

**Proposed Substantive Changes to the
January 25, 2012, 2011 Integrated Energy Policy Report**

**For Consideration at the February 8, 2012
California Energy Commission Business Meeting**

[Proposed additions shown in **bold underline**, proposed deletions shown in ~~strikeout~~]

EXECUTIVE SUMMARY:

PAGE 7, FIRST PARAGRAPH UNDER “ENERGY EFFICIENCY”

Energy efficiency remains California’s top priority for meeting new electricity needs and is a key strategy for increasing jobs and reducing greenhouse gas emissions from the electricity sector. Past and current government energy policies and programs have made California a national leader in energy efficiency; in the last three decades, California’s **policies, programs, and** efficiency standards for buildings and appliances have contributed to keeping California’s per capita electricity consumption relatively constant while use in the rest of the United States has increased 40 percent.

CHAPTER 2: RENEWABLE ELECTRICITY STATUS AND ISSUES

PAGE 29, FIRST PARAGRAPH UNDER “CALIFORNIA’S RENEWABLE ELECTRICITY TARGETS AND STATUS” HEADING

According to a recent presentation by Michael Picker, Senior Advisor to the Governor for Renewable Facilities, resources included in the 12,000 MW goal are defined as: (1) fuels and technologies accepted as renewable for purposes of the Renewables Portfolio Standard; (2) sized up to 20 MW; and (3) located within the low-voltage distribution grid or supplying power directly to a consumer. **Some parties have suggested that this definition be expanded to include other low GHG-emitting resources, such as fuel cells and high-efficiency combined heat and power facilities. The Energy Commission will hold workshops during the 2012 IEPR Update and 2013 IEPR proceedings to discuss combined heat and power issues, and welcomes suggestions from parties on how best to ensure that the state’s distributed generation and combined heat and power goals are complementary.**

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The contract failure rate increases to about 40 percent when also considering contracts that have been delayed, and, at the September 14, 2011, workshop on the draft *Renewable Power in California: Status and Issues* report, two utilities indicated that they currently assume a contract failure rate of 40 percent. This suggests it

would be prudent for utilities to contract for renewable generation in the range of 55,000 GWh (contract failure rate of 30 percent) to 85,000 GWh (contract failure rate of 40 percent). **[ADDED FOOTNOTE: The Energy Commission acknowledges that historical contract failure rates are not predictive of future rates, which could be lower or higher.]**

PAGE 32, PARAGRAPH FOLLOWING TABLE 2

For the 12,000 MW distributed generation (DG) target, Energy Commission staff developed preliminary regional targets for localized generation (Table 3), defined for purposes of the analysis at that time as renewable DG projects 20 MW and smaller interconnected to the distribution or transmission grid. The analysis was technology neutral and included solar, biomass, geothermal, wind, fuel cells using renewable fuel, and small hydropower. The analysis also assumed that renewable DG capacity installed since 2007 would count toward meeting the 12,000 MW goal. California has roughly 3,000 MW of renewable DG capacity installed and, if existing state programs to support renewable DG are fully successful, the state could add about 6,200 MW of capacity in the next five to eight years (Figure 2). **More information is needed to assess the legitimacy of the targets and the targets should be periodically updated.** Given the trend of declining costs for solar photovoltaic (PV) technologies, the Energy Commission believes the focus should be on developing the “low-hanging fruit” in the next few years. Meanwhile, the state should focus on reforming permitting and interconnection processes so that subsequent development of renewable DG installations can take advantage of cost reductions and improved regulatory structures in later years.

PAGE 33, NOTES TO FIGURE 2, “RENEWABLE DISTRIBUTED GENERATION CAPACITY COUNTED TOWARD 12,000 MW GOAL”

Source: California Energy Commission. “Pending” capacity refers to projects approved under existing programs and in development but not yet completely installed. “Authorized” capacity refers to capacity allocated under existing programs that is not yet approved or installed. Existing programs include the Senate Bill 32 feed-in tariff, the Renewable Auction Mechanism, the Utility Solar Photovoltaic Program, and the California Solar Initiative. **The Energy Commission acknowledges that the totals presented in this figure will need further refinement; for example, not all projects developed under the Renewable Auction Mechanism may qualify as wholesale DG under the definition of DG presented in this report.**

PAGE 53, #4 UNDER “RECOMMENDATIONS”

4. Promote incentives for renewable technologies and development projects that create in-state jobs and support in-state industries, including manufacturing and construction. In implementing this strategy, the state should evaluate how current renewable energy policies and programs are affecting in-state job growth and

economic activity, how to optimize their effectiveness and transparency, and identify which renewable technologies rely on supply chains that provide the best opportunities for California businesses.

CHAPTER 3: ACHIEVING COST-EFFECTIVE ENERGY EFFICIENCY FOR CALIFORNIA: ASSEMBLY BILL 2021 PROGRESS REPORT

PAGE 54, SECOND PARAGRAPH UNDER “INVESTOR-OWNED UTILITIES’ PROGRESS”

The 2010 IOU savings numbers are still *ex ante* savings, that is, self-reported savings that have not been verified by third-party evaluators. Beginning with the 2006-2008 program implementation cycle, the CPUC instituted a more comprehensive process for capturing, retaining, and reporting *ex post* evaluation results. The CPUC’s 2006-2008 EM&V results show a significant difference between reported and evaluated savings for that period. While the IOUs reported surpassing their energy savings goals, the evaluation report indicated that the utilities achieved between 37 percent and 71 percent of their goals for that period. However, the CPUC’s *2009 Energy Efficiency Evaluation Report for the 2009 Bridge Funding Period* verified that the IOUs achieved 141 percent of the GWh goal and 104 percent of the MW goal. **[ADDED FOOTNOTE: California Public Utilities Commission, Energy Efficiency Evaluation Report for the 2009 Bridge Funding Period, January 2011, <http://www.cpuc.ca.gov/NR/rdonlyres/D66CCF63-5786-49C7-B250-00675D91953C/0/EEEvaluationReportforthe2009BFPeriod.pdf>, p. 23.**

CHAPTER 7: ENERGY COMMISSION NATURAL GAS DEMAND FORECAST

PAGE 88, FIRST BULLET UNDER “KEY INPUT ASSUMPTIONS FOR THE REFERENCE CASE...”

Average annual growth rate in U.S. gross domestic product is ~~2.7~~ **2.6** percent.

CHAPTER 9: CALIFORNIA’S ELECTRICITY INFRASTRUCTURE

PAGE 112, SECOND PARAGRAPH UNDER “PART ONE: ONCE-THROUGH COOLING AND ASSEMBLY BILL 1318,” SENTENCE ADDED BEFORE “THE SOUTH COAST AIR BASIN, FOR EXAMPLE....”

Air pollution is a serious problem that has adverse health and economic effects.

PAGE 114, PARTIAL PARAGRAPH AT TOP OF PAGE

~~the interagency advisory committee to propose revisions to these dates, if necessary. In effect, the compliance date is adaptive to the progress made by the energy agencies in pursuing multiple elements of state energy policy and getting specific replacement infrastructure ready to replace an OTC power plant.~~

PAGE 114, FIRST FULL PARAGRAPH

Since the state adopted the policy, there have been two ~~struggles~~ proceedings to revise compliance dates for power plants owned by Los Angeles Department of Water and Power (LADWP). In December 2010, SWRCB tabled LADWP's effort to extend the compliance schedule for: 1) any combined cycle power plant, or 2) any power plant that, once repowered, eliminates use of ocean water. On July 19, 2011, SWRCB modified the OTC policy (based on another proposal made by LADWP as part of its generation implementation plan filed with the SWRCB on April 1, 2011) to include: (a) an acceleration of two power plant repowering projects and a delay in the remainder of LADWP's repowering projects, compared to the compliance dates in the May 2010 OTC policy, and (b) broadening criteria for accepting compliance dates beyond 2022 for any generator that will entirely eliminate the use of ocean water for cooling, even as makeup for evaporative cooling towers. The delayed compliance dates for the three LADWP power plants ~~are regarded as placeholders and~~ will be examined again in 2012-2013 through mechanisms established in the policy.

PAGE 114, FINAL PARAGRAPH

Whether the CPUC does this, which would translate into opportunities to repower existing OTC capacity, depends upon finding a need for new dispatchable fossil power plants. Two likely justifications exist. One is the need to add capacity from highly flexible advanced single cycle or combined cycle power plants that can start and stop readily, and ramp over a wide range easily, to help to integrate solar and other intermittent renewables. Other resources may be available to help meet these needs, including concentrated solar plans with salt storage, other forms of energy storage, and/or geothermal plants. Another is the need to add capacity in local capacity areas, or in even more narrowly drawn subareas, to assure local reliability given the limitations of the transmission system for meeting customer loads from remote power plants. Although the CPUC has yet to issue a final decision in Track 1 of the 2010 LTPP rulemaking, the parties submitted a settlement agreement that would defer such a

PAGE 117, FINAL PARAGRAPH (CONTINUES ON PAGE 118)

~~The rule introduces numerous uncertainties, but an unusual one is the lack of clarity regarding which entities are covered.~~ Applicability of Rule 1325 is dictated by reference to PM2.5 emissions, or its nitrogen oxide or sulfur oxide precursors, exceeding 100 tons per year. PM2.5 is measured by an emission test method not widely used in California; therefore, until facilities conduct a source test using the specified method, it will be unclear whether the rule applies to them or their proposed modifications. Also, the rule includes ~~ambiguous~~ provisions relating to a facility's historical emissions and potential to emit that can encumber modifications affecting only one or a few units at a multiunit power plant. *[DELETED FOOTNOTE:*

~~As an example, in acquiring the permit for repowering Haynes Units 5-6, LADWP accepted a 100 tons per year PM2.5 cap on the entire Haynes power plant. Discussion with LADWP representatives reveal that they do not yet fully understand how this may constrain options for repowering other Haynes units in the future.] In short, SCAQMD's adoption of Rule 1325, which is more restrictive than the new federal rules it implements, will likely affect the largest power plant facilities in South Coast Air Basin, but to what extent remains to be determined.~~

PAGE 118, FINAL PARTIAL PARAGRAPH

~~A clear example of the potential conflict is the expected impact of aspirational~~
Another source of uncertainty regarding replacement of OTC plants arises from the state goals for energy efficiency and other demand-side policy initiatives. The incremental energy efficiency assessment prepared by the Energy Commission in the 2009 IEPR, and used with minor modifications in the CPUC's 2010 LTPP rulemaking, shows roughly 2,000 MW of load reduction in the California ISO's L.A. Basin local reliability area. Presumably, such a major load reduction

PAGE 119, LAST SENTENCE OF FIRST PARTIAL PARAGRAPH

The CPUC has recently **authorized funding at the same levels as the Public Goods Charge for energy efficiency, renewables, and research and development, but has also** initiated a proceeding to consider major redesigns of IOU programs, illustrating that reliance upon previous goals may not accurately reflect future activity.

PAGE 119, FIRST FULL PARAGRAPH, BEGINNING "TABLE 11 REPRODUCES...."

Table 11 reproduces the expected time frame for power plant development as presented to the California ISO Board in August 2011 for an OTC power plant with a nominal 2020 compliance date. The California ISO staff pointed out to their Board that decisions need to be made soon if major new generation projects are to be operational by 2020. ~~The California ISO staff concluded that the state needs to commit to some amount of power plant development now. Waiting to be sure that incremental energy efficiency (and other demand-side policies impacts) that would reduce the need for new power plant development should be counted upon means that~~ **If construction of new gas plants in the Western L.A. Basin is deferred, but the expected incremental energy efficiency and demand response results are not achieved,** the infrastructure will not be ready in time if it turns out to be necessary. As a result, reliability standards would not be satisfied, and various transmission or generation outages, if encountered, would result in higher probabilities of customer outages or greater extent of customer outages (or both). Although California ISO's analysis uses the same deliverability risk assessment concept as that first articulated by CPUC staff in their 2008 LTPP proposal, the California ISO assumed that no incremental demand-side policy impacts were

obtained. In contrast, the CPUC guidance to IOUs (issued in the 2010 LTPP rulemaking) reflected a reduced amount of impacts being used for resource planning compared to aspirational goals, but not an elimination of such impacts altogether.

PAGE 121, FIRST BULLET UNDER “POLICY DECISIONS”

- ~~Energy a~~ **Agencies (Energy Commission and CPUC), the California ISO, and SCAQMD should adopt a consistent approach to relying on load reductions resulting from demand-side policy initiatives for reliability planning purposes.** ~~have some influence over the extent that load reductions resulting from demand-side policy initiatives should be relied upon for reliability planning purposes, thus reducing demand and hence the need for power plant development. For example, should these agencies concur with the California ISO in discounting incremental energy efficiency entirely, or should they assume some minimum level of load reduction from future programs?~~

PAGE 122, THREE BULLETS AT TOP OF PAGE

- The California ISO and transmission owners have an ability to influence the extent to which local capacity area requirements can be diminished through transmission system development, upgrades, and modifications. Is it feasible for the California ISO to **identify** ~~focus IOU attention on~~ transmission system upgrades that **IOUs can implement to** ~~would~~ reduce LCR requirements and provide greater geographic flexibility for generation additions?
- ~~SCAQMD, ARB, and the Legislature have some ability to make power plant offset requirements and permitting more or less stringent while respecting ambient air quality standards. Will SCAQMD and the Legislature be willing to make modifications to regulations or laws if supported by the energy agency analyses?~~
- SWRCB has the ability to shift OTC compliance dates to affect the timing of existing power plant retirement and development of replacement capacity requiring offsets. Will SWRCB **do so** ~~be willing to delay compliance dates, if it~~ ~~when doing so~~ allows demand-side policies to defer fossil generation or enables greater use of remote renewable generation dependent upon transmission development?

PAGE 122, PARAGRAPH BEGINNING “NUMEROUS AGENCIES ARE INVOLVED...”

Numerous agencies are involved in making these decisions, ~~and there is no overarching mechanism, other than a desire for good government and respect for reliability, to motivate cooperation.~~ The initial track record of energy agency cooperation is good for developing a proposal for preliminary schedules and periodic review of compliance dates, along with SWRCB’s acceptance of this approach in its OTC mitigation policy. The AB 1318 effort has broadened the OTC focus to address

the offset issues, which are at the heart of any “solution.” ~~The energy agency technical team has managed to find ways of allotting analytic work based on the competencies of their respective staff and availability of resources. More entities must become involved as the issues turn to assessing criteria pollutant offsets needed and available and how to devote scarce amounts among competing interests. Devising common planning assumptions and better integration of planning processes is one means of getting multiple agencies “on the same page.” The state agencies have embarked upon improved coordination of efforts through the CCEF process, but tighter coordination will be needed to surmount the challenges of OTC policy implementation while satisfying ambient air quality standards.~~

PAGE 122-123, “CONCLUSION” SECTION:

The analyses released by California ISO in December 2011 brought an abundance of improved information about the long-term need for new power plant capacity to replace OTC units for satisfying LCR, given various assumptions about the future. These results differ from ones previously released by suggesting that not all of the L.A. Basin OTC capacity has to be replaced, and that much of San Diego OTC capacity does have to be replaced. The magnitudes of these results differ depending upon the CPUC-defined renewable development scenario that was assumed, reflecting uncertainty about what mix and location of renewables will be developed to satisfy California’s 33 percent by 2020 requirements. ~~These results are controversial, may not resolve existing uncertainties, and may even raise new ones.~~ The next round of analyses planned for early 2012 will provide additional information about the extent to which capacity needed for renewable integration is incremental to that needed for LCR purposes. It will also inform assumptions used in the AB 1318 effort to estimate future offsets in the South Coast Air Basin for power plants that must be located in areas subject to SCAQMD’s permitting requirements.

~~While the CPUC (IOU procurement authority, IOU demand-side program funding, transmission line CPCN approval), the California ISO (transmission project justification and electricity market design assessments), and the Energy Commission (thermal power plant licensing) can make their own decisions about portions of the infrastructure that will be needed through time, there is no overarching mechanism to ensure that all of the energy and environmental agencies can come to consistent decisions.~~

- ~~A new~~ **Interagency coordination should continue on** mechanism should be developed to coordinate broader policy decisions that are inappropriate to the more narrow focus of a single agency. ~~The new mechanism should build from the existing evidentiary-based agency processes that exist today but~~ **Interagency coordination should** focus on **achieving consistent** decision-making **in the proceedings that are underway.**

PAGE 125, 3RD AND 4TH BULLETS

- Renewable energy development, especially including wind, central-station solar PV, solar thermal with and without storage, geothermal, and renewable DG.
- The need for dispatchable generation capacity to provide ancillary services in support of renewable resource integration, and the availability of other resources, such as energy storage or geothermal plants, which may need a different market to be economically run.

PAGE 129, FIRST PARAGRAPH UNDER “RENEWABLE ENERGY DEVELOPMENT”

As California increases its reliance on renewable energy, the amount of dependable capacity provided by renewable resources will also increase. The dependable capacity provided by new renewable resources and its location will affect the amount and location of dependable capacity needed from new dispatchable gas-fired generation to meet system and local capacity requirements. The composition of renewable resources with respect to technology (wind, solar PV, solar thermal with and without storage, geothermal, and so on) and location will affect the need for dispatchable gas-fired generation to provide ancillary services and inertia.

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Generation resources that use OTC provide a significant share of the inertia needed by the system. The retirement of OTC resources may require replacement capacity (largely gas-fired) to provide a similar amount of inertia. While solar thermal resources can provide substantial amounts of inertia, wind resources provide very little (if any), and solar photovoltaics do not provide any at all. ~~Therefore, the shift from solar thermal to solar photovoltaic development may increase the need for inertia from new gas-fired resources.~~ The development of geothermal resources, on the other hand, would reduce the need for inertia from other sources; the shift from solar thermal to solar PV development may increase it.

CHAPTER 10: TRANSPORTATION ENERGY FORECASTS AND ANALYSIS

PAGE 137, SECOND PARAGRAPH

Any source of energy for transportation has economic, environmental, security, and infrastructure dimensions. Petroleum fuels refined from crude oil, currently the dominant transportation energy source in California and globally, have historically had many advantages. These include high energy content, portability, storability, established vehicle fleet and equipment stock, and established refining, transportation, storage, and distribution infrastructure. Until recently, petroleum was

a lower-priced and well-supplied source of fuels; however, these advantages appear to be eroding. While petroleum will be available far into the future **[ADDED FOOTNOTE: Yergin, Daniel, 2011. *The Quest: Energy, Security, and the Remaking of the Modern World*. Penguin Press.]** and markets will fluctuate, higher prices may be a permanent feature of future fuels markets and offer greater incentives for increased use of alternative and renewable fuels. Some stakeholders and analysts have gone further and argued that world-wide crude oil production has peaked, or will shortly, and that the petroleum dependent global economy is at high risk for substantial disruption. **[ADDED FOOTNOTE: Written comments by Gary Goodson, dated December 20, 2011, and David Fridley, dated December 20, 2011, available at http://www.energy.ca.gov/2011_energy_policy/documents/comments_draft_iepr/]** Petroleum use raises other considerations, since it is the source of about 40 percent of state GHG emissions, as well as other air, water, and land pollutants. Also, California relies heavily on foreign imports of petroleum from geopolitically sensitive areas, which can create significant supply and price vulnerabilities. As a consequence of these undesirable characteristics, state and federal policies and regulations have been implemented to reduce future petroleum use.