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**Proposed Changes to
Final 2018 Integrated Energy Policy Report Update, Volume II**

**For Consideration at the February 20, 2019
California Energy Commission Business Meeting**

Page numbers refer to the report posted on January 28, 2019, that does not show changes in underline-strikeout (docket number 18-IEPR-01, TN# 226392). Added text is shown in underline; ~~deleted text shown in strikeout~~.

Executive summary, page 11

The Energy Commission, CPUC, and the California ISO continue to work together to address reliability issues first with the closure of San Onofre and, with the additional partnership of the Los Angeles Department of Water and Power, to address reliability issues related to Aliso Canyon. ~~(See Figure ES-5.)~~ This year marks the third year of analysis by the joint agency team of the natural gas and electricity systems, this time for summer 2018 (see Figure ES-5) and winter 2018–2019. For all scenarios studied, the analysis finds that pipeline capacity is more constrained in 2018 than in the previous year, meaning there is a greater risk of service interruptions than last year or solely due to restricted use of Aliso Canyon. The summer 2018 study identified five new mitigation measures, including steps to increase local gas and electricity supply, to help improve the short-term reliability concerns. Reliability risks remain the same in winter 2018–2019, with the possibility of multiple cold days late in winter posing the greatest risk to energy reliability in the region.

Chapter 3, page 88:

~~More than~~As shown in Table 8, almost 2,900 MW of summer peak natural gas-fired generation capacity retired between July 1, 2017, and December 31, 2018~~in the first half of 2017~~, all within the California ISO service territory. ~~Since then, another 1,491 MW of primarily natural gas capacity has retired; the plants are listed in Table 8.~~

Chapter 3, page 89, Table 8, Generation Plant Retirements, July 2017 to Date December 31, 2018:

Plant/Units	Fuel	Peak MW	Retirement Date
San Joaquin Cogen	Natural Gas	43	7/19/2017
Broadway 3	Natural Gas	65	8/3/2017
Zond Windsystems	Wind	8	8/24/2017
Graphic Packaging Cogen	Natural Gas	24	12/30/2017
King City Energy Center	Natural Gas	39	12/31/2017
Wolfskill Energy Center	Natural Gas	41	12/31/2017
Kearney GT3	Natural Gas	61	1/9/2018
Mandalay 1-3	Natural Gas	560	2/15/2018
Etiwanda 3-4	Natural Gas	640	6/1/2018
Bell Bandini Commerce Refuse	Biomass	10	6/30/2018
<u>Tracy Biomass</u>	<u>Biomass</u>	<u>5</u>	<u>8/29/2018</u>
<u>Encina Units 1-5</u>	<u>Natural Gas</u>	<u>859</u>	<u>12/12/2018</u>
<u>La Paloma Units 3-4*</u>	<u>Natural Gas</u>	<u>516</u>	<u>12/21/2018</u>
<u>North Island</u>	<u>Natural Gas</u>	<u>36</u>	<u>12/31/2018</u>
<u>Division Naval Station</u>	<u>Natural Gas</u>	<u>44</u>	<u>12/31/2018</u>
<u>NTC/MCRD Cogeneration</u>	<u>Natural Gas</u>	<u>20</u>	<u>12/31/2018</u>
Total		<u>1,4912,891</u>	

Source: California ISO Market Notice, ~~July 6, 2018~~ January 10, 2019. *Postponed, may return to service

Chapter 3, page 89:

More than ~~1,800~~1,200 MW is expected to retire in ~~the next year~~2019, as presented in Table 9.

Chapter 3, page 89, Table 9, Expected Generation Plant Retirements, 2019(~~July 2018 to June 2019~~):

Replace existing table (shown below)

Plant/Units	Fuel	Peak MW	Retirement Date
Ormond Beach (one of two units)	Natural Gas	741 or 775	10/1/2018
Encina 2 - 5	Natural Gas	840	12/31/2018
Encina GT	Natural Gas	14	12/31/2018
Gilroy Cogen	Natural Gas	120	1/1/2019
Total		1,806 – 1,830	

With this table (shown below)

Plant/Units	Fuel	Peak MW	Retirement Date
La Paloma Units 1-2*	Natural Gas	520	2/20/2019
Greenleaf 1*	Natural Gas	47	3/11/2019
Calpine American Cogen	Natural Gas	87	5/1/2019
Redondo Beach Unit 7	Natural Gas	344	10/31/2019
Huntington Beach Unit 1	Natural Gas	226	10/31/2019
Total		1,224	

Source: California ISO Market Notice, July 6, 2018 January 10, 2019, *Proposed for postponement, may return to service

Chapter 3, page 89:

~~The retirement of the Encina natural gas-fired units in the San Diego area is conditional on the Carlsbad natural gas facility (500 MW) coming on-line. The California ISO has awarded reliability must-run contracts to two units in the Big Creek/Ventura local reliability area that requested permission to retire. The California ISO determined that the retirement of the 54 MW of the Ellwood power plant would result in a 45 MW deficiency in the Santa Clara subarea next year, while the loss of both Ormond Beach units would result in a 170 MW shortage in the Moorpark subarea. The California ISO expects the units will also be needed in 2020, while the local reliability area awaits completion of a 230 kilovolt (kV) transmission line, and Southern California Edison (SCE) completes the procurement of new resources (expected to be on-line in 2021). For a complete discussion of resource needs in Southern California, see Chapter 6. With the exception of Calpine American Cogen, the 2019 retirements are conditional upon the California ISO finding that the units are not needed for reliability. (The Huntington Beach retirement is conditional upon completion of replacement capacity being constructed onsite.)~~

Chapter 3, 89, footnote 172:

~~See memorandum from Keith Casey, California ISO vice president of market and infrastructure development, to the California ISO Board of Governors, July 18, 2018, available at http://www.caiso.com/Documents/Decision_ReliabilityMustRunDesignation_EllwoodGeneratingStation_OrmondBeachGeneratingStation-Memo-Jul2018.pdf. For a discussion of current reliability issues in Southern California, see materials for the IEPB joint agency workshop on Energy Reliability in Southern California, May 8, 2018, available at http://www.energy.ca.gov/2018_energypolicy/documents/#05082018.~~

Chapter 3, page 90

Utility-Scale Generation Additions Since July 2017

California continues to add utility-scale generation, almost all of which is renewable. As shown in Table 10, ~~31 of the 40~~ 59 of the 73 projects added since July 1, 2017 through December 2018, are solar photovoltaic (~~928 MW~~ 1,339 MW), with ~~only two~~ three of them combusting natural gas (~~32~~ 557 MW).

Chapter 3, page 90, Table 10

Replace existing table and title (shown below)

Table 10: Utility-Scale Generation Additions in California Since July 1, 2017

Technology	< 20 MW		≥ 20 MW		Total	
	Number	MW	Number	MW	Number	MW
Solar	14	43	17	885	31	928
Wind	1	2	2	177	3	179
Biofuel	3	3	1	35	4	38
Natural Gas	1	4	1	28	2	32
Total	19	52	21	1,125	40	1,177

With this table and title (shown below)

Table 10: Utility-Scale Generation Additions in California ~~Since July 1, 2017~~ From July 2017 Through December 2018

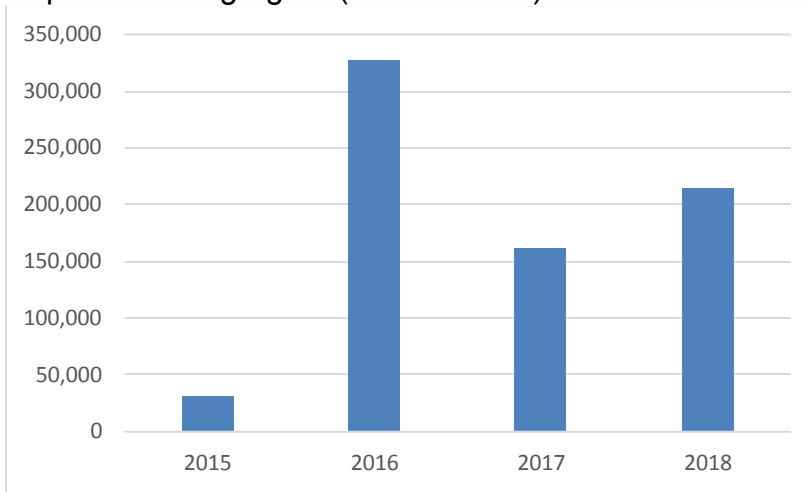
Technology	< 20 MW		≥ 20 MW		Total	
	Number	MW	Number	MW	Number	MW
Solar	36	107	23	1232	59	1,339
Wind	3	5	3	306	6	311
Biofuel	3	3	2	55	5	58
Natural Gas	1	4	2	553	3	557
Total	43	119	30	2146	73	2,265

Chapter 3, page 91, footnote 173:

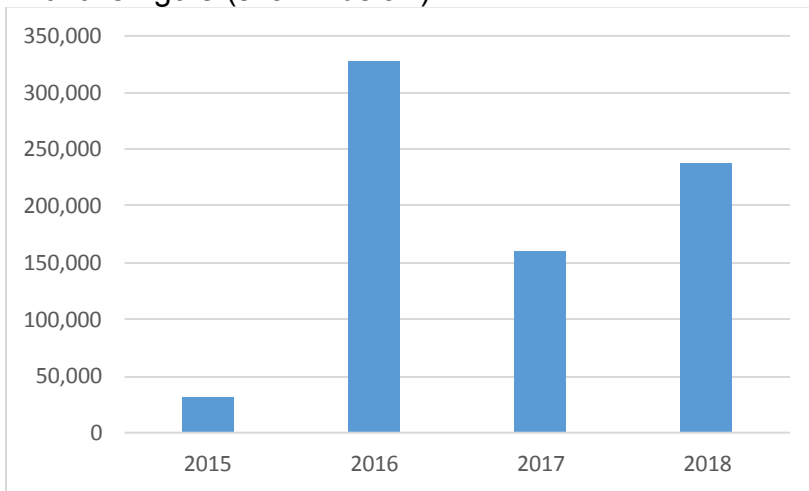
Issued in R.17-09-020 on November 21, 2018, the ~~Commission~~ CPUC tabled consideration of the decision at its meeting on January 10, 2019, and placed it on the agenda for its meeting on ~~January 3~~ February 21, 2019.

Chapter 3, page 93, Figure 14, Annual Avoided Renewable Curtailment due to Western EIM (MWh):

Replace existing figure (shown below)



With this figure (shown below)



Chapter 3, page 93-94:

Reductions in renewable curtailment in ~~the first three quarters of 2018~~ exceeded those for ~~all of 2017~~; total reductions through ~~December 31~~September 30, 2018, since 2015 exceed ~~734,000~~757,000 MWh. Associated reductions in GHG emissions are more than ~~314,000~~324,000 metric tons CO₂e.

Table 11 illustrates the gross benefits associated with the Western EIM since its inception. Annual benefits increase each year as more balancing authorities participate; total gross benefits exceed ~~\$500~~\$564 million through the ~~third quarter end~~ of 2018.

Chapter 3, page 94, Table 11, Gross Benefits of Western EIM (Million \$US):

Balancing Authority	2014	2015	2016	2017	2018 (9/30)	Total
Arizona Public Service			\$5.98	\$34.56	\$45.30 <u>\$35.27</u>	\$85.84 <u>\$75.84</u>
California ISO	\$1.24	\$12.66	\$28.34	\$36.96	\$67.94 <u>\$63.80</u>	\$147.14 <u>\$143.00</u>
Idaho Power					\$26.88 <u>\$21.06</u>	\$26.88 <u>\$21.06</u>
NV Energy		\$0.84	\$15.57	\$24.20	\$25.55 <u>\$20.60</u>	\$66.16 <u>\$61.24</u>
PacifiCorp	\$4.73	\$26.23	\$45.47	\$37.41	\$61.68 <u>\$40.00</u>	\$175.52 <u>\$153.84</u>
Portland Gen'l Electric				\$2.83	\$27.57 <u>\$18.45</u>	\$30.40 <u>\$21.28</u>
Powerex					\$7.84 <u>\$4.92</u>	\$7.84 <u>\$4.92</u>
Puget Sound Energy			\$1.56	\$9.86	\$13.68 <u>\$9.77</u>	\$25.10 <u>\$21.19</u>
Total	\$5.97	\$39.73	\$96.92	\$145.82	\$276.44 <u>\$213.87</u>	\$564.88 <u>\$502.31</u>

Chapter 3, page 94, footnote 183:

Western EIM Benefits Report, Fourth Quarter 2018, California ISO, ~~October 29, 2018~~January 31, 2019, p. ~~14~~pp. 14-15. GHG emissions reductions are based on an emissions factor for energy displaced by additional renewable generation of 0.428 metric tons CO₂e per MWh.

Chapter 6, page 189-190

On August 8, 2018, California Attorney General Xavier Becerra, along with the California Air Resources Board (CARB), ~~and the County of Los Angeles, and the Los Angeles City Attorney's Office~~, announced having reached a settlement to resolve their outstanding claims against SoCalGas from the massive gas well leak at Aliso Canyon.³⁹⁹

³⁹⁹ See settlement agreement at <https://oag.ca.gov/system/files/attachments/press-docs/notice-lodging-and-proposed-cd-full.pdf>.

If approved by the Los Angeles County Superior Court, SoCalGas will take four key actions, in addition to paying \$119.5 million:

- Monitor methane at the Aliso Canyon facility fence line and post the data online in near real time for eight years, with certain methane levels triggering new reporting requirements.
- Create a new internal safety committee, which shall remain in place for eight years from approval of the settlement by the court.
- Retain an independent “safety ombudsman” to evaluate the internal safety committee’s work and report to the public on safety-related issues at the Aliso Canyon facility for eight years following approval of the settlement by the court.
- Refrain from shifting the cost of this settlement ~~and actions taken to respond to the leak to SoCalGas’ ratepayers.~~

The \$119.5 million settlement payment is broken down as follows:⁴⁰⁰

- \$26.5 million– GHG mitigation program to be invested in dairy biogas-collection infrastructure to fully mitigate the 109,000 metric tons of methane emitted by the leak
- \$7.6 million– GHG mitigation reserve
- \$45.4 million– Supplemental environmental projects, including \$25 million for a long-term health study,⁴⁰¹ a local air monitoring network in Porter Ranch, air filtration systems in public schools, electric school buses, mobile asthma clinics, lead paint abatement of homes near the closed Exide battery recycling plant, and a fund to provide grants for other air pollution reduction projects
- \$19 million– Reimbursement for costs incurred by government agencies.
- \$21 million– Civil penalties ~~for violations of California law, legal fees, and investigative costs.~~

Chapter 6, page 191

Current Operating Status of the SoCalGas System as of April 2018

Reliability challenges continue in Southern California despite the increase in allowed/permitted inventory at the Aliso Canyon storage facility. Significant natural gas pipeline outages on the SoCalGas system are the primary reason. Four key pipeline

400 https://www.arb.ca.gov/html/aliso-canyon/aliso-canyon-mitigation-agreement.pdf?_ga=2.120101964.557895652.1533753574-568780011.1524768107&utm_medium=email&utm_source=govdelivery.

401 The Porter Ranch Neighborhood Council expressed concerns about the long-term health impacts from exposure to crude oil (a constituent of the gas) from the gas leak, see letter from Issam Najm, president of the Porter Ranch Neighborhood Council to CPUC Commissioners Picker, Peterman, Randolph, Guzman Aceves, and Rechtschaffen, TN#225672, and response from Commissioner Randolph, TN# 225889 at <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=18-IEPR-03>.

outages continue in 2018, reducing system capacity by more than 1 Bcfd from full system capacity.⁴⁰³

- Line 235-2 ruptured on October 1, 2017, and damaged nearby Line 4000 ^{**[new footnote]} There is no return-to-service date identified yet for Line 235-2.
- Line 4000 has been in and out of service and is operating at reduced pressure such that only an incremental 270 million cubic feet per day (MMcfd) is allowed into the system.
- Line 3000 has been out of service ~~since between~~ July 2016 and September 17, 2018. The in-service date of Line 3000 ~~has been~~ was delayed multiple times, ~~and the line returned to service September 17, 2018~~. However, the return to service of Line 3000 will not incrementally increase system capacity due to the bottleneck created by losses on Lines 235-2 and 4000.

^{**[new footnote]} SoCalGas commented that “the remediation work for line 4000, however, was not caused by damage from the rupture of Line 235-2.” (See TN #26490 in docket 18-IEPR-01, February 8, 2018.)

Chapter 6, page 203:

Winter 2018–2019

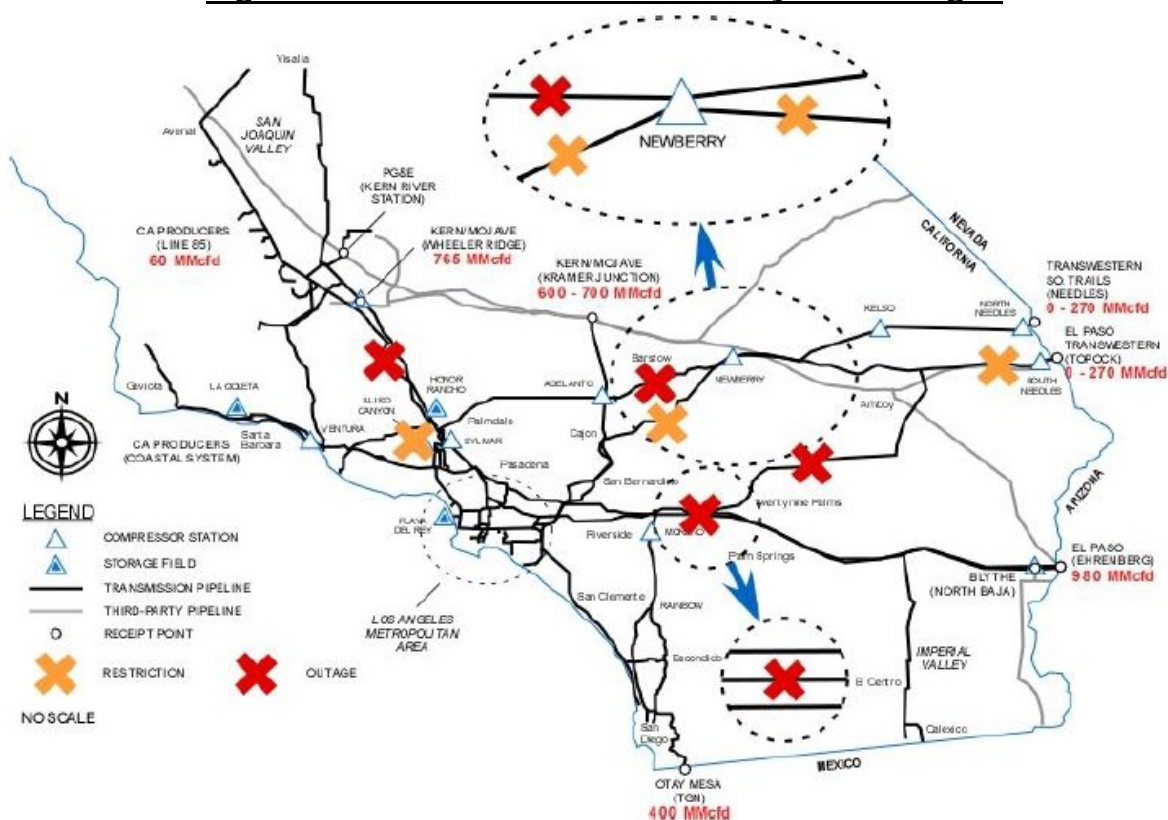
Winter 2018–2019 marks the third winter that the joint agency technical assessment group released a winter assessment (*2018–2019 Winter Assessment*).⁴²⁷ Southern California continues to face reliability challenges to its energy system in winter 2018–2019, primarily due to continuing outages and reduced capacity on key natural gas pipelines. The current operating status of the SoCalGas system is mostly unchanged from last winter, as described in the section “Current Operating Status of the SoCalGas System,” except for the extra gas stored at Aliso Canyon and Line 3000, which returned to service September 17, 2018, at reduced operating pressure, in theory allowing receipts from the Topock area. (See Figure XX.)

New Figure (shown below)

⁴⁰³ Full system capacity of 3.875 Bcfd (revised to 3.775 Bcfd due to derating of pipeline in the Line 85 zone) less 2.655 Bcfd (current operating capacity as of April 10) is 1.220 Bcfd, which is greater than 1.0 Bcfd.⁴²

⁴²⁷ *Aliso Canyon Risk Assessment Technical Report Winter 2018-19 Supplement, October 10, 2018.*
https://www.energy.ca.gov/2018_energypolicy/documents/#05082018.

Figure XX: Southern California Gas System Outages



Source: SoCalGas

As mentioned, the return to service of Line 3000 does not incrementally increase supply due to the bottleneck created by losses on Line 235-2 and Line 4000. Table 22 presents feasible sendout from the SoCalGas system for winter 2018–2019 with and without gas system mitigations.

Chapter 6, page 211:

The joint agency team continues to track three active transmission projects out of nine projects approved in the San Onofre area, and the other six projects were completed and placed in service as of 2017. The three projects being tracked include two critical transmission lines and up to 1,800 mega volt ampere reactive (MVAR) of reactive support identified in the 2017 IEPR. The transmission projects being tracked, the sponsor, and expected in-service dates are shown in Table 25, with further discussion provided below. Two of the projects are ~~scheduled to be~~ came on-line in 2018, with the in-service date for the last project in 2022. Two large transmission line projects are encountering delays; a mitigation measure was implemented for the Sycamore Canyon–Peñasquitos line to maintain reliability for summer 2018.