

Attachment 1

Description of the scenario recommended by CPUC Staff for use as the Base Case in the California Independent System Operator's 2011-2012 Transmission Planning Process

Update: Since this letter was sent on June 6, CPUC staff has updated the distribution of the small-scale solar PV that was included in the recommended base case. This change was made to correct errors in the PV distribution in the calculator used to develop the 33% RPS scenarios for the 2010 Long-Term Procurement Plan proceeding, and also to more accurately reflect the types of resources that are expected to contribute to the IOUs' PV programs and to the Renewable Auction Mechanism. The "Resources Selected by Scenario" table in this version of the attachment reflects the updated PV distribution – the total MW of PV is the same as in the June 6 table, but the distribution by service territory and type has changed. This redistribution also increased the average capacity factor of the PV resources in the scenario, resulting in a slightly smaller need for other generation to fill the RPS net short. The contribution from the "bundle" on the margin – Imperial with minor upgrades – thus decreased slightly, from 1725 MW to 1693 MW. There was no change to any of the other zones.

Further, in consultation with ISO staff, the assumed contribution of the Coolwater-Lugo line to incremental MW from the Kramer CREZ was increased from 277 MW to 700 MW, to reflect new information since the ISO's 2010-2011 Transmission Plan was adopted. This changed assumption is reflected on pages 3 and 4 of this updated attachment, but it did not change the resulting base case scenario.

Introduction and Summary of Proposed Base Case

California Public Utilities Commission (CPUC) staff proposes that the California Independent System Operator (ISO) use as its 2011-2012 base case an updated version of the Cost-Constrained Scenario that was a required scenario in the 2010 Long-Term Procurement Plan (LTPP) proceeding, Rulemaking (R.)10-05-006.

The proposed scenario, which reflects new information detailed below, includes the following resources:

Zone	Resources Selected by Scenario (MW)								
	Biogas	Biomass	Geo-thermal	Hydro	Large Scale Solar PV	Small Scale Solar PV	Solar Thermal	Wind	Total
Imperial	-	-	1,247	-	49	-	300	97	1,693
Tehachapi	-	37	-	-	-	-	-	3,452	3,489
NonCREZ	14	168	-	-	50	-	150	420	802
New Mexico	-	32	20	-	-	-	-	895	947
Riverside East	-	-	-	-	550	-	492	-	1,042
Northwest	-	97	-	-	-	-	-	614	711
San Diego South	-	21	-	-	-	-	-	678	699
Carrizo South	-	-	-	-	900	-	-	-	900
Solano	-	-	-	-	-	-	-	535	535
Distributed Solar - PG&E	-	-	-	-	-	773	-	-	773
Distributed Solar - SCE	-	-	-	-	-	750	-	-	750
Wyoming	2	-	-	-	-	-	-	459	461
Utah-Southern Idaho	21	-	134	13	-	-	-	90	258
Mountain Pass	-	-	-	-	-	-	410	113	523
Alberta	-	-	-	-	-	-	-	450	450
Colorado	-	-	-	-	-	-	-	420	420
Nevada C	-	-	-	-	50	-	400	-	450
Montana	-	-	-	-	-	-	-	300	300
Remote DG (Greenfield) - PG&E	-	-	-	-	-	412	-	-	412
San Bernardino - Lucerne	-	-	-	-	-	-	-	261	261
Arizona	-	-	-	-	290	-	-	-	290
Pisgah	-	-	-	-	-	-	275	-	275
Palm Springs	-	-	-	-	-	-	-	178	178
Remote DG (Brownfield) - PG&E	-	-	-	-	-	206	-	-	206
Round Mountain	-	-	22	-	-	-	-	78	100
British Columbia	50	-	-	-	-	-	-	-	50
Remote DG (Greenfield) - SCE	-	-	-	-	-	126	-	-	126
Distributed Solar - SDGE	-	-	-	-	-	78	-	-	78
Kramer	-	-	-	-	-	-	62	-	62
Remote DG (Brownfield) - SCE	-	-	-	-	-	63	-	-	63
Remote DG (Greenfield) - SDGE	-	-	-	-	-	17	-	-	17
Remote DG (Brownfield) - SDGE	-	-	-	-	-	9	-	-	9
Total In-State	14	226	1,269	0	1,549	2,436	1,689	5,812	12,995
Total Out-of-State	73	129	154	13	340	0	400	3,229	4,338
Total	87	355	1,423	13	1,889	2,436	2,089	9,041	17,332

Description of Updated Inputs, Relative to 2010 LTPP's Cost-Constrained Scenario

The inputs and methodology used to create the 33% RPS scenarios adopted for planning purposes in the 2010 LTPP proceeding are detailed in the proceeding's December 3, 2010 Scoping Memo¹ and the *Standardized Planning Assumptions – Part 2 (Renewables)* that accompanied the Scoping Memo and was updated slightly in a February 10, 2011 Ruling.² These inputs and methodology are reflected in the 33% RPS Calculator available for download on the CPUC's website: <http://www.cpuc.ca.gov/PUC/energy/Procurement/LTPP/LTPP2010/2010+LTPP+Tools+and+Spreadsheets.htm>.

To create the base case proposed for the ISO's 2011-2012 Transmission Planning Process, CPUC staff updated a limited set of inputs and assumptions in the RPS Calculator to reflect new information, then ran the model with the Scenario/Ranking Score Weighting set to "Cost-Constrained".

The changes to the inputs and assumptions used in the 2010 LTPP proceeding are detailed below:

Small-scale Solar PV in the Discounted Core

As described in the 2010 LTPP Scoping Memo, each of the required 33% RPS scenarios included a "discounted core" of resources that were held constant across all scenarios, with certain exceptions for resources that required new transmission. The *Standardized Planning Assumptions – Part 2 (Renewables)* explains that the discounted core included 1,052 MW of small-scale (≤ 20 MW) solar PV that would be developed under the IOUs' wholesale solar PV programs.³ The base case that Commission staff proposes here corrects an error whereby 384 MW of IOU Power Purchase Agreements (PPAs) signed outside of those wholesale PV programs were counted towards the 1,052 MW total. The full 1,052 MW from the wholesale solar PV programs as well as the 384 MW of small-scale PPAs (each of which met the test for inclusion in the discounted core of individual PPAs) are now included in the discounted core.

This proposed base case also adds to the discounted core an additional 1,000 MW of small-scale solar PV to reflect the interim procurement requirement under the Renewable Auction Mechanism (RAM).⁴ The 33% RPS scenarios required for the 2010 LTPP did not reflect the RAM program because that program was adopted by the CPUC in December 2010, after the finalization of the required 33% RPS scenarios. However, CPUC staff views the procurement directed under the RAM program as equivalent to or greater than the IOU solar programs in terms of surety of completion by 2020, justifying the inclusion of RAM's interim procurement requirement in the discounted core.

Together, these changes result in a **net increase of 1,384 MW of small-scale solar PV in the proposed base case** relative to the Cost-Constrained Scenario required in the 2010 LTPP.

¹ <http://docs.cpuc.ca.gov/efile/RULC/127542.pdf>

² <http://docs.cpuc.ca.gov/efile/RULINGS/130670.pdf>.

³ *Ibid.*, page 13

⁴ http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/128432.pdf.

Transmission Capacity and Cost Assumptions

In consultation with ISO staff, CPUC staff has updated the transmission assumptions that were used in Fall 2010 to create the required 33% RPS scenarios. Those older transmission assumptions were based on a May 2010 ISO staff assessment of capacity on the existing transmission system and capacity with minor upgrades.⁵ The updated assumptions described below reflect changes and new information gathered since that time, particularly the ISO's approved 2010-2011 Transmission Plan⁶, recently signed Large Generator Interconnection Agreements as reported in the 2010-2011 Plan and by ISO staff, and/or CPUC permitting approvals.

Below is an extract from the updated "g-TxInputs" tab of the 33% RPS Calculator, showing zones for which one or more of the transmission assumptions has been updated. Updated cells are shaded in orange.

	MW of Available Capacity on Existing Transmission (No Upgrades)	MW of Available Capacity on Existing Transmission (Minor Upgrades)	Cost of Minor Upgrades (\$M)	Segment Size (MW)	Segment Capital Cost (\$ millions)
Imperial	1125	2125	\$690	1,500	\$1,252
Kramer	62	62	\$0	700	\$542
Mountain Pass	1400	1400		1,500	\$1,287
Palm Springs	283	283		1,000	\$668
Pisgah	275	275	\$0	1,475	\$740
Riverside East	1317	1317		2,400	\$0.000001
Solano	0	535	\$40	1,000	\$538
Westlands	220	800	\$10	1,500	\$1,058

The reason for each of the changes above is described in more detail below, by zone:

Imperial

- Capacity on the "existing" system now assumes completion of a third 500/230kV bank at Imperial Valley substation that was previously considered a "minor upgrade"
- Capacity available with "minor upgrades" now assumes completion of Path 42 upgrades estimated by ISO staff at \$40 Million and West of Devers upgrades⁷ for \$650 Million⁸.

⁵ For the ISO's May 2010 estimates and an explanation of the overall approach to transmission consideration in the 33% RPS Calculator, see pages 17-22 and Appendix D of the *Standardized Planning Assumptions – Part 2 (Renewables)*.

⁶ See, in particular, pages 253-255 of the Plan at <http://www.caiso.com/2b88/2b8872c95ce10.pdf>.

⁷ Although the cost and scope of the West of Devers upgrades indicate that they should not be considered "minor", the incremental capacity added by those upgrades cannot be easily disentangled, for purposes of the Calculator's resource ranking, from the incremental capacity added by the Path 42 upgrades. Furthermore, classification as a "minor upgrade" versus a new transmission segment in the Calculator only affects a resource bundle's environmental score, and this is an update of the Cost-Constrained Scenario, in which environmental score is not a factor.

- Note: The cost of the West of Devers upgrades was assigned to Imperial as an incremental option, though it would also serve other zones, including Riverside East and Palm Springs.⁹

Kramer

- Capacity on the “existing” system now assumes completion of a Special Protection Scheme (SPS) that was previously considered a “minor upgrade”
- The first potential new transmission segment to this zone now reflects the 700 MW that would be added by the Coolwater-Lugo line, for \$542 Million¹⁰

Mountain Pass

- Capacity on the “existing” system now assumes completion of the Eldorado-Ivanpah transmission line

Palm Springs and Riverside East

- The 2010-2011 ISO Plan identified 1,600 MW total capacity from Riverside East and Palm Springs on the existing system. For the update of the Calculator, this 1,600 MW of “free” transmission capacity was allocated as 283 MW to Palm Springs and 1,317 MW to Riverside East, because the number of available generic and commercial resources in the 33% RPS Calculator totals only 283 MW for the Palm Springs CREZ.¹¹
- The 2010-2011 Plan indicates that the West of Devers upgrade would add 3,100 MW of incremental capacity from the Riverside East and Palm Springs CREZs. In consultation with ISO staff, this capacity was reduced for the Calculator to 2,400 MW of incremental capacity from Riverside East, to recognize the simultaneous constraints West of Devers when the model also chose significant amounts of generation from the Imperial CREZ.¹²

Pisgah

- Capacity on the “existing” system now assumes completion of an SPS that was previously considered a “minor upgrade”
- The first potential new transmission segment to this zone now reflects the 1,475 MW that would be added by the Pisgah-Lugo line, for \$740 Million¹³

⁸ Cost reported in Southern California Edison Company’s Petition for Declaratory Order for Incentive Rate Treatment, Volume 1, Federal Energy Regulatory Commission Docket EL11-10, http://elibrary.ferc.gov/idmws/docket_sheet.asp?docket=EL11-10&Subdocket=000, at page 15.

⁹ The cost of a single upgrade could not be split among zones, since the Calculator might then choose only one of those zones and, thus, only some portion of the transmission upgrade and its cost.

¹⁰ Cost reported in Southern California Edison Company’s Petition for Declaratory Order for Incentive Rate Treatment, Volume 1, Federal Energy Regulatory Commission Docket EL11-10, http://elibrary.ferc.gov/idmws/docket_sheet.asp?docket=EL11-10&Subdocket=000, at page 14.

¹¹ Under these assumptions, the Calculator chose 178 MW from Palm Springs and 1,042 MW from Riverside East, so this allocation of the 1,600 MW of “free” transmission capacity was not a binding constraint on either zone.

¹² This number was not a binding constraint on Riverside East, since the Calculator never chose more than 1,042 MW from that zone, not even using up the available “free transmission”, as described in Footnote 11.

¹³ Cost reported in Federal Energy Regulatory Commission, Order on Southern California Edison Company’s Petition for Declaratory Order Petition, Docket EL10-81, http://elibrary.ferc.gov/idmws/File_list.asp?document_id=13861516, at page 2.

Solano

- ISO staff reported that the amount of capacity accommodated by South of Contra Costa reconductoring (a “minor upgrade”) was 535 MW, slightly greater than the 300 MW used previously in the Calculator and reported in the 2010-2011 Plan. CAISO staff also revised downward the cost of that reconductoring, from \$100 Million to \$40 Million.

Westlands

- Capacity on the “existing” system now reflects the 220 MW reported in the 2010-2011 Transmission Plan
- ISO staff revised downward the cost of the Borden-Gregg reconductoring (a “minor upgrade”) that would allow a total of 800 MW from Westlands CREZ, from \$50 Million to \$10 Million.