but one stakeholder, CDWR, requested that the ISO either delay disaggregation of the LAPs or never to disaggregate further than the existing three default LAPs. The following points summarize stakeholder feedback to the *Issue Paper*.

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1 Paragraph 611 of FERC's September 21, 2006 *Order Conditionally Accepting the California Independent System Operator's Electric Tariff Filing to Reflect Market Redesign and Technology Upgrade* (Docket No. ER06-615).

Significant implementation hurdles faced by market participants

Stakeholders indicate that they will face significant implementation hurdles upon disaggregation of the three default LAPs. These hurdles include the need for load serving entities to develop load profiles for different geographies; for those load-serving entities that are under the jurisdiction of the California Public Utilities Commission (CPUC), the new load profiles must go through an approval process. Also, load serving entities have considerable concerns about accurately forecasting load for smaller geographies. The existence of adequate metering for LAP disaggregation and the timing of the installation of smart meters is also of concern. As a result of these implementation hurdles, stakeholders strongly advocate for a longer and/or delayed implementation timeline.

Analysis of costs as well as benefits

Stakeholders strongly support the development of a methodology by which to assess both the benefits and the costs of LAP disaggregation. Such a methodology would ideally include information about stakeholders' costs and benefits as well as costs and benefits for the ISO and the market as a whole.

Analysis of convergence bidding and PDR data

The implementation of proxy demand resource and convergence bidding are major market changes that target some of the same benefits that are anticipated from LAP disaggregation. Additionally, those market enhancements are sure to impact pricing patterns. These factors as well as simply more experience and market data from the ISO's LMP market will significantly inform the analysis of the costs and benefits of disaggregation as well as the number of boundaries of any new load zones.

Efficacy of other market enhancements

Having load bid and settle at a smaller geography is intended to send a more accurate price signal which would in turn guide decisions about transmission investment and investment in demand response technologies and programs. The ISO currently posts nodal prices and prices at the sub-LAP level, and some stakeholders have indicated that this adequately conveys more spatially disaggregated prices to participants. It has been indicated that this is especially true for CPUC-jurisdictional entities which average rates over their service territories regardless of the granularity of wholesale prices. Participants indicate that nodal supply and demand prices from convergence bidding activity will supply nodal demand price signals. Stakeholders have also contended that the need for responsive demand may be met by the proxy demand resource and participating load programs at the wholesale level, and by programs administered at the retail level. An important benefit of LAP disaggregation is cited as being improved ability for load to hedge exposure to congestion costs. The ISO has made improvements, yet to be quantified, by allocating CRRs at the sub-LAP level in tier 1 of the monthly allocation process, and in tier 2 of the annual process.

Consideration of and coordination with state policy

A significant concern of market participants – load serving entities, community-choice aggregators, direct access providers, and marketers – is the coordination of state policy and the policies and programs established by the CPUC.

3 Preliminary Analyses

As noted above, the vast majority of stakeholders oppose the near-term disaggregation of the LAPs. Regardless of the timing, the stakeholder community is likely to object to any degree of disaggregation proposed by the ISO unless the ISO demonstrates compelling evidence that further disaggregation is needed. An analysis of data from the first 16 months of the ISO's LMP market does not provide sufficient pricing data to support a proposal for further disaggregation at this time.

Market Surveillance Committee

Analysis by the Market Surveillance Committee of spatial price patterns similarly found that there was not a large price divergence to "chase." Their analysis showed that, at the nodal level, most prices vary together, and that the distribution of differences between nodal prices is centered at 0. This indicates that prices are not very different, that that they are in a steady proportion to one another. The significance of the steady proportionality of the nodal prices is that it indicates the costs of congestion and losses to each node are relatively constant. Increased price-responsive demand and/or increased transmission would be needed to overcome those constraints. (As an aside, it has been pointed out that transmission investment in California is largely policy-driven due in part to renewable portfolio standards.)

The MSC analysis also showed that nodes with higher average prices and those with lower average prices are mixed rather than being spatially segregated and tend to be in electrically disconnected areas. If all the PNodes with higher average prices were spatially grouped together, and the PNodes with lower average prices were grouped together, the drawing of smaller load zones would be intuitive. Since they are not spatially grouped together, it is not clear how to establish new load zone boundaries such that each zone contains PNodes with prices that reflect relatively homogeneous congestion conditions. As a result, the MSC suggested that it would be difficult to argue against full nodal pricing to load on market efficiency or equity considerations.

California ISO

Analysis of price trends at the nodal and default LAP level over the past 16 months does not demonstrate substantial and persistent divergence of prices between LAPs and constituent pricing nodes. Particular areas of the system demonstrate more divergence than others such as the San Francisco and Humboldt areas. However, overall within each LAP the ISO observed that those persistent price differences are relatively small. Generally, differences in average prices between the default LAPs and areas within the LAPS fluctuate within the $0-$2/MWh range.

4 Interim Proposal

At this juncture, less than two years after go live and in the advent of significant new enhancements such as convergence bidding, multi-stage generation modeling, and increased participation in participating demand response, there are not sufficient data to determine the number or boundaries of more disaggregated LAPs. The number and boundaries of new LAPs will depend on the extent and the pattern of any spatial price dispersion that we may see in our market as it continues to evolve.

Pricing trends are likely to change with the implementation of upcoming enhancements, and with the increasing experience of the ISO and its participants in using those enhancements. Convergence bidding introduces nodal level virtual bidding of demand, which is likely to change pricing trends. Additional time is required to better evaluate the appropriate fit of the new load aggregation points.

The ISO proposes continued evaluation of pricing trends for one year after implementation of convergence bidding to develop a proposal for appropriate level of disaggregation. To accomplish this, the ISO intends to file a motion for an extension of the implementation timeline currently dictated by the Commission's September 21, 2006 MRTU order as three years after the start of the LMP-based markets, *i.e.*, 2012.

In its motion for extension of time, the ISO plans to provide the following road-map to a delayed implementation of any further LAP disaggregation. In the first quarter of 2012, after a full year's worth of pricing experience under convergence bidding and further participation of proxy demand response resources, the ISO will undertake a stakeholder process to develop a proposal for the appropriate level of disaggregation, and for the boundaries of the new load zones. The ISO will begin the development of a technical study aimed at defining the new load zones. The ISO will elicit input on the proposed methodology prior to beginning our analysis of the prior years' pricing data. At the outset of the stakeholder process, the ISO will seek input on the results of its study and will collaborate with stakeholders to explore fully the options and implications for any further disaggregation The proposal to be filed with the Commission in compliance with the September 2006 order will include a proposed timeline for implementation of any proposed changes to the existing three default LAPs. At this time, in its motion the ISO plans to request that the implementation time frame be delayed to the second quarter of 2013.

5 Process and Timetable

The table below summarizes the key steps in the stakeholder process on load granularity refinements, starting with the release of this issue paper and ending with submission of the ISO management proposal to the Board. The ISO invites stakeholder input on any and all topics discussed in this issue paper.

Event	Date
Issue Paper posted	September 1, 2010
Policy framing discussion	September 8, 2010
Stakeholder comments due *	September 20, 2010
MSC Meeting	October 8, 2010
Interim Proposal posted	December 9, 2010
Conference call	December 16, 2010
Stakeholder comments due *	January 14, 2011
File a Motion for Extension with FERC	1st quarter, 2011

Re-open stakeholder process	1st quarter, 2012
Seek approval by the ISO Board	3rd quarter, 2012
File proposal with FERC	4th quarter, 2012
Proposed implementation	2nd quarter, 2013

* Please e-mail comments to the initiative mailbox: LGR@caiso.com

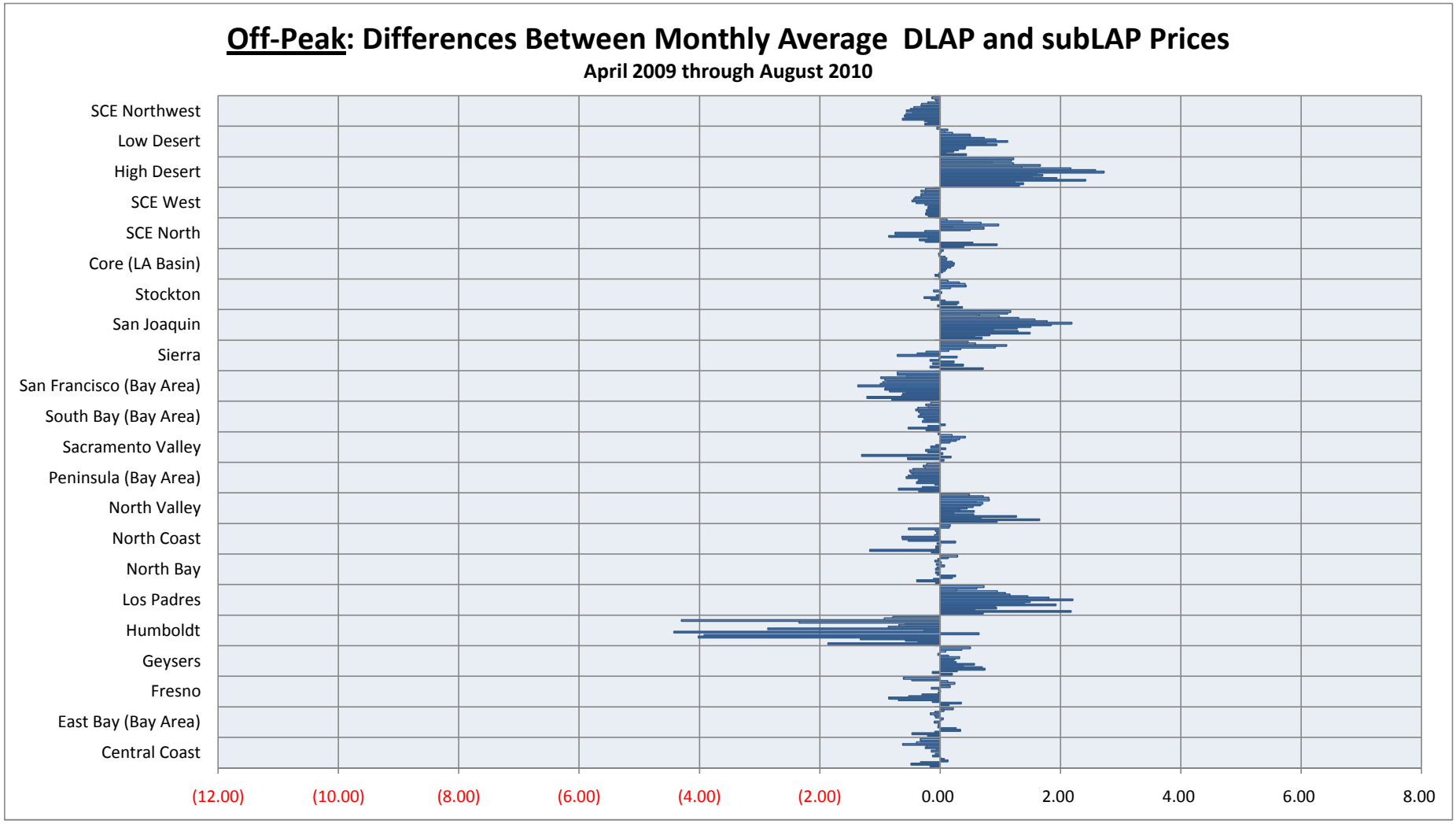
6 Conclusion

The ISO invites stakeholder comments and discussion on the issues raised within this paper as well as other issues that should be examined. Specifically, the ISO requests comments on the ISO's proposed extension of the September 2006 order compliance requirement from 2012 to 2013. The ISO asks stakeholders to comment on whether the roadmap for implementation discussed above poses any concerns. The ISO urges stakeholders to comment on whether an alternative timeline would be more appropriate, and if so, why and what particular milestones must be considered. Please send written comments to LGR@caiso.com by close of business on January 14, 2011.

The ISO will conduct a stakeholder conference call on December 16, 2010. Any comments submitted and the discussion at the stakeholder conference call will serve to inform the ISO's request for an extension of time with FERC which we intend to file in the first quarter of 2011.

ATTACHMENT C

Tables Summarizing ISO Study Results


Off-Peak: Differences Between Monthly Average DLAP and subLAP Prices
April 2009 through August 2010
SCE Northwest
Low Desert
High Desert
SCE West
SCE North
Core (LA Basin)
Stockton
San Joaquin
Sierra
San Francisco (Bay Area)
South Bay (Bay Area)
Sacramento Valley
Peninsula (Bay Area)
North Valley
North Coast
North Bay
Los Padres
Humboldt
Geysers
Fresno
East Bay (Bay Area)
Central Coast
(12.00)
(10.00)
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(4.00)
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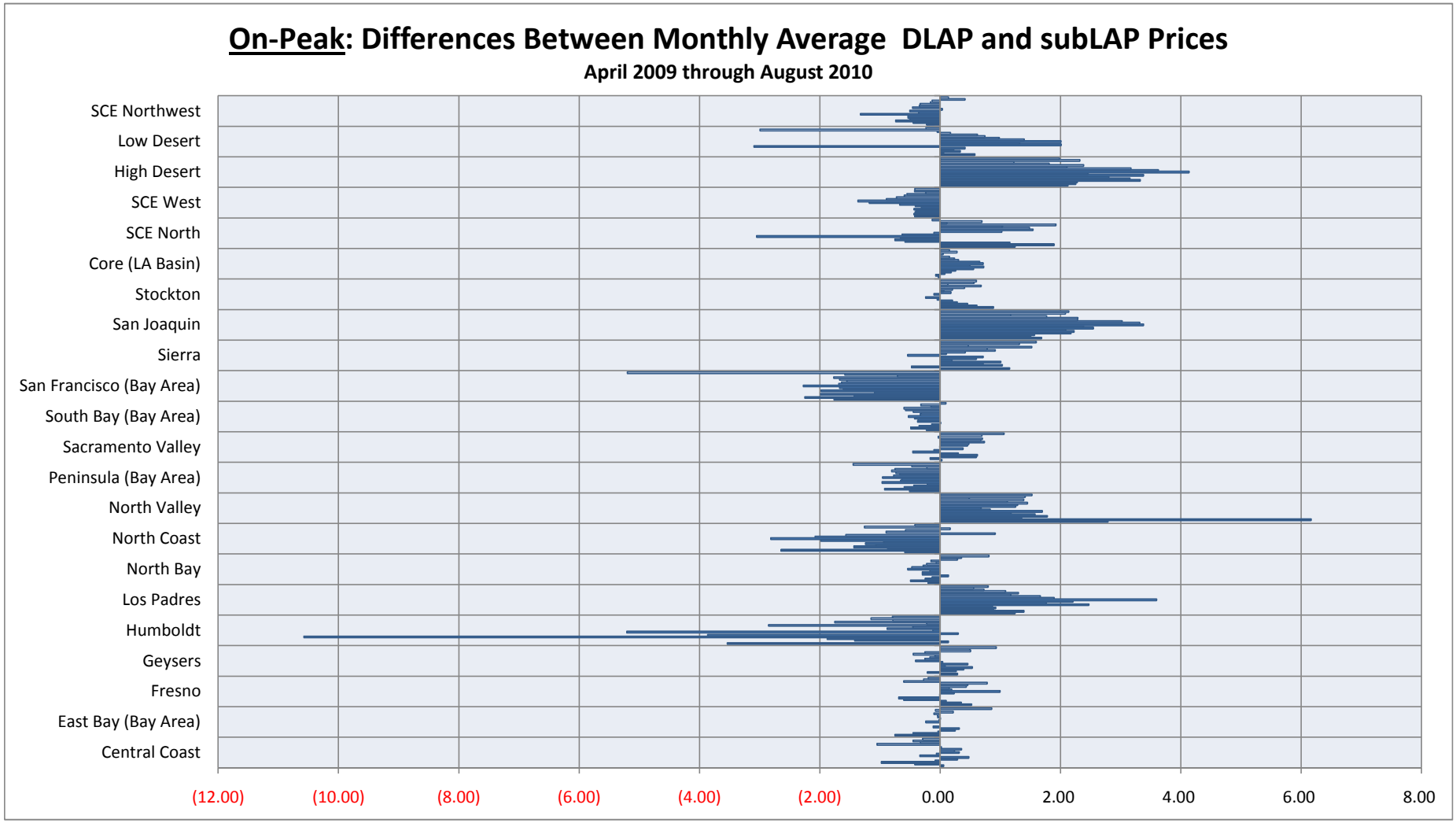
6.00
8.00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Los Padres
Humboldt
Geysers
Fresno
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Central Coast
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4.00
6.00
8.00

OFF-PEAK

		Apr-09		May-09		Jun-09		Jul-09		Aug-09		Sep-09		Oct-09		Nov-09		Dec-09	
		Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price
PG&E Default LAP	PG&E Default LAP	20.95		23.54		19.19		30.11		26.95		28.71		35.76		29.30		42.32	
	Central Coast	21.12	(0.17)	24.03	(0.48)	19.51	(0.33)	29.98	0.13	26.89	0.07	28.71	0.00	35.89	(0.13)	29.38	(0.08)	42.32	(0.00)
	East Bay (Bay Area)	21.16	(0.21)	24.01	(0.47)	19.27	(0.08)	29.77	0.34	26.69	0.26	28.75	(0.04)	35.79	(0.03)	29.32	(0.02)	42.42	(0.09)
	Fresno	20.80	0.15	23.19	0.35	19.31	(0.13)	30.80	(0.69)	27.81	(0.85)	29.23	(0.52)	36.06	(0.30)	29.33	(0.03)	42.32	0.00
	Geysers	20.74	0.20	23.67	(0.13)	18.90	0.29	29.37	0.75	26.25	0.70	28.33	0.39	35.19	0.57	29.04	0.26	42.11	0.21
	Humboldt	22.81	(1.87)	23.91	(0.37)	19.77	(0.58)	31.44	(1.33)	30.97	(4.02)	32.63	(3.92)	35.12	0.64	33.72	(4.43)	42.59	(0.27)
	Los Padres	20.23	0.72	21.37	2.18	18.61	0.57	29.17	0.94	26.03	0.92	26.79	1.93	34.36	1.40	27.80	1.50	40.12	2.21
	North Bay	21.02	(0.07)	23.93	(0.39)	19.30	(0.11)	29.91	0.20	26.70	0.26	28.76	(0.05)	35.84	(0.07)	29.30	(0.00)	42.40	(0.07)
	North Coast	21.09	(0.15)	24.71	(1.17)	19.26	(0.08)	30.18	(0.07)	26.95	0.01	28.76	(0.05)	35.51	0.26	29.83	(0.53)	42.95	(0.63)
	North Valley	20.00	0.95	21.89	1.65	18.51	0.68	28.84	1.27	26.39	0.56	28.48	0.23	35.20	0.57	28.97	0.33	41.87	0.45
	Peninsula (Bay Area)	21.30	(0.36)	24.23	(0.69)	19.48	(0.30)	30.13	(0.01)	27.04	(0.08)	29.10	(0.39)	36.12	(0.36)	29.66	(0.36)	42.89	(0.56)
	Sacramento Valley	20.88	0.06	24.08	(0.54)	19.01	0.18	31.42	(1.31)	26.91	0.04	28.92	(0.20)	36.00	(0.24)	29.21	0.09	42.47	(0.15)
	South Bay (Bay Area)	21.18	(0.23)	24.07	(0.53)	19.39	(0.20)	30.03	0.09	26.96	(0.01)	29.00	(0.29)	36.01	(0.24)	29.57	(0.27)	42.68	(0.36)
	San Francisco (Bay Area)	21.75	(0.80)	24.76	(1.22)	19.83	(0.64)	30.73	(0.62)	27.52	(0.56)	29.55	(0.84)	36.68	(0.92)	30.21	(0.91)	43.69	(1.36)
	Sierra	20.23	0.72	23.71	(0.17)	18.80	0.39	30.24	(0.13)	26.72	0.23	28.88	(0.17)	35.78	(0.02)	29.02	0.28	43.03	(0.71)
	San Joaquin	20.25	0.70	22.97	0.57	18.36	0.82	28.62	1.49	25.66	1.30	27.82	0.89	34.48	1.28	27.79	1.51	40.47	1.85
	Stockton	20.58	0.37	23.58	(0.04)	18.91	0.28	29.80	0.31	26.87	0.08	28.86	(0.15)	36.03	(0.27)	29.36	(0.06)	42.33	(0.01)
SCE Default LAP	SCE Default LAP	20.11		20.41		18.19		28.96		25.86		26.35		33.75		28.51		40.26	
	Core (LA Basin)	20.12	(0.02)	20.49	(0.08)	18.21	(0.01)	28.92	0.04	25.78	0.08	26.24	0.10	33.57	0.18	28.28	0.22	40.02	0.23
	SCE North	19.71	0.40	19.46	0.95	17.66	0.54	29.21	(0.25)	26.20	(0.34)	26.55	(0.20)	34.60	(0.85)	29.25	(0.74)	41.00	(0.75)
	SCE West	20.30	(0.20)	20.65	(0.24)	18.41	(0.21)	29.19	(0.23)	26.07	(0.21)	26.54	(0.20)	33.94	(0.19)	28.75	(0.25)	40.65	(0.40)
	High Desert	18.78	1.32	19.02	1.39	16.95	1.24	26.54	2.42	23.92	1.94	24.82	1.53	32.05	1.70	26.90	1.61	37.53	2.73
	Low Desert	19.67	0.44	20.31	0.10	17.97	0.22	28.66	0.30	25.45	0.41	25.92	0.42	32.81	0.94	27.74	0.77	39.13	1.12
	SCE Northwest	20.36	(0.25)	20.61	(0.20)	18.45	(0.26)	29.59	(0.63)	26.44	(0.57)	26.94	(0.59)	34.32	(0.57)	28.96	(0.45)	40.82	(0.56)

		Jan-10		Feb-10		Mar-10		Apr-10		May-10		Jun-10		Jul-10		Aug-10	
		Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price
PG&E Default LAP	PG&E Default LAP	43.53		39.51		34.86		30.08		27.35		18.30		28.47		28.60	
	Central Coast	43.67	(0.15)	39.58	(0.06)	35.11	(0.25)	30.30	(0.23)	27.97	(0.62)	18.69	(0.39)	28.79	(0.32)	28.93	(0.33)
	East Bay (Bay Area)	43.52	0.01	39.46	0.05	34.94	(0.07)	30.17	(0.09)	27.51	(0.16)	18.39	(0.09)	28.41	0.06	28.38	0.22
	Fresno	43.55	(0.03)	39.66	(0.14)	34.69	0.17	29.93	0.15	27.10	0.24	18.17	0.13	28.94	(0.47)	29.20	(0.61)
	Geysers	43.28	0.25	39.19	0.32	34.72	0.14	30.12	(0.04)	27.35	(0.01)	18.21	0.09	28.11	0.36	28.09	0.51
	Humboldt	46.39	(2.86)	40.37	(0.86)	35.55	(0.69)	30.65	(0.58)	29.69	(2.34)	22.60	(4.30)	29.40	(0.93)	29.38	(0.79)
	Los Padres	41.72	1.81	38.06	1.46	33.71	1.16	29.00	1.08	26.39	0.95	18.02	0.28	27.86	0.61	27.87	0.73
	North Bay	43.58	(0.05)	39.44	0.07	34.93	(0.06)	30.06	0.02	27.43	(0.09)	18.34	(0.04)	28.34	0.14	28.31	0.29
	North Coast	44.16	(0.63)	39.61	(0.09)	34.92	(0.06)	30.13	(0.05)	27.42	(0.08)	18.82	(0.52)	28.32	0.15	28.43	0.17
	North Valley	42.98	0.55	38.84	0.67	34.16	0.71	29.48	0.60	26.53	0.82	17.49	0.81	27.75	0.72	28.11	0.49
	Peninsula (Bay Area)	44.06	(0.53)	39.97	(0.45)	35.35	(0.48)	30.58	(0.50)	27.80	(0.45)	18.55	(0.25)	28.75	(0.28)	28.82	(0.22)
	Sacramento Valley	43.60	(0.07)	39.51	0.01	34.70	0.17	29.81	0.27	27.02	0.32	17.88	0.42	28.27	0.20	28.63	(0.03)
	South Bay (Bay Area)	43.86	(0.33)	39.81	(0.30)	35.22	(0.36)	30.48	(0.40)	27.72	(0.37)	18.50	(0.20)	28.71	(0.24)	28.75	(0.15)
	San Francisco (Bay Area)	44.52	(0.99)	40.47	(0.95)	35.74	(0.87)	31.00	(0.92)	28.33	(0.99)	18.85	(0.55)	29.18	(0.71)	29.30	(0.71)
	Sierra	43.91	(0.38)	39.75	(0.23)	34.72	0.15	29.73	0.35	26.43	0.92	17.19	1.11	27.88	0.59	28.13	0.47
	San Joaquin	41.34	2.19	37.74	1.78	33.29	1.57	28.77	1.31	26.36	0.98	17.65	0.65	27.35	1.12	27.42	1.17
	Stockton	43.50	0.03	39.62	(0.11)	34.86	0.01	29.90	0.17	26.91	0.43	17.88	0.42	28.15	0.32	28.46	0.13
SCE Default LAP	SCE Default LAP	42.75		38.59		34.42		29.01		26.05		17.98		27.65		27.63	
	Core (LA Basin)	42.55	0.20	38.49	0.10	34.32	0.11	28.93	0.08	26.07	(0.02)	18.00	(0.02)	27.64	0.01	27.57	0.05
	SCE North	43.00	(0.25)	38.09	0.50	33.69	0.73	28.81	0.21	25.08	0.97	17.30	0.68	27.28	0.37	27.51	0.11
	SCE West	43.22	(0.47)	39.03	(0.44)	34.84	(0.41)	29.33	(0.31)	26.37	(0.32)	18.22	(0.25)	27.97	(0.32)	27.87	(0.24)
	High Desert	40.17	2.58	36.42	2.17	33.07	1.36	27.35	1.67	24.83	1.22	17.11	0.86	26.47	1.18	26.40	1.22
	Low Desert	41.82	0.93	37.86	0.73	33.92	0.50	28.51	0.50	25.85	0.21	17.90	0.07	27.52	0.13	27.68	(0.05)
	SCE Northwest	43.24	(0.49)	39.02	(0.43)	34.74	(0.32)	29.32	(0.31)	26.26	(0.21)	18.03	(0.06)	27.73	(0.08)	27.76	(0.13)

ON-PEAK

		Apr-09		May-09		Jun-09		Jul-09		Aug-09		Sep-09		Oct-09		Nov-09		Dec-09	
		Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price
PG&E Default LAP	PG&E Default LAP	30.04		36.27		29.41		39.05		37.20		41.12		49.44		38.60		54.34	
PG&E Default LAP	Central Coast	29.98	0.06	36.69	(0.42)	30.38	(0.98)	39.13	(0.08)	36.91	0.29	40.64	0.48	49.78	(0.34)	38.66	(0.06)	54.03	0.32
PG&E Default LAP	East Bay (Bay Area)	30.79	(0.75)	36.72	(0.45)	29.45	(0.04)	38.80	0.25	36.88	0.32	41.24	(0.12)	49.44	(0.00)	38.60	(0.01)	54.58	(0.24)
PG&E Default LAP	Fresno	29.51	0.52	35.92	0.35	29.30	0.10	39.66	(0.61)	37.89	(0.69)	41.13	(0.01)	49.45	(0.01)	38.36	0.24	53.35	1.00
PG&E Default LAP	Geysers	29.75	0.29	36.48	(0.21)	29.14	0.27	38.66	0.40	36.66	0.54	41.04	0.09	48.98	0.46	38.55	0.04	54.75	(0.41)
PG&E Default LAP	Humboldt	33.57	(3.54)	36.13	0.14	30.83	(1.42)	40.93	(1.88)	47.77	(10.57)	44.99	(3.87)	49.14	0.30	43.80	(5.21)	54.46	(0.12)
PG&E Default LAP	Los Padres	28.79	1.25	34.88	1.39	28.52	0.89	38.12	0.93	36.33	0.87	38.65	2.47	47.68	1.77	36.38	2.21	50.74	3.60
PG&E Default LAP	North Bay	30.24	(0.20)	36.77	(0.49)	29.66	(0.25)	39.18	(0.13)	37.06	0.14	41.42	(0.30)	49.74	(0.30)	38.77	(0.17)	54.88	(0.54)
PG&E Default LAP	North Coast	30.63	(0.59)	38.92	(2.64)	30.28	(0.87)	40.49	(1.43)	38.27	(1.07)	42.36	(1.24)	50.38	(0.94)	40.58	(1.98)	57.16	(2.81)
PG&E Default LAP	North Valley	27.24	2.79	30.10	6.17	28.05	1.36	37.27	1.78	35.62	1.58	39.94	1.18	47.74	1.70	37.76	0.83	53.66	0.68
PG&E Default LAP	Peninsula (Bay Area)	30.55	(0.51)	37.20	(0.93)	30.00	(0.60)	39.49	(0.44)	37.41	(0.21)	42.09	(0.97)	50.10	(0.66)	39.23	(0.64)	55.30	(0.96)
PG&E Default LAP	Sacramento Valley	30.01	0.03	36.44	(0.17)	28.80	0.60	38.43	0.62	36.90	0.30	41.58	(0.46)	49.55	(0.10)	38.21	0.38	54.35	(0.01)
PG&E Default LAP	South Bay (Bay Area)	30.27	(0.23)	36.76	(0.49)	29.76	(0.35)	39.19	(0.14)	37.19	0.01	41.50	(0.38)	49.81	(0.37)	39.02	(0.43)	54.87	(0.53)
PG&E Default LAP	San Francisco (Bay Area)	31.80	(1.76)	38.52	(2.25)	30.84	(1.43)	41.04	(1.99)	38.29	(1.09)	43.10	(1.98)	51.05	(1.61)	40.27	(1.67)	56.62	(2.27)
PG&E Default LAP	Sierra	28.88	1.16	36.75	(0.47)	28.37	1.03	38.34	0.71	36.19	1.01	40.93	0.20	48.84	0.60	37.88	0.72	54.88	(0.54)
PG&E Default LAP	San Joaquin	28.35	1.69	34.77	1.51	27.84	1.57	36.88	2.18	34.97	2.23	39.04	2.09	46.90	2.55	36.21	2.39	50.96	3.38
PG&E Default LAP	Stockton	29.15	0.89	35.66	0.61	28.95	0.46	38.77	0.29	36.99	0.20	41.17	(0.05)	49.68	(0.24)	38.60	(0.01)	54.45	(0.10)
SCE Default LAP	SCE Default LAP	28.86		34.64		28.23		38.43		36.74		39.01		48.24		39.13		52.33	
SCE Default LAP	Core (LA Basin)	28.90	(0.03)	34.72	(0.07)	28.15	0.08	38.24	0.19	36.48	0.26	38.46	0.56	47.51	0.72	38.63	0.50	51.61	0.72
SCE Default LAP	SCE North	27.62	1.25	32.75	1.90	27.07	1.16	39.02	(0.59)	37.49	(0.75)	39.67	(0.66)	51.28	(3.05)	39.76	(0.63)	52.43	(0.10)
SCE Default LAP	SCE West	29.29	(0.42)	35.08	(0.43)	28.65	(0.42)	38.84	(0.41)	37.17	(0.43)	39.33	(0.31)	48.65	(0.41)	39.81	(0.67)	53.51	(1.18)
SCE Default LAP	High Desert	26.74	2.13	32.39	2.26	25.95	2.28	35.10	3.33	33.58	3.15	36.21	2.81	44.86	3.38	36.67	2.46	48.19	4.14
SCE Default LAP	Low Desert	28.29	0.58	34.59	0.06	27.89	0.34	38.20	0.23	36.32	0.41	42.11	(3.09)	46.23	2.01	37.81	1.32	50.32	2.01
SCE Default LAP	SCE Northwest	29.09	(0.22)	35.09	(0.45)	28.97	(0.74)	38.94	(0.51)	37.27	(0.54)	39.55	(0.54)	49.56	(1.33)	39.49	(0.36)	52.84	(0.51)

		Jan-10		Feb-10		Mar-10		Apr-10		May-10		Jun-10		Jul-10		Aug-10	
		Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price	Average Price	Delta from dLAP Price
PG&E Default LAP	PG&E Default LAP	52.25		48.54		44.81		39.16		35.28		28.60		41.44		39.55	
PG&E Default LAP	Central Coast	52.01	0.24	48.18	0.36	44.79	0.02	39.17	(0.00)	36.33	(1.05)	28.93	(0.33)	41.89	(0.45)	39.84	(0.29)
PG&E Default LAP	East Bay (Bay Area)	52.27	(0.02)	48.53	0.01	44.85	(0.04)	39.21	(0.04)	35.38	(0.11)	28.38	0.22	41.52	(0.08)	38.69	0.86
PG&E Default LAP	Fresno	52.05	0.20	48.38	0.15	44.38	0.43	38.70	0.46	34.49	0.78	29.20	(0.61)	41.71	(0.28)	39.75	(0.20)
PG&E Default LAP	Geysers	52.51	(0.26)	48.71	(0.17)	44.90	(0.09)	39.61	(0.45)	35.53	(0.25)	28.09	0.51	40.94	0.50	38.61	0.93
PG&E Default LAP	Humboldt	53.13	(0.88)	48.99	(0.46)	47.66	(2.85)	39.39	(0.22)	37.03	(1.75)	29.38	(0.79)	42.58	(1.15)	40.34	(0.80)
PG&E Default LAP	Los Padres	50.35	1.90	46.87	1.67	43.63	1.18	37.86	1.30	34.19	1.09	27.87	0.73	40.88	0.56	38.75	0.80
PG&E Default LAP	North Bay	52.72	(0.47)	48.82	(0.28)	45.03	(0.22)	39.23	(0.07)	35.43	(0.15)	28.31	0.29	41.08	0.36	38.73	0.81
PG&E Default LAP	North Coast	54.33	(2.08)	50.10	(1.57)	43.89	0.92	40.06	(0.90)	35.85	(0.58)	28.43	0.17	42.69	(1.26)	39.97	(0.42)
PG&E Default LAP	North Valley	50.99	1.26	47.25	1.29	43.36	1.45	38.05	1.12	33.88	1.39	28.11	0.49	40.02	1.41	38.02	1.53
PG&E Default LAP	Peninsula (Bay Area)	53.02	(0.77)	49.21	(0.67)	45.55	(0.74)	39.97	(0.80)	36.03	(0.75)	28.82	(0.22)	41.91	(0.47)	40.99	(1.45)
PG&E Default LAP	Sacramento Valley	51.79	0.46	48.06	0.48	44.07	0.74	38.49	0.68	34.57	0.70	28.63	(0.03)	40.74	0.69	38.49	1.06
PG&E Default LAP	South Bay (Bay Area)	52.58	(0.33)	48.86	(0.32)	45.25	(0.45)	39.74	(0.58)	35.88	(0.60)	28.75	(0.15)	41.76	(0.32)	39.45	0.10
PG&E Default LAP	San Francisco (Bay Area)	53.93	(1.68)	50.18	(1.64)	46.36	(1.55)	40.84	(1.67)	37.04	(1.77)	29.30	(0.71)	43.02	(1.59)	44.74	(5.20)
PG&E Default LAP	Sierra	52.14	0.11	48.12	0.42	43.89	0.92	38.38	0.78	33.75	1.52	28.13	0.47	40.12	1.32	37.95	1.60
PG&E Default LAP	San Joaquin	48.93	3.32	45.51	3.02	42.52	2.29	36.87	2.29	33.50	1.77	27.42	1.17	39.35	2.09	37.41	2.14
PG&E Default LAP	Stockton	52.07	0.18	48.47	0.06	44.61	0.20	38.76	0.41	34.59	0.68	28.46	0.13	40.87	0.56	38.94	0.60
SCE Default LAP	SCE Default LAP	52.48		49.05		45.67		39.32		34.08		27.63		42.61		39.40	
SCE Default LAP	Core (LA Basin)	51.83	0.66	48.75	0.30	45.43	0.24	39.16	0.15	34.07	0.00	27.57	0.05	42.33	0.28	39.24	0.15
SCE Default LAP	SCE North	51.45	1.03	47.51	1.55	44.18	1.49	38.28	1.04	32.15	1.92	27.51	0.11	41.91	0.70	39.53	(0.13)
SCE Default LAP	SCE West	53.85	(1.37)	49.95	(0.90)	46.39	(0.73)	39.92	(0.60)	34.63	(0.55)	27.87	(0.24)	43.03	(0.42)	39.82	(0.42)
SCE Default LAP	High Desert	48.86	3.63	45.88	3.17	43.56	2.11	36.93	2.39	32.26	1.81	26.40	1.22	40.29	2.32	37.41	1.98
SCE Default LAP	Low Desert	51.08	1.40	48.07	0.98	44.92	0.74	38.70	0.62	33.90	0.17	27.68	(0.05)	45.60	(2.99)	39.63	(0.24)
SCE Default LAP	SCE Northwest	52.44	0.04	49.51	(0.46)	46.01	(0.35)	39.65	(0.33)	34.24	(0.16)	27.76	(0.13)	42.20	0.41	39.26	0.14

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service list in the captioned proceedings, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, California this 16th day of February, 2011.

/s/ Anna Pascuzzo

Anna Pascuzzo