

LIST OF ORA ATTACHMENTS AND WORKPAPERS

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Attachment 2.1

ORA Workpapers: Price Forecast 2014 vs. 2015
(Confidential) 1 of 2

(Available via Email)

Attachment 2.2

ORA Workpapers: Price Forecast 2014 vs. 2015
(Confidential) 2 of 2

(Available via Email)

Attachment 2.3

ORA Workpapers: Load Bid Calculations
(Confidential)

(Available via Email)

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-21

To: ORA
Prepared by: Thomas Watson
Title: Principal Advisor
Dated: 07/21/2016

Question 01:

- I. Please explain the calculations provided in the workpaper titled, "SCE ERRR 2016 Chapter II_Section E_Commit Cost_CONFIDENTIAL."
 - a. How are the cost impacts calculated?
 - b. What are the reasons that incorrect registered costs were submitted on each occasion that they were incorrect?
 - c. Please explain each occasion that an incorrect registered cost submission did not have a cost impact.

Response to Question 01:

Response to Question 1a:

As specified in D.15-05-007, cost impacts are based on an estimate of CAISO Bid Cost Recovery ("BCR") gains or losses calculated by comparing BCR credits from settlements invoices with calculated BCR using correctly-calculated commitment costs.

Response to Question 1b:

Please refer to Chapter IV, Section B of SCE's Supplemental Direct Testimony in A.16-04-001, Exhibit SCE-05, dated June 29, 2016.

Response to Question 1c:

Incorrect commitment cost submissions were deemed impactful only when CAISO committed the respective unit and market revenues including BCR would have differed using the corrected costs. Incorrect submissions were deemed not impactful if the respective resource was not committed and thus BCR did not apply, or if it was committed and BCR did not apply using either the originally submitted or the corrected costs.

Attachment 2.5

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORR-SCE-22

To: ORR
Prepared by: Thomas Watson
Title: Principal Advisor
Dated: 08/01/2016

Question 07:

7. When are commitment cost impacts calculated?
 - a. Are they calculated at the year-end for all incorrect bids?

Response to Question 07:

SCE serves its annual ERRR Review testimony to the Commission and the past ERRR Review Proceeding's service list (including ORR) on April 1 each year, for the preceding year's Record Period. Cost impacts are generally calculated while preparing testimony for the applicable Record Period.

Attachment 2.6

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-22

To: ORA
Prepared by: Thomas Watson
Title: Principal Advisor
Dated: 08/01/2016

Question 03:

3. Did SCE report information of this discovery in any other ERRR testimony aside from the 2015 Supplemental Direct Testimony?

Response to Question 03:

SCE discussed the CAISO commitment cost cap calculation discovery for the 2015 Record Period in its Direct Testimony for A.16-04-001 in Exhibit SCE-01, pp. 20-22, served on April 1, 2016.

SCE subsequently submitted information regarding the 2012-2014 Record Periods in its Supplemental Direct Testimony (Exhibit SCE-05, pp. 19-20), served on June 29, 2016.

Attachment 2.7

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-21

To: ORA
Prepared by: Thomas Watson
Title: Principal Advisor
Dated: 07/21/2016

Question 02:

2. Were there any occasions when resources were not bid into the CAISO market when they were available?
 - a. If so, what were the reasons that they were not bid?

Response to Question 02:

SCE is not aware of any occasions during the Record Period when resources were not bid into the CAISO market when they were available.

Attachment 2.8

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-22

To: ORA
Prepared by: Thomas Watson
Title: Principal Advisor
Dated: 08/01/2016

Question 04:

4. With respect to the Incremental Bid Costs recorded in SCE workpaper titled, "SCE ERRR 2016 Chapter II_Section E_Inc Bid Cost Variance Impact_CONFIDENTIAL," ORA found 59 occasions (see attached spreadsheet) in which the day-ahead LMP was greater than both the clean and the calculated bid cost but incremental energy was not awarded by CAISO.
 - a. Is this a different scenario than is described in the Joint Utilities' Proposal in D.15-05-007, Appendix A, Item 3e? "Percentage of times incremental energy was not awarded when incremental bid cost at the awarded megawatt ("MW") level was lower than the locational marginal price ("LMP") at the applicable node. Explanation and documentation of CIDI tickets submitted, and subsequent actions taken by the utility."
 - b. If this is a different scenario, please explain how it is different.
 - c. If this is not a different scenario, please explain why SCE did not include this information in its response to Data Request 21, Question 3.



SCE ERRR A 16-04-001 DR22 Supplement to Q4.xlsx

Response to Question 04:

Response to Question 4a:

Yes.

Response to Question 4b:

The Joint Utilities' Proposal contemplated that this particular metric would serve as an indicator of how often the CAISO was incorrectly dispatching generation resources. However, the fact that there were certain occasions in which the day-ahead LMP was higher than SCE's incremental energy bid price and the CAISO did not issue awards for those bids, does not mean that the CAISO incorrectly dispatched generation resources. When the CAISO evaluates

Attachment 2.8 (continued)

committing a dispatchable thermal resource, it must and does also consider startup costs (for an off-line resource), and minimum load costs (for both off-line and on-line resources); thus, simply comparing the LMP for a given hour to a resource's incremental energy cost is not the sole indicator of whether the resource should have been economically dispatched. This is particularly true when the resource is off-line and the LMP exceeds the incremental cost for only a brief period. SCE monitored and evaluated daily CAISO IFM results, then reviewed any that appeared suspect.

In each of the referenced instances, the resource is one discrete configuration of a large multi-stage generator (MSG). Given the contemporary status of these resources and system conditions, SCE did not consider the results to be inappropriate. In other words, SCE did not consider the fact that the LMPs happened to be higher than SCE's incremental energy bid prices for those discrete, limited hours to be indicative of uneconomic dispatch.

Attached to this response is an updated version of the Excel file provided by ORA, with a "Reason" column added.

Response to Question 4c:

See SCE's response to Question 4b.

Attachment 2.9

SCE Response to Data Request 22, Question 4, Supplement
(Confidential)

(Available via Email)

Attachment 2.10

Southern California Edison
April 2016 ERRA Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-15

To: ORA
Prepared by: Thomas Watson
Title: Principal Advisor
Dated: 06/08/2016

Question 01:

Chapter 1 – LEAST-COST DISPATCH

1. Please use the attached Excel template to provide the day-ahead market bids and market awards for each of SCE's 75 dispatchable energy resources. Please provide one Excel sheet per energy resource. Please do not use pivot tables.
 - a. Please note that some fields will not necessarily have a value; in these cells please indicate either "N/A" or leave the field blank.



SCE ERRA A 16-04-001 DR015 Supplement to Q1.xlsx

Response to Question 01:

SCE objects to this question on the grounds that it is burdensome and because the majority of the requested information is duplicative of required elements in SCE's annual ERRA compliance review or responses to prior ORA data requests, and thus has already been provided in SCE's Record Period 2015 workpapers or DR responses.

The Commission defined required LCD showing metrics for SCE in Decision (D.)15-05-007, stating that "Beginning with the 2016 application for its 2015 ERRA compliance proceeding, the showing on least cost dispatch that is outlined in this decision and provided in Appendices A and B of this decision should remain the required showing for SCE unless it is changed by a future order of this Commission."¹ Additionally, the decision specifies that "Because the agreed upon methodology and workpapers would constitute adequate evidence to allow ORA and the Commission to assess the utilities' compliance with LCD principles and Standard of Conduct 4, ORA would cease its Master Data Request [MDR] process regarding LCD. Follow-up data requests would be to facilitate additional discovery on focused topics."²

This Commission decision was in response to an SCE and ORA consensus that in prior Record Periods the showing requirements were not as clearly defined, and the MDR process had become a significant burden for ORA and SCE given the varying, voluminous and sometimes duplicative nature of the questions. The specific content required by D.15-05-007 corrects that issue by eliminating any ambiguity on what information SCE is required to provide. SCE has already

Attachment 2.10 (continued)

provided its 621,700+ dispatchable thermal resource bids and associated market awards from Record Period 2015 in its workpapers, and does not believe that again providing that same information in a different arrangement constitutes “additional discovery on focused topics” as contemplated by D.15-05-007.

Finally, SCE notes the metrics defined in D.15-05-007 require summary statistics in several data categories (*e.g.*, incremental bid cost variances and resource awards). The pivot tables included in SCE’s workpapers are simply an efficient way to summarize the information. The raw data underlying the tables (the same data ORA requests herein) is already included within each file.

Notwithstanding this objection, attached to this response is an Excel spreadsheet containing the requested information.

- 1) *See* D.15-05-007, Conclusion of Law #2
- 2) *See* D.15-05-007, Appendix A

Attachment 2.11

SCE Response to Data Request 15, Question 1
(Confidential)

(Available via Email)

Attachment 2.12

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-20

To: ORA
Prepared by: Thomas Watson
Title: Principal Advisor
Dated: 07/20/2016

Question 03:

3. Did SCE have any dispatchable renewable resources in 2015?

Response to Question 03:

SCE assumes that in this specific context, ORA intends the term “dispatched” to mean “capable of receiving market awards through economic bidding.” SCE’s renewable portfolio included two resources – McCoy Solar and Alta Wind – that were “dispatched” through market bids.

Attachment 2.13

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-22

To: ORA
Prepared by: Thomas Watson
Title: Principal Advisor
Dated: 08/01/2016

Question 08:

8. With respect to SCE's two dispatchable The term "dispatchable" is used in this context to mean "capable of receiving market awards through economic bidding." renewable resources, McCoy Solar and Alta Wind:
- a. What are the Resource IDs for these two facilities?
 - b. Please describe SCE's bidding activity for these two resources in the day-ahead market. Please include the dollar amount bid for each resource, how often, and any other pertinent details.
 - c. Please confirm that for both resources, the purpose of bidding in the day-ahead market is to protect against extreme negative pricing, whereupon it would cost SCE money for these resources to generate electricity.

Response to Question 08:

CONFIDENTIAL
Protected Materials Pursuant to California Public Utilities Commission Decisions and Applicable Law.
-Public Disclosure Restricted-

Response to Question 8a:

[REDACTED]

Response to Question 8b:

[REDACTED]

Attachment 2.13 (continued)



Response to Question 8c:



Attachment 2.14

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-20

To: ORA
Prepared by: Thomas Watson
Title: Principal Advisor
Dated: 07/20/2016

Question 04:

4. Did SCE curtail any renewable resources in 2015?
 - a. If so, under what conditions is it economical to curtail renewables? If there are different conditions for wind and solar, please explain each separately.
 - b. How is curtailment scheduled through SCE's bidding processes?

Response to Question 04:

Response to Question 4a:

Certain resources were curtailed, either by SCE through contractually-defined mechanisms (*e.g.* , market price thresholds), by CAISO for reliability reasons, or (in limited cases) by CAISO through market awards related to bids. It could be economic to curtail any resource under certain conditions, such as market prices being below the resource's marginal cost, or low enough to incur excessive costs (*e.g.* , significantly negative prices.)

Response to Question 4b:

Resource schedules and any associated curtailments are administered through normal CAISO market processes, and SCE notifies the counterparties of the resulting production schedules.

Attachment 2.15

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-14

To: ORA
Prepared by: Thomas Watson
Title: Principal Advisor
Dated: 06/06/2016

Question 01:

Chapter 1 – LEAST-COST DISPATCH

1. With respect to SCE's Demand Response program, please provide the following information:
 - a. How are the DR bids calculated? Please provide specific examples of the formulas and/or models, with numerical values, used to make these calculations.
 - b. Please explain the process for submitting PDR and RDRR bids to the CAISO. Please define any terms or acronyms used in this explanation.
 - c. Please provide specific examples of the formulas and/or models, with numerical values, that SCE uses to forecast DR triggers. Please provide as much detail as possible.
 - d. Were there any circumstances in which a DR trigger was met but the AMP or CBP resource was not dispatched, other than the trigger not being forecast?
 - i. If so, please provide an explanation of any circumstances in which the DR trigger was met AND forecast but the AMP or CBP resource was not dispatched.
 - e. What are the specific opportunity costs that factor into the triggers or thresholds that would lead SCE to dispatch DR resources?
 - i. What quantitative metrics are a part of these opportunity costs?
 - ii. How are these opportunity costs calculated? Please provide specific examples of the formulas and/or models, with numerical values, used to make these calculations.
 - f. Please define the following terms: CAISO warning, CAISO alert, CAISO emergency.
 - g. What are the different load zones or DLAPs associated with the DR programs? Please be specific and define all terms and acronyms.

Response to Question 01:

Response to Question 1a:

The bids for the DR programs are based on the greater of the Net Benefits Test (NBT) threshold market price, opportunity cost, and the variable dispatch cost, if any. Per SCE's CPUC-approved Rule 24 tariff, the energy bids must be greater than or equal to the NBT threshold market price, which the CAISO publishes monthly, for on- and off-peak periods.

The variable dispatch cost is based on the program incentives or contract price and reflects the

Attachment 2.15 (continued)

energy payment to the customer or aggregator. The opportunity cost is the foregone gain from choosing another alternative and is thus calculated by program based on the remaining available hours (or calls) to dispatch and SCE's price forecast.

When performing an opportunity cost evaluation, SCE uses a price forecast from the following day through the end of the time period over which the DR program is constrained (e.g., calendar year and/or month) to determine which dispatch hours would produce the highest value for the resource, given the program limits. The evaluation rank orders the hourly prices from highest to lowest until the program limit, adjusted for the remaining available dispatches, has been reached. The applicable opportunity cost corresponds to the last/lowest priced hour in the ranked order of remaining available dispatch hours. Generally, the less program hours available, and/or the higher the price forecast, the higher the opportunity cost.

Example – Capacity Bidding Program 1-4 (CBP 1-4)

Assumptions and Inputs:

The CBP tariff price is 15,000 (BTU/kWh) heat rate. The price of natural gas and the associated Greenhouse Gas (GHG) compliance cost is \$2.46/MMBTU. During the applicable month, the NBT threshold market clearing price for on-peak hours is \$28.93/MWh. The program is only available on non-holiday weekdays from hours ending (HE) 12-19, and for a maximum of 30 hours per month. The program may only be dispatched for a maximum of four hours per day, and one event (dispatch) per day. There have been no dispatches in the month thus far.

Bid price Calculation = Maximum (market equivalent price based on heat rate of 15,000 BTU/kWh, NBT threshold market price, opportunity cost)

Market equivalent price based on a heat rate of 15,000 BTU/kWh = 15 MMBTU/MWh *
(\$2.46/MMBTU) = \$36.90/MWh

The opportunity cost is the 30th highest price forecast hour for non-holiday weekday hours from HE 12-19 for the month, for which there are no more than four consecutive hours of dispatch for each day in the calculation. Assuming the opportunity cost is \$40/MWh, the bid price =
Maximum (\$28.93, \$36.90, \$40) = \$40/MWh

Example – Summer Discount Plan (SDP)

Assumptions and Inputs:

The SDP tariff does not have a contract or variable dispatch cost. The program is only available on non-holiday weekdays from HE 12-20, and for a maximum of 35 hours per year. The program cannot be dispatched for more than three consecutive days. There have been no dispatches for the program so far this year.

Bid price calculation = Maximum (NBT threshold market price, opportunity cost)

Attachment 2.15 (continued)

The opportunity cost is the 35th highest price forecast hour for non-holiday weekday hours between HE 12-20 for the rest of the year. Assuming the opportunity cost is \$70/MWh, the bid price = Maximum (\$28.93, \$0, \$70) = \$70/MWh.

Response to Question 1b:

The process is substantially identical to submitting generating resource bids. SCE submits price/quantity pairs associated with each specific resource ID through the CAISO's Scheduling Infrastructure Business Rules (SIBR) interface.

Response to Question 1c:

Pre-CAISO market integration, SCE compared its forecasted market conditions (*e.g.*, the Default Load Aggregation Point (DLAP) prices) to each DR resource's contract terms or opportunity costs to determine when the DR resources should have been dispatched. Post-integration, SCE no longer forecasts triggers, as dispatch is based on CAISO market awards. One post-integration exception is for CBP; since Monday dispatches must be communicated to customers prior to the weekend, dispatches are based on the DLAP price forecast.

Please also see SCE's response to Question 1a.

Response to Question 1d:

Yes.

On June 29, 2015, SCE was unable to dispatch the resource(s) due to a technical issue with its dispatch notification system. On November 5, 2015, SCE inadvertently did not submit bids for the resource(s).

Response to Question 1e:

Please see SCE's response to Question 1a. The opportunity cost calculations are based on program limitations in the contracts or tariffs, remaining program dispatch availability, and SCE's internal DLAP price forecasts.

Response to Question 1f:

Attached to this response is the current CAISO "Emergency Fact Sheet." This and similar documents can be found on the CAISO web site.

Response to Question 1g:

Per CAISO requirements, each integrated PDR and RDRR must be within a single Sub-Load Aggregation Point (SLAP). All SCE DR resources are located in one of six SLAPs within SCE's DLAP: SCEC-APND (Central); SCEN-APND (North); SCEW-APND (West);

Attachment 2.15 (continued)

SCHD-APND (High Desert); SCLD-APND (Low Desert); and SCNW-APND (Northwest).

The corresponding CAISO market awards and settlements are based on the Locational Marginal Prices (LMPs) for each SLAP, thus in any given hour, only a portion of a specific program might be awarded. SCE uses its DLAP price forecast in its resource opportunity cost calculations.

Attachment 2.16

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORR-SCE-14

To: ORR
Prepared by: Thomas Watson
Title: Principal Advisor
Dated: 06/06/2016

Question 02:

Chapter 1 – LEAST-COST DISPATCH

2. Please explain the “integration” that occurred mid-year (June or July of 2015) that is referenced in the Demand Response worksheets. Please include the following information:
- What was the purpose or goal of the integration?
 - Why did it result in the available Demand Response hours increasing six-fold (nine-fold in the case of the Residential Summer Discount Program)?
 - What precipitated this integration for all types of DR programs and aggregators?
 - Were there any differences between the circumstances, processes, and/or effects of the integration for the AMP, CBP-DA, CBP-DO, and Summer Discount Programs? If so, please explain these differences.
 - In the Demand Response workpapers titled “SCE ERRR 2016 Chapter II_DR_XXX_CONFIDENTIAL” [with the Xes representing the different Demand Response programs], what do the C [C1, C2, C3, C4 for the SPDR workpaper], HD, LD, N, NW, and N tabs stand for and represent?
 - Why are the values in the “Forecast Triggers Met” column of the aforementioned workpapers not applicable (N/A) after the integration? Does this mean that SCE is no longer forecasting triggers post-integration?
 - What were the criteria that determined which subset of customers qualified for the PDR and RDRR products?
 - What is the proportional breakdown of customers that did or did not qualify for PDR or RDRR?
 - If only a subset of DR customers qualified for PDR and RDRR, does SCE continue to forecast DR triggers for the remaining non-qualifying customers? Please explain why or why not.

Response to Question 02:

Response to Question 2a:

The integration effectively moved the DR programs into the CAISO wholesale markets as supply-side resources, as directed by the CPUC. SCE’s integration efforts stem from a series of previous federal and state regulatory decisions aimed at enabling and encouraging market integration of DR resources, such as FERC Order 719 and the CPUC DR Rulemakings (R.)02-06-001, R.07-01-041, R.13-09-011, and Application (A.)08-06-001. The Commission

Attachment 2.16 (continued)

established R.13-09-011 “to determine whether and how to bifurcate current utility-administered, ratepayer-funded Demand Response programs into demand-side and supply-side resources, with the intent of prioritizing demand response as a utility-procured resource, competitively bid into the California Independent System Operator wholesale electricity market .”

The goal of integrating DR resources into the CAISO wholesale market is to enhance the role of DR in meeting California’s long-term clean energy goals while maintaining system and local reliability.

Response to Question 2b:

This is because programs are now dispatched at the Load Control Group (LCG) level, rather than at a system-wide level. An LCG is essentially a program broken down by SLAP (of which there are six), thus the six-fold increase in dispatchable hours. One exception is the Summer Discount Plan-Residential (SDP-R), in which the Central SLAP is broken down into smaller groups. Each LCG has at least one resource that is integrated in the market.

Response to Question 2c:

In addition to the factors described in SCE’s response to Question 2a, in D.12-04-045 the Commission stated its intent to address competitive procurement of DR (also known as third-party DR aggregation):

*“The next major policy question we must address is the extent to which we will embrace competitive procurement of [demand response] and the timeline in which this transition will occur. Historically, California has employed a utility-centric model of [demand response] procurement that allows only a limited role for third party aggregators. However, this model is changing. ... We think that third party aggregators can provide additional innovation and services to the market, yielding additional uncaptured potential benefits to [demand response] in California. We intend to take up this question in a new [demand response] policy guidance rulemaking to be opened later this year. ”*¹

1. See D.12-04-045, p.16.

Response to Question 2d:

AMP: The current deadline to notify customers of a dispatch is 70 minutes before the event. Pre-integration, the program was dispatched when the expected CAISO real-time market (RTM) SCE DLAP prices were at or greater than the trigger prices. Post-integration, the CAISO Day-Ahead Market (DAM) DLAP prices and awards became the trigger, thus SCE no longer needed to dispatch based on forecasts. However, as CAISO RTM award timing does not align with the program notification requirements, the resources are integrated into the DAM only (real-time dispatches can still be made during a CAISO Warning or Emergency.) As such, in the post-integration environment there were theoretically days in which when the program would have been dispatched using the pre-integration process, but the resources had not received a

Attachment 2.16 (continued)

DAM award. Furthermore, pre-integration, the resources were dispatched at the program level. Post-integration, market bids and awards correspond to the applicable resource ID, assigned on a geographic basis (*i.e.*, by SLAP). As such, the program may have been dispatched only for certain SLAPs on a given day.

CBP-DA: The current deadline to notify customers of a dispatch is 15:00 on the business day before the event. Similar to pre-integration AMP, the CBP-DA products were dispatched at the program level, based on forecasted CAISO DAM prices being at or greater than the trigger price. Post-integration, the CAISO DAM prices and awards became the trigger, corresponding to the applicable resource ID, by SLAP. Thus, SCE no longer needed to dispatch based on forecasts, with the occasional exception being when CAISO DAM results were published late.

CBP-DO: Similar to CBP-DA, but the current customer notification deadline is 70 minutes before the event and thus unaffected by late-published CAISO DAM results.

SDP: Pre-integration, the program was economically dispatched when published CAISO DAM prices were at or greater than the trigger price, and RTM prices were expected to remain at or above that level. The program was also dispatched for reliability purposes when the CAISO declared a system emergency. Post-integration, the CAISO DAM prices and awards became a trigger, thus SCE no longer needed to economically dispatch in the DAM based on forecasts. The program is also bid in the RTM for reliability purposes, though by CAISO market rules, such bids and dispatches are based on system emergency conditions and extremely high prices. There is also no straightforward process to cancel the dispatches once awarded in the CAISO market. As with the other programs pre-integration, the resources were dispatched at the program level. Post-integration, market bids and awards correspond to the applicable resource ID, by SLAP.

Response to Question 2e:

The worksheet names and data correspond with the applicable SLAP, as shown in the table below. For SDP-R, there are four LCGs in the Central SLAP (C1, C2, C3, and C4).

Name	SLAP
C	Central
HD	High Desert
LD	Low Desert
N	North
NW	Northwest
W	West

Response to Question 2f:

Please see SCE's response to Question 1c.

Response to Question 2g:

Attachment 2.16 (continued)

Number of potential resources: Given the current CAISO requirement that each resource must be comprised of customers within the same SLAP and served by the same Load Serving Entity (LSE), this could have resulted in approximately 270 resource IDs. SCE determined that approximately 70 resource IDs was the most that could be reasonably managed, with current tools and processes, in front and back office operations.

SCE's dispatch capability: Once the target number of resource IDs was determined, SCE sought to structure the resources in a way that maximized the dispatchable MWs when awarded. As the DR resources are actually dispatched at the LCG level, SCE decided to select at least one resource within each LCG. When one resource within an LCG is awarded and dispatched, all DR customers within the same LCG are dispatched. With this design, if all of the CAISO resource IDs are awarded, SCE's full DR portfolio would be dispatched.

Resource size: SCE then ranked the potential resources by estimated capacity and selected the largest resources per LCG to comprise the 70 resource IDs.

Response to Question 2h:

See the table below for the MWs associated with each program that were integrated (*i.e.*, registered) and not integrated.

Registered vs Non-Registered MWs for Integrated Programs							
	CBP 1-4	CBP 2-6	AMP	BIP	API	SDP	Total
Registered MW	10	-	74	648	64	368	1,164
Non-Registered MW	18	8	24	97	0	3	150
Total MW	28	8	98	745	64	371	1,314

Response to Question 2i:

As described in SCE's response to Question 2g, the resource ID structure is such that every LCG is represented, thus when a given LCG was awarded, the entire LCG was dispatched (*i.e.*, the non-integrated portions were dispatched with the integrated portions.) As such, there was no need to forecast triggers for the remaining non-qualifying customers.

Attachment 3.1 Corrective Actions

KERN RIVER 3 FOREBAY ACTUATOR FAILURE – RCE

Draft 5/11/15

7. Corrective Actions

Based on the RCE findings, the following corrective actions are recommended to remove the chances of this event reoccurring.

No.	Areas of Improvement	Corrective Actions	Cause Evaluation Element Category	Cause Evaluation Element Primary and Secondary Contributors	Responsible Lead	Date Due/ Status
1	Human Performance	Coach individuals involved in the procedure adherence requirements.	Failure to Follow Procedures		Toby Gibson	Jan 14, 2015
2		Lessons Learned shared with Operators.			Toby Gibson	Jan 14, 2015
3	Organizational	Northern Hydro Divisions to review RCR for actions and impact to the division			Dean Yarbrough	Pending final report
4		Gas & Solar Division to review RCR for actions and impact to the division			Terry Maddox	Pending final report
5		Eastern Hydro Divisions to review RCR for actions and impact to the division			Danielle Chupa	April 27, 2015
6		Attach final RCR to PM Notification record on SAP			Danielle Chupa	Pending final report
7		Evaluate the need to close the forebay gates remotely for public safety			Danielle Chupa	Schedule a meeting with EHD, Engineering and FPD Management by June 30, 2015
8	Process	Incorporate test gate limits procedure into existing Preventative Maintenance Inspection Program to routinely inspect, repair and document conditions of the actuator components.	Prevention Maintenance Inspection		Dan Keverline	3/13/15
9		Update Station Orders 1.14 and 0.03 to have personnel directly observe that the actuator is properly working during penstock fill conditions.	On-Site Observation	On-Site Observation	Toby Gibson	June 30, 2015
10		Adopt 3-way communication protocols and reference its use in Station Orders 1.14 and 0.03			Toby Gibson	June 30, 2015

**Attachment 3.1 (continued)
Corrective Actions**

KERN RIVER 3 FOREBAY ACTUATOR FAILURE – RCE

Draft 5/11/15

11	<i>Maintenance</i>	Follow manufacturer specifications for inspecting, repairing and documenting conditions of the actuator components.			Dan Keverline	5/14/15
12	<i>Project Management</i>	Replace damaged #1 Penstock Actuator			Todd Holmes	3/13/15
13		Inspect #2 Penstock Actuator for similar problems and make appropriate adjustments.			Dan Keverline	3/13/15
14		Replace #2 Penstock Actuator			Wayne Yarnall	1 st qtr 2016
15	<i>Extant Condition</i>	Survey Hydro Operations to determine if similar actuators exist.	Extant Condition		Steve Wellington	3/20/15

Attachment 3.2
SCE's Direct Cost – Kern River 3, Unit 1 outage

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-11

To: ORA
Prepared by: Tim Condit
Title: Project Manager II
Dated: 05/31/2016

Question 40:

Equipment Cost Recovery

40. How much did it cost SCE to replace the damaged parts? Please provide the cost breakdown (labor, materials, etc.) and workpapers. If there are numerous cost items less than \$100,000, please group them in the appropriate categories.

Response to Question 40:

SCE objects on the basis that the question relates to costs that are beyond the scope of this ERRR proceeding. The costs of labor and materials are funded through SCE's approved GRC base rates. Subject to and without waiving that objection, SCE responds as follows: Direct costs of replacement/repairs were capitalized in the amount of:

Labor	\$ 53,862.76
Contract	\$ 422,767.22
Materials	\$ 72,381.80
Other	\$ 8,610.89
<u>TOTAL</u>	<u>\$ 557,622.67</u>

2015 Mountainview U3 Steam Leak RCE

Attachment 4.1 (continued)
Mountainview Unit 3 Steam Leak Root Cause Evaluation Report

Mountainview Unit 3A Steam Leak--RCE

Mountainview Unit 3A Steam Leak – RCE

Event Date: April 26, 2015

Management Sponsors/Division:

Phil Herrington, VP of Power Production

Terry Maddox, Manager of Gas & Solar

Lead Cause Evaluator/Division:

Evaluator—Liza Aznar, P&PI

Evaluator – Steven Wellington, P&PI

Reviewer:

PPD: Phil Herrington, Shaun Mehaffey

Final Approved Date:

Attachment 4.1 (continued)
Mountainview Unit 3 Steam Leak Root Cause Evaluation Report

Mountainview Unit 3A Steam Leak--RCE

RCE Disclaimer

Consistent with the SCE philosophy that all problems are thoroughly understood, this cause evaluation evaluates, through the use of an after-the-fact hindsight-based analysis, conditions adverse to quality and the causes of those conditions. The information identified in this cause evaluation was discovered and analyzed using all information and results available at the time it was written. These results and much of the information considered in this evaluation were not available to the organizations, management, or individual personnel during the time frame in which relevant actions were taken and decisions were made. Cause evaluations have been established as a means to document and “assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected,” and, as necessary, to ensure that actions are taken to prevent recurrence.

This cause evaluation does not attempt to make a determination as to whether any of the actions or decisions taken by management, suppliers, internal organizations, or individual personnel at the time of the event were reasonable or prudent based on the information that was known or available at the time they took such actions or made such decisions. Any individual statements or conclusions included in the evaluation as to whether errors may have been made or improvements are warranted are based upon all of the information considered, including information and results learned after-the-fact, evaluated in hindsight after the results of actions or decisions are known, and do not reflect any conclusion or determination as to the prudence or reasonableness of actions or decisions at the time they were made.

The reason for the addition of this information is to make clear to outside reviewers that the cause evaluation is not a “reasonableness” or “prudence” review, and to prevent statements and conclusions included in cause evaluations from being used out of context.

This language does not change how we do cause evaluations, but reflects current practice. In particular, cause evaluations should continue to be critical, thorough, and accurate in identifying the reasons why adverse conditions or events occurred and what corrective action is needed to address them and, as appropriate, to prevent recurrence.

Attachment 4.1 (continued)
Mountainview Unit 3 Steam Leak Root Cause Evaluation Report

Mountainview Unit 3A Steam Leak--RCE

Table of Contents

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2. PROBLEM STATEMENT	<u>4</u>
3. EXTENT OF CONDITION	<u>4</u>
4. SEQUENCE OF EVENTS	<u>5</u>
5. ANALYSIS AND CAUSES	<u>5</u>
6. CORRECTIVE ACTIONS	<u>5</u>

Attachment 4.1 (continued)
Mountainview Unit 3 Steam Leak Root Cause Evaluation Report

Mountainview Unit 3A Steam Leak--RCE

1. EXECUTIVE SUMMARY

On April 26, 2015, Mountainview Generating Station experienced a steam leak on Unit 3A during start up. Unit 3 was coming out of a week-long spring outage when the incident occurred. This resulted in a temporary delay in startup that extended the outage.

During the course of the investigation, it was discovered that the main cause of the leak was from the Contractor hitting the gasket retainer during valve assembly. The Contractor pulled up the breach (bonnet) which inadvertently knocked the keeper (gasket retainer) and caused it to slip down. When the steam pressure started to increase, it blew the gasket out and steam leaked from the bonnet. The Contractor was called in to rebuild the valve and on April 28th, Mountainview successfully started up Unit 3.

2. PROBLEM STATEMENT

STANDARD: Mountainview's expectation requires that all valves in the plant not leak.

DEVIATION: On April 24, 2015, the main steam block valve (HV-501) on Unit 3A leaked during startup.

CONSEQUENCE: a. **Actual-** Unable to startup Unit 3 as scheduled. The outage was extended by two days. Minor damage did occur.

b. **Potential-** Serious injury and significant equipment damage could have occurred if personnel were in close proximity and steam leak developed into a rupture.

3. EXTENT OF CONDITION

The Contractor worked on approximately 20 valves around the plant. Only the main steam block valve (HV-501) of Unit 3A leaked.

Attachment 4.1 (continued)
Mountainview Unit 3 Steam Leak Root Cause Evaluation Report

Mountainview Unit 3A Steam Leak--RCE

4. SEQUENCE OF EVENTS

1. Mountainview attempted to startup Unit 3 on April 26, 2015.
2. As pressure build, it was noticed that steam was leaking through the valve bonnet. This was documented in the Operators log on April 26th.
3. The unit was immediately shutdown and the Contractor who previously repaired the valve was called in. They tightened the packing but quickly discovered other issues involved. After disassembling the valve, they noticed that the gasket retainer was knocked off when the valve technician pulled up the bonnet. This caused the seal to blow off when steam pressure started to build.
4. A new ring was installed to replace the blown graphite gasket and the valve was reassembled and returned to service.
5. Unit 3 was successfully started up on April 28, 2015.

5. ANALYSIS AND CAUSES

5.1 Primary Cause: Human Error-Contractor

The Contractor took full responsibility for the incident. While rebuilding the valve, the gasket retainer was knocked off. Although there may have been some mitigating circumstances such as the location and the clearances involved, they were quick to dismiss them and stated that it was 100% their fault. Although they performed some tests, they failed to properly stroke the valve to ensure full travel of the breach.

6. CORRECTIVE ACTIONS:

Corrective Action Plan			
Element	Description	Responsible Lead	Due Date
Problem	Replaced gasket seal on valve.	Doug Russell, complete	April 27 2015
Cause	CA-1:Revision of valve testing procedures	Doug Russell, complete	April 27 2015

APPROVALS

Attachment 4.1 (continued)
Mountainview Unit 3 Steam Leak Root Cause Evaluation Report

Mountainview Unit 3A Steam Leak—RCE

RCE performed by: _____ Date: _____

RCE Approved by: _____ Date: _____

Attachment 5.1

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-08

To: ORA
Prepared by: Erin Childs
Title: Project Manager
Dated: 04/26/2016

Question 5.0:

5. For the contract amendments submitted in Chapter 7, please indicate which did NOT receive prior Commission approval in RY 2015, through any another Commission process or mechanism, and for which SCE is seeking Commission approval through its RY 2015 ERRR reporting.

Response to Question 5.0:

None of the contract amendments submitted in Chapter 7 received prior Commission approval. SCE is seeking Commission approval for all of the contract amendments through this 2015 Record Period ERRR Review Proceeding.

Attachment 5.2

Southern California Edison
April 2016 ERRR Review A.16-04-001

DATA REQUEST SET A1604001 ORA-SCE-08

To: ORA
Prepared by: Erin Childs
Title: Project Manager
Dated: 04/26/2016

Question 6.1:

1. For the following 39 contracts, please indicate whether the amendment **increased** or **decreased** the contract's notional value:

6.1. Walnut Creek LLC, Letter Agreement executed 2/25/2015

Response to Question 6.1:

CONFIDENTIAL
Protected Materials Pursuant to California Public Utilities Commission Decisions and
Applicable Law.
-Public Disclosure Restricted-



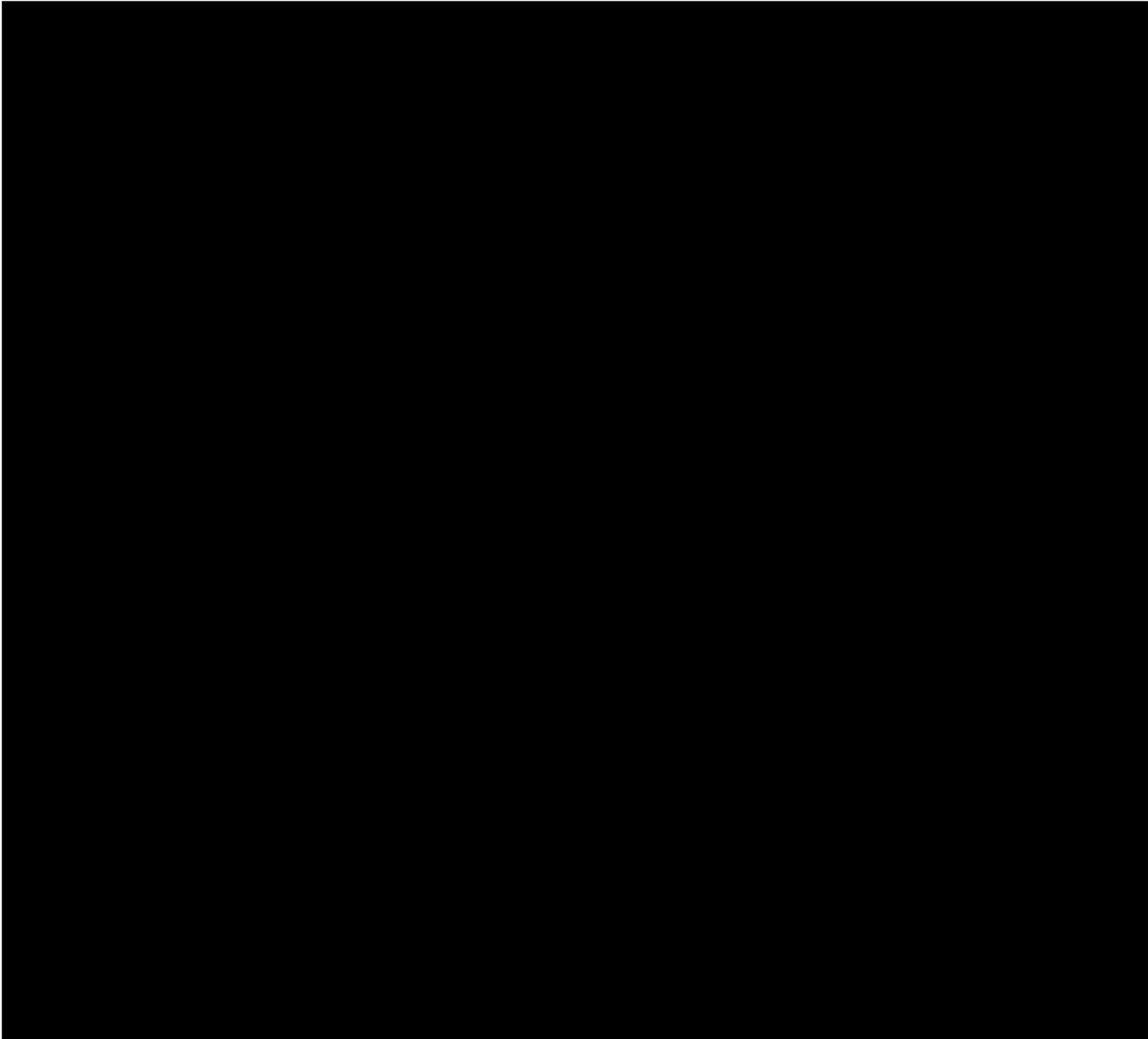
Attachment 5.3

Southern California Edison
April 2016 ERRR Review A.16-04-001

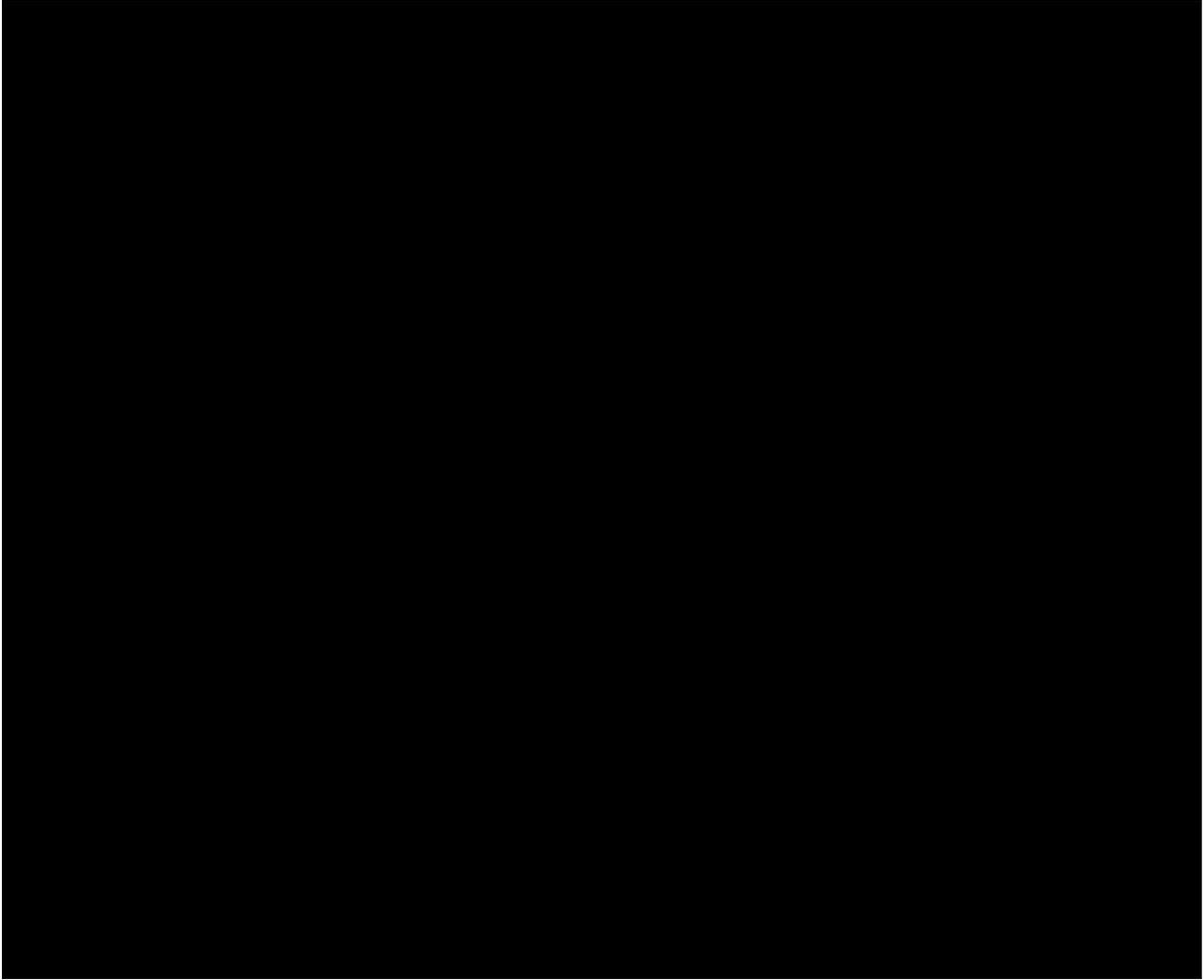
DATA REQUEST SET A1604001 ORA-SCE-08

To: ORA
Prepared by: Erin Childs
Title: Project Manager
Dated: 04/26/2016

Question 6.2-6.39:



Attachment 5.3 (continued)



Response to Question 6.2-6.39:

[Redacted]



Attachment 5.4

SCE Response to Data Request 6.2-6.39
Attachment ORA-SCE-008
(Confidential)

(Available via Email)