

## DOCKETED

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# Proposed Changes to *Final 2016 Integrated Energy Policy Report Update*

## For Consideration at the February 15, 2017 California Energy Commission Business Meeting

*Page numbers refer to the report posted on January 18, 2017, that does not show changes in underline-strikeout (docket number 16-IEPR-01, TN#215418). Added text is shown in underline; ~~deleted text shown in strikeout~~.*

### **Executive Summary, page 3:**

Collectively, 167~~165~~ jurisdictions representing 33 countries, 1.094~~1.08~~ billion people, and 35 percent of the global economy have signed or endorsed the *Subnational Global Climate Leadership Memorandum of Understanding*.

### **Executive Summary, page 6:**

If not for energy transfers through the EIM, the California ISO would have curtailed 328,000~~272,000~~ MWh of renewable energy in the first half of 2016, equivalent to 140,000~~116,000~~ metric tons of carbon emissions.

### **Chapter 1, Environmental Performance of the Electricity Generation System, page 25:**

The growth in renewable generation serving California by resource type from 1983–2014 is shown in Figure 8 on the next page. The data in Figure 8 are intended to be representative of RPS-eligible generation, and so it includes energy delivered into California from out-of-state facilities that are RPS-eligible.<sup>1</sup> Overlaid on the graph are some of the policies, discussed above, that helped stimulate the market for renewables. Prior to the RPS, Figure 8 shows the resurgence of renewable resources in the state beginning in 1980s, resulting largely from policies established by Governor Brown under his first administration.<sup>2</sup> The next major increase in renewable projects came roughly after 2008, when projects procured in response to the RPS began coming on-line.<sup>3</sup> The increase in renewable energy generation after 2008 coincides with decreases in GHG emissions in the electricity sector, as seen in Figure 4. The Energy Commission estimates that about 27 percent of California’s electricity retail sales in 2016 were served by renewable energy.<sup>4</sup> California is well on its way to meeting the requirement for 33 percent renewables by 2020.

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1 The data in Figure 6 are a proxy for the RPS but do not reflect the RPS accounting rules that allow for, among other things, carry-over between multi-year compliance periods. For more information, see the section on “Percentage Renewable is a Proxy for RPS Progress” at [http://www.energy.ca.gov/renewables/tracking\\_progress/#renewable](http://www.energy.ca.gov/renewables/tracking_progress/#renewable).

2 To implement the Public Utility Regulatory Policies Act of 1978, which was passed at the federal level in response to the 1973 energy crisis, California instituted standard offer contracts for renewable projects that spurred renewable development in the state.

3 The original RPS statute was passed in 2002.

4 The California Energy Commission’s Tracking Progress webpage, Renewable Energy, updated December 22, 2016, and posted December 27, 2016, [http://www.energy.ca.gov/renewables/tracking\\_progress/#renewable](http://www.energy.ca.gov/renewables/tracking_progress/#renewable).

**Chapter 1, Environmental Performance of the Electricity Generation System, page 37:**

The benefits of avoided renewables curtailment are significant according to California ISO studies, with an estimated ~~328,000-305,000~~ megawatt-hours (MWh) exported instead of curtailed, which displaced an estimated ~~140,000-130,000~~ metric tons of CO<sub>2</sub> in ~~the first, and second, and third quarters of 2016.~~

**Chapter 1, Environmental Performance of the Electricity Generation System, page 37:**

(Footnote 56): California ISO, 2017, available at [http://www.caiso.com/Documents/ISO-EIMBenefitsReportQ4\\_2016.pdf](http://www.caiso.com/Documents/ISO-EIMBenefitsReportQ4_2016.pdf). California ISO, 2016, available at [http://www.caiso.com/Documents/ISO-EIMBenefitsReportQ2\\_2016.pdf](http://www.caiso.com/Documents/ISO-EIMBenefitsReportQ2_2016.pdf) and [http://www.caiso.com/Documents/ISO-EIM\\_BenefitsReportQ1\\_2016.pdf](http://www.caiso.com/Documents/ISO-EIM_BenefitsReportQ1_2016.pdf).

**Chapter 3, Climate Adaptation and Resiliency, page 153:**

Further, as mentioned above, the Energy Commission is collaborating with Governor's Office of Planning and Research, CNRA, and the CAT Research Working Group to guide research on climate adaptation through California's Climate Assessment. Regarding the choice of climate models for research, of the ten global climate models recommended for use by the California Department of Water Resources (DWR) Climate Change Technical Advisory Group (CCTAG), the Climate Action Team Research Working Group prioritized four<sup>4</sup> models for use in California's Fourth Climate Change Assessment,<sup>5</sup> based on the ability of the models to capture key processes of concern for water resources. These models represent systematic selection based on metrics related to the state's climate vulnerability: HadGEM2-ES (warm/dry); CNRM-CM5 (cool/wet), CanESM2 (average), and MIROC5 (spans range of variability). Additionally, the CAT Research Working Group has recommended that research teams contributing to California's Fourth Climate Assessment consider a long-drought scenario. For teams with sufficient resources to consider more models, ~~t~~The other six downscaled climate models suggested by the California Department of Water Resources CCTAG include ACCESS-1.10, CCSM4, CESM1-BGC, GFDL-CM3, HadGEM2-CC, and CMCC-CMS. All of the these models combined with RCP 4.5 and RCP 8.5 and downscaled according to the LOCA methodology are available through the beta site for Cal-Adapt 2.0 (<http://beta.cal-adapt.org/>). The four priority global climate models selected, in aggregate general, cover the range of outcomes from all the global climate models that were available for the last report from the Intergovernmental Panel on Climate Change. The selection was done for practical reasons, given the fact that the vast majority of the groups participating in the Fourth Climate Assessment will not be able to handle more than a few ~~four~~ climate scenarios.

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<sup>5</sup> Climate Action Team Research Working Group, *Projected Climate Scenarios Selected to Represent a Range of Possible Futures in California*, January 2017, [http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-04/TN215798\\_20170207T111409\\_Projected\\_Climate\\_Scenarios\\_Selected\\_to\\_Represent\\_a\\_Range\\_of\\_Po.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-04/TN215798_20170207T111409_Projected_Climate_Scenarios_Selected_to_Represent_a_Range_of_Po.pdf).

### **Chapter 3, Climate Adaptation and Resiliency, page 161:**

At the subnational level, in 2014 the UNFCCC launched the Non-State Actor Zone program to track the performance of pledges made by subnational entities, including private companies. The entities included in this program represent about one-third of the global economy.<sup>6</sup> California and others are taking the lead by signing a Memorandum of Understanding referred to as the “Under 2 MOU” pledging emissions reductions congruent with the goal of limiting planetary warming below 2 degrees Celsius (3.6 degrees Fahrenheit) above preindustrial levels. The Under 2 MOU signatories also adopt a target of limiting GHG emissions to 2 tons per capita or 80–95 percent below the 1990 level by 2050. As of January 7, 2017~~October 6, 2016~~, 167~~136~~ jurisdiction~~subnational entities~~ representing 33 countries and six continents have signed or endorsed the Under 2 MOU. Together, they represent 1.094~~0.8~~ billion people and 35 percent of the global economy.<sup>7</sup>

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6 Hsu, A., et al., June 2015 “Towards a New Climate Diplomacy,” *Nature Climate Change*, pp. 501-503.

7 <http://under2mou.org/> Accessed on January 7, 2017~~December 22, 2016~~. For current information, see <http://under2mou.org/>.