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Background Material for March 10, 2015 Energy Commission Staff Webinar

Statewide Annual Planning Renewable Net Short (RNS) Update Preliminary IEPR 2015

The planning RNS is a key component in statewide transmission and generation planning simulation models. Its main purpose is to estimate the incremental amount of new renewables needed to meet statewide policy goals (considered a floor). The planning RNS is not intended to guide RPS renewable procurement plans, only to guide statewide transmission and generation planning simulation models.

The planning RNS tables are calculated annually by Energy Commission staff based on the November 2011 report, *Proposed Method to Calculate the Amount of New Renewable Generation Needed to Comply with Policy Goals*.

See http://www.energy.ca.gov/2011_energy/policy/documents/index.html#03082011.

This report documents the method to calculate a range of statewide planning RNS forecasts based on the most recent adopted demand forecast of retail sales.

The following tables include the 2015-2026 planning RNS. These tables use data from the 2014 *Integrated Energy Policy Report (IEPR) Update* and the 2013 IEPR filings. For more information, contact Angela Tanghetti of the Supply Analysis Office, Energy Assessments Division by email angela.tanghetti@energy.ca.gov or telephone (916) 654-4854.

Sources of Data:

Line 1 - Statewide Retail Sales - Low, Mid, and High case demand forecasts: Form 1.1c Line 69
http://www.energy.ca.gov/2014_energy/policy/documents/demand_forecast_cmf/LSE_and_BA/

Line 2 - Retail sales excluded from the RNS calculation, such as entities with a special RPS compliance obligation (CDWR, WAPA, MWD, CCSF, etc.) and the Statewide Pump Load - Low, Mid, and High case demand forecasts: Form 1.1c Line 70
http://www.energy.ca.gov/2014_energy/policy/documents/demand_forecast_cmf/LSE_and_BA/

Line 4 - IEPR 2013 IOU Additional Achievable Energy Efficiency - All sectors total GWh:
<http://www.energy.ca.gov/2014publications/CEC-200-2014-009/CEC-200-2014-009-CMF.pdf> pg 44-45

Line 5 - IEPR 2013 POU Incremental Energy Efficiency from Energy Supply Plan (S-2) filings:
http://energyalmanac.ca.gov/electricity/s-2_supply_forms_2013/

Line 6 - Additional New Combined Heat and Power (on-site portion) - Based on an updated ICF report in support of the 2011 IEPR: (the year 2015 new CHP forecast is shifted to begin operating in the year 2019)
<http://www.energy.ca.gov/2012publications/CEC-200-2012-002/CEC-200-2012-002-REV.pdf>.

Lines 9-11 - Operational RPS Renewable Generation:
http://energyalmanac.ca.gov/renewables/net_short/RNS_Update_Report_Operational_Generation.xlsx

	All Values in TWh for the Year 2015	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		265.2	268.0	271.2
2	Non RPS Deliveries (CDWR, WAPA, MWD,CCSF, etc.)		10.7	10.8	10.8
3	Retail Sales for RPS	3=1-2	254.5	257.3	260.5
4	Additional Achievable Energy Efficiency IOU CED 2014		3.0	2.3	1.7
5	Incremental Energy Efficiency POU IEPR 2013 S-2		1.4	1.3	0.8
6	Additional New Combined Heat and Power		-	-	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	250.1	253.7	258.0
8	Total Renewable Energy Needed For 23% RPS	8=7* 23%	57.5	58.3	59.3
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2015)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2015)		12.7	12.7	12.7
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	66.3	66.3	66.3
13	Total RE Net Short to meet 23% RPS In 2015 (TWh)	13=8-12	(8.8)	(8.0)	(7.0)

	All Values in TWh for the Year 2016	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		265.1	270.3	275.9
2	Non RPS Deliveries (CDWR, WAPA, MWD,CCSF, etc.)		10.7	10.8	10.8
3	Retail Sales for RPS	3=1-2	254.4	259.5	265.1
4	Additional Achievable Energy Efficiency IOU CED 2014		6.1	4.6	3.1
5	Incremental Energy Efficiency POU IEPR 2013 S-2		1.8	1.5	0.9
6	Additional New Combined Heat and Power		-	-	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	246.4	253.4	261.0
8	Total Renewable Energy Needed For 25% RPS	8=7* 25%	61.6	63.3	65.3
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2014)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2014)		12.7	12.7	12.7
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	66.3	66.3	66.3
13	Total RE Net Short to meet 25% RPS In 2016 (TWh)	13=8-12	(4.7)	(3.0)	(1.1)

	All Values in TWh for the Year 2017	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		266.3	273.2	281.0
2	Non RPS Deliveries (CDWR, WAPA, MWD, CCSF, etc.)		10.7	10.8	10.8
3	Retail Sales for RPS	3=1-2	255.5	262.5	270.2
4	Additional Achievable Energy Efficiency IOU CED 2014		9.5	6.8	4.6
5	Incremental Energy Efficiency POU IEPR 2013 S-2		2.2	1.7	1.1
6	Additional New Combined Heat and Power		-	-	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	243.8	253.9	264.5
8	Total Renewable Energy Needed For 27% RPS	8=7* 27%	65.8	68.6	71.4
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2014)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2014)		12.7	12.7	12.7
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	66.3	66.3	66.3
13	Total RE Net Short to meet 27% RPS In 2017 (TWh)	13=8-12	(0.5)	2.3	5.1

	All Values in TWh for the Year 2018	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		267.8	276.0	285.6
2	Non RPS Deliveries (CDWR, WAPA, MWD,CCSF, etc.)		10.8	10.8	10.8
3	Retail Sales for RPS	3=1-2	257.0	265.2	274.8
4	Additional Achievable Energy Efficiency IOU CED 2014		12.6	8.6	5.5
5	Incremental Energy Efficiency POU IEPR 2013 S-2		2.9	2.1	1.3
6	Additional New Combined Heat and Power		-	-	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	241.5	254.4	268.1
8	Total Renewable Energy Needed For 28% RPS	8=7* 28%	67.6	71.2	75.1
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2014)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2014)		12.7	12.7	12.7
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	66.3	66.3	66.3
13	Total RE Net Short to meet 28% RPS In 2018 (TWh)	13=8-12	1.3	4.9	8.8

	All Values in TWh for the Year 2019	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		269.3	279.4	290.7
2	Non RPS Deliveries (CDWR, WAPA, MWD,CCSF, etc.)		10.8	10.8	10.8
3	Retail Sales for RPS	3=1-2	258.5	268.6	279.9
4	Additional Achievable Energy Efficiency IOU CED 2014		15.7	10.6	6.6
5	Incremental Energy Efficiency POU IEPR 2013 S-2		3.6	2.5	1.5
6	Additional Combined Heat and Power		1.7	0.7	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	237.5	254.8	271.8
8	Total Renewable Energy Needed For 31% RPS	8=7* 31%	73.6	79.0	84.2
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2014)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2014)		12.3	12.3	12.3
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	65.9	65.9	65.9
13	Total RE Net Short to meet 31% RPS In 2019 (TWh)	13=8-12	7.7	13.1	18.3

	All Values in TWh for the Year 2020	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		272.2	282.8	295.9
2	Non RPS Deliveries (CDWR, WAPA, MWD,CCSF, etc.)		10.8	10.8	10.8
3	Retail Sales for RPS	3=1-2	261.5	272.0	285.0
4	Additional Achievable Energy Efficiency IOU CED 2014		18.7	12.3	7.7
5	Incremental Energy Efficiency POU IEPR 2013 S-2		4.2	2.9	1.7
6	Additional New Combined Heat and Power		5.4	2.4	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	233.2	254.4	275.7
8	Total Renewable Energy Needed For 33% RPS	8=7* 33%	77.0	84.0	91.0
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2014)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2014)		12.3	12.3	12.3
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	65.9	65.9	65.9
13	Total RE Net Short to meet 33% RPS In 2020 (TWh)	13=8-12	11.1	18.1	25.1

	All Values in TWh for the Year 2021	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		274.8	286.0	300.2
2	Non RPS Deliveries (CDWR, WAPA, MWD, CCSF, etc.)		10.8	10.8	10.9
3	Retail Sales for RPS	3=1-2	264.0	275.2	289.4
4	Additional Achievable Energy Efficiency IOU CED 2014		21.9	14.2	8.7
5	Incremental Energy Efficiency POU IEPR 2013 S-2		4.7	3.2	1.8
6	Additional New Combined Heat and Power		8.4	3.8	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	229.0	254.0	278.9
8	Total Renewable Energy Needed For 33% RPS	8=7* 33%	75.6	83.8	92.0
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2014)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2014)		12.3	12.3	12.3
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	65.9	65.9	65.9
13	Total RE Net Short to meet 33% RPS In 2021 (TWh)	13=8-12	9.7	17.9	26.1

	All Values in TWh for the Year 2022	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		277.4	289.4	304.5
2	Non RPS Deliveries (CDWR, WAPA, MWD,CCSF, etc.)		10.8	10.8	10.9
3	Retail Sales for RPS	3=1-2	266.6	278.6	293.6
4	Additional Achievable Energy Efficiency IOU CED 2014		25.4	16.1	9.7
5	Incremental Energy Efficiency POU IEPR 2013 S-2		5.3	3.4	2.0
6	Additional New Combined Heat and Power		10.8	4.8	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	225.1	254.2	281.8
8	Total Renewable Energy Needed For 33% RPS	8=7* 33%	74.3	83.9	93.0
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2014)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2014)		12.1	12.1	12.1
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	65.7	65.7	65.7
13	Total RE Net Short to meet 33% RPS In 2022 (TWh)	13=8-12	8.5	18.2	27.3

	All Values in TWh for the Year 2023	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		279.8	292.6	308.3
2	Non RPS Deliveries (CDWR, WAPA, MWD,CCSF, etc.)		10.8	10.9	10.9
3	Retail Sales for RPS	3=1-2	269.0	281.7	297.4
4	Additional Achievable Energy Efficiency IOU CED 2014		29.1	18.2	10.9
5	Incremental Energy Efficiency POU IEPR 2013 S-2		5.3	3.4	2.0
6	Additional New Combined Heat and Power		13.3	5.7	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	221.4	254.3	284.5
8	Total Renewable Energy Needed For 33% RPS	8=7* 33%	73.0	83.9	93.9
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2014)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2014)		11.6	11.6	11.6
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	65.3	65.3	65.3
13	Total RE Net Short to meet 33% RPS In 2023 (TWh)	13=8-12	7.8	18.7	28.6

	All Values in TWh for the Year 2024	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		282.1	295.6	312.2
2	Non RPS Deliveries (CDWR, WAPA, MWD,CCSF, etc.)		10.9	10.9	10.9
3	Retail Sales for RPS	3=1-2	271.2	284.7	301.3
4	Additional Achievable Energy Efficiency IOU CED 2014		32.9	20.4	12.1
5	Incremental Energy Efficiency POU IEPR 2013 S-2		5.3	3.4	2.0
6	Additional New Combined Heat and Power		15.7	6.7	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	217.4	254.2	287.1
8	Total Renewable Energy Needed For 33% RPS	8=7* 33%	71.7	83.9	94.8
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2014)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2014)		11.1	11.1	11.1
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	64.8	64.8	64.8
13	Total RE Net Short to meet 33% RPS In 2024 (TWh)	13=8-12	7.0	19.1	30.0

	All Values in TWh for the Year 2025	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		284.6	298.7	316.2
2	Non RPS Deliveries (CDWR, WAPA, MWD,CCSF, etc.)		10.9	10.9	10.9
3	Retail Sales for RPS	3=1-2	273.7	287.8	305.3
4	Additional Achievable Energy Efficiency IOU CED 2014		37.1	22.7	13.4
5	Incremental Energy Efficiency POU IEPR 2013 S-2		5.3	3.4	2.0
6	Additional New Combined Heat and Power		18.1	7.6	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	213.2	254.1	289.9
8	Total Renewable Energy Needed For 33% RPS	8=7* 33%	70.3	83.8	95.7
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2014)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2014)		10.6	10.6	10.6
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	64.2	64.2	64.2
13	Total RE Net Short to meet 33% RPS In 2025 (TWh)	13=8-12	6.1	19.6	31.4

	All Values in TWh for the Year 2026	Formula	Low Demand Forecast Renewable Net Short	Mid Demand Forecast Renewable Net Short	High Demand Forecast Renewable Net Short
Renewable Energy Target					
1	Statewide Retail Sales CED 2014 Adopted		286.2	301.7	320.9
2	Non RPS Deliveries (CDWR, WAPA, MWD,CCSF, etc.)		10.9	10.9	11.0
3	Retail Sales for RPS	3=1-2	275.4	290.8	309.9
4	Additional Achievable Energy Efficiency IOU CED 2014		42.0	25.3	14.9
5	Incremental Energy Efficiency POU IEPR 2013 S-2		5.3	3.4	2.0
6	Additional New Combined Heat and Power		18.8	8.0	-
7	Adjusted Statewide Retail Sales for RPS	7=3-4-5-6	209.3	254.0	293.1
8	Total Renewable Energy Needed For 33% RPS	8=7* 33%	69.1	83.8	96.7
Operational Renewable Generation					
9	Total In-State Renewable Generation (COD prior to 1/1/2014)		53.2	53.2	53.2
10	Total Out-of-State Renewable Generation (COD prior to 1/1/2014)		10.3	10.3	10.3
11	Renewable Auction Mechanism (RAM)		0.4	0.4	0.4
12	Total Operational Renewable Generation for CA RPS	12=9+10+11	64.0	64.0	64.0
13	Total RE Net Short to meet 33% RPS In 2026 (TWh)	13=8-12	5.1	19.9	32.8