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California Energy Commission
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Re: 2008 Integrated Energy Policy Report (IEP) Update -
Docket No. 08-IEP-1B: Written Comments On 2008
IEPR Update - 33% Renewable Electricity

To Whom It May Concern:

Attached are the written comments of Southern California Edison Company (SCE) on the questions attached to the Notice of Staff Workshop on the impacts of higher levels of renewables on the electricity system which occurred on July 21, 2008. SCE enjoyed participating in the workshop. If the California Energy Commission (CEC) staff has any questions on the attached materials, please do not hesitate to contact me at (916) 441-2369.

Very truly yours,

Manuel Alvarez

SBW:sbw:1556072

Attachment

ATTACHMENT

Attachment B:
**Questions for Staff Workshop on Impacts of Higher Levels of Renewables
on the Electricity System – Summary of Recent Studies**

There is a degree of uncertainty regarding how the electricity and supporting infrastructure may develop over time, which will affect the implications of alternative development strategies for achieving 33 percent renewables by 2020. For example, once-through cooling concerns and greenhouse gas emission policies may require a number of existing generation facilities to be replaced. The fuel and development costs for these different generation technologies may also vary over time to alter scenario economics. Given the range of uncertainty for these relevant factors, a rigorous study of the electricity system will require an examination of different renewable and conventional generation mixes to ensure system stability at the least cost possible.

SPECIFIC QUESTIONS

1. Estimating 33 percent of statewide retail sales for 2020

a. Staff is assuming that the 33 percent target refers to a percentage of retail sales, as is the case with the current Renewable Portfolio Standard, and that the target will be imposed on all load serving entities in California. Are these assumptions appropriate? If not, how should the 33 percent target be determined?

Answer: Yes.

b. If you believe the 33 percent target should be based on retail sales, do you have any comments or suggestions on how to estimate 33 percent of statewide retail sales for 2020?

Answer: Use the CEC demand forecast through 2018 that can be extrapolated through 2020 (i.e. similar to what was used in the California Gas Report).

2. Comparison of Resource Mix Scenarios for 33 percent

a. What resource mix scenarios for 2020 have been published? Please provide the reference.

Answer: The California Energy Commission (CEC) published a 2020 study with various resource mix scenarios in the 2007 IEPR. The California Public Utilities Commission's (CPUC) Energy Division is planning a study of 33% renewables in the 2008 Long Term Procurement Plan (LTPP) docket. Southern California Edison Company (SCE), Pacific Gas & Electric Company (PG&E), and San Diego Gas and Electric (SDG&E) are working together to examine a number of 33% renewables resource scenarios using Nexant as the consultant and the Plexos production simulation model.

The CEC 2007 IEPR scenario analysis was a good start. Yet, actual data for many assumptions regarding fuel prices and technology costs for both conventional and renewable resources have deviated dramatically from the assumptions in this analysis. In addition, the variability of output from such high levels of renewables may require significant variable usage of the gas system to balance load and generation. This might require significant changes to the gas operations in the state.

Lastly, the permitting, other licensing, and construction of new transmission could easily be delayed. Therefore it is reasonable to at least build a scenario postulating that achieving a 33% goal by 2020 is unrealistic. Some scenarios will need to be developed and analyzed that would change the previous analysis and look into the effects of such a delay. Even if the permitting and licensing were not delayed, other factors, like a significant shortfall of transmission planning and construction engineers in this time period, could delay the completion of these needed transmission projects.

b. Are there other resource mix scenarios that would be helpful to further understand the operational, physical, and market changes needed to accommodate 33 percent renewables?

Answer: Yes and this kind of simulation modeling will take a significant amount of time and effort to get understandable and actionable results.

c. What assumptions should be made in coming up with reasonably likely resource mixes for 2020?

Answer: We need to make many assumptions, including those about: load, energy efficiency, changes to the eligibility rules for out of state renewables, fuel prices, technology development rates and prices, the need for and timing of construction of new transmission lines, the competition with other states and possibly other countries for purchase of the existing technologies (i.e. wind, and solar), the effects that pending carbon legislation would have on most of these assumptions, economic issues like inflation by region and technology, the amount of and type of generation needed to back up wind and solar, the effects of new planning reserve margin requirements, operability issues, the effectiveness and possible usage of new storage technology, and the timing and penetration of new electric technologies (like PHEV's).

3. Impacts of contract delays or cancellations on meeting Renewable Portfolio Standard goals.

a. Do you have any comments or suggestions regarding the impact of contract delays or cancellations on meeting Renewable Portfolio Standard goals for investor-owned utilities? Publicly owned utilities? Other load serving entities?

Answer: Project delays and/or cancellations could impact the State's effort to meet an increased Renewables Portfolio Standard (RPS) goal. The CPUC identified the various risk factors for new renewable projects. The largest among these were the availability of certain tax credits, transmission access, site control, and permitting issues.¹ For example, the CPUC has noted that delay in the generation of renewable power is related to delayed interconnection studies or delayed transmission construction.² Another example is that public agencies responsible for permitting at county, state and federal levels are resource-constrained while requests for renewable energy permitting have increased.³ The responsible public agencies must coordinate their permitting efforts to assure renewable developers can bring new projects on-line.

b. Do you think the current procurement process will produce 33 percent renewables by 2020?

Answer: The current procurement processes by Investor-owned utilities (IOUs) and municipal utilities may produce sufficient contracts for the generation of enough energy to meet a 33 percent renewables target. However, Electric Service Providers (ESP) procurement of renewables is lagging and is doing little to assure new renewable generation develops. As the CPUC has noted, the response to recent IOU RPS solicitations is "robust and increasing." This indicates that the market is maturing.⁴ As familiarity with the RPS procurement process increases, SCE expects participation to continue to expand. However, the limiting factor in achieving the 33% renewables target continues to be the delivery of the contracted energy. So, the state agencies with responsibility for transmission, siting, permitting, and relevant tax credits must work together to reduce any potential project delay or failure.

c. How does California's rate of bringing new renewable energy on-line compare with that of other states and countries?

Answer: California continues to have the highest level of renewables in the country. No other state in the U.S. has even close to the same level of delivering renewables and has yet to reach the same level of challenges that exist in California.

d. What can be done to increase the rate that new renewable energy begins operation?

Answer: See response to section (b) above.

¹ CPUC presentation at 7.

² CPUC "Renewables Portfolio Standard Quarterly Report," April 2008, at 5.

³ Id. at 6.

⁴ CPUC Presentation at 2.

4. Potential wholesale and retail price impacts (positive or negative) and strategies to mitigate negative impacts.

a. Would wholesale energy costs to the utilities increase or decrease by implementing a 33 percent goal?

Answer: Wholesale costs to all purchasers of power will increase.

b. In your estimate, by how much would average electricity prices increase or decrease?

Answer: SCE cannot definitively determine how much average electricity prices would increase.

c. Would a price increase and/or decrease affect in a similar manner investor-owned utilities and publicly owned utilities?

Answer: Both IOUs and publicly-owned utilities would see increases but not necessarily by the same percentage amount, due to each entities' current resource portfolios.

d. Should all ratepayers bear the effect of an increase or share the savings of a decrease in rates?

Answer: Yes

e. Would the increase or decrease be implemented at once or in stages?

Answer: Procurement costs for renewable resources should be included in rates as the costs are incurred.

f. Given that most DWR contracts will be declining significantly in the 2010-2012 period, would the 33 percent goal substitute the high costs of Department of Water Resources contracts?

Answer: It is unknown how much renewable energy costs will increase as a result of a higher goal.

5. Operational and physical changes needed to integrate renewables while maintaining reliability, including an evaluation of when those changes would be needed and at what level of renewable penetration, the need for energy storage technologies, and the impacts of using peaker plants.

a. How do the CPUC/CAISO resource adequacy requirements treat renewable resources, and are any changes under development that would change this in the foreseeable future?

Answer: The current resource adequacy rules use an effective or net qualifying capacity for all resources. There may be changes to the counting rules in the future. The presentation at the July 21 workshop by Mr. Jaske did a good job in explaining the current rules.

b. Are there additional studies completed, underway, or planned regarding operational and physical changes needed to integrate 33 percent renewables into the electricity system?

Answer: The CAISO has identified the need for such analysis but has not yet started this analysis. The IOUs' Nexant study is also analyzing the issues related to 33% renewables. Various operational issues and costs may be associated with such a high level of renewables. In addition, the transmission grid may need significant modifications from its current configuration to operate in a reliable manner under such operating conditions.

c. How do changes in the renewable resource mix affect the operational impacts of 33 percent renewables on the electricity system?

Answer: There are distinct operational issues related to the future potential renewable resource portfolios. For example, significantly higher levels of wind production may produce surplus energy in the off peak time periods and vice versa for solar projects. Producing energy not matched to actual demand always requires operational changes which usually increase costs and require more diligence in daily operations. The CAISO needs to analyze these factors as the ramifications of such operational problems are serious and could lead to significant customer interruptions.

d. How much of the impact of integrating 33 percent renewables can be addressed by energy storage technologies? Pumped hydropower?

Answer: Storage technology will most likely assist in meeting many grid operational needs when increasing the level of renewables. The type, need, and timing of such technology is uncertain and should be the subject of many more studies.

e. How much of the impact should be addressed by changes at the point of renewable energy generation? What changes would be most helpful?

Answer: We don't know yet. It will require more studies.

f. What characteristics (e.g., start/stop and ramp rate) will back-up generation resources need to accommodate 33 percent renewables?

Answer: It depends on the renewable portfolio mix, the locations of the renewables and other grid related parameters (like how much more renewable energy will be added to other WECC regions.)

g. Could demand side management strategies or distributed generation technologies be used to reduce the impacts of integrating large amounts of renewable generation?

Answer: These programs were not designed for such purposes. It will require more study to determine if such programs could assist in such integration.

6. Potential impacts on natural gas demand, supply, and price.

a. What would be the net increase or decrease in natural gas demand for electricity generation by 2020 by implementing the 33 percent goal?

Answer: As yet undetermined. There will most likely be a slight decrease for some fossil generation. But, due to the variable operation of some renewables, the electric system may need to use higher heat rate units to control operations. There may also need to be more start-up fossil generation which would require more natural gas usage.

b. Are there any effects on natural gas?

Answer: Yes, it would be expected that gas demand in the electric sector would decrease due to the amount of new renewable generation. The amount of decrease will however depend on the renewable portfolio mix and other assumptions. It is difficult to forecast how much fuel substitution in other sectors might occur. This would affect total California consumption.

c. Would the increase/decrease be enough to encourage or discourage applications for liquefied natural gas (LNG) facilities in the State?

Answer: N/A (the gas utilities may be a better source of information for this question)

d. There are several pipeline proposals to bring more gas to the West Coast from the Rockies, would a 33 percent goal affect those projects?

Answer: N/A (the gas utilities may be a better source of information for this question)

e. Can the goal affect any of the existing infrastructure facilities such as pipelines or compressor stations?

Answer: N/A (the gas utilities may be a better source of information for this question)

f. Given that California Imports most of its gas from outside of the state, what would be the effect on the price of gas at the California border?

Answer: From a theoretical stand point, the price of gas should decrease, but probably not by much. Other economic and global metrics have more influence on the price of gas at the border. In addition, other uses of gas may increase due to GHG and other transportation issues. This may not decrease total imports nor change prices.

g. Would the changes in price of natural gas be reflected in lower/higher prices to core and non-core consumers?

Answer: If there is a change, then it is probably going to be a small decrease.

7. Environmental concerns with large-scale renewable facilities.

a. Do you have any comments or suggestions regarding environmental concerns and mitigation strategies in developing large-scale renewable facilities?

Answer: A 33% renewables scenario will require significant amounts of new transmission and upgrades to the existing system. Also this level of new renewable resources will require extremely large plots of land for wind and solar installations.

b. Should additional environmental criteria be added to Renewable Portfolio Standard eligibility (e.g., requiring that hydro must be "low impact" to be eligible for the RPS, regardless of capacity)?

Answer: N/A

c. How much focus should continue on repowering existing wind facilities to reduce the environmental impacts of those facilities?

Answer: N/A

GENERAL QUESTIONS

8. Staff plans to present summaries of various existing studies (listed in Attachment A) related to achieving 33 percent by 2020 at the workshop. Are there other completed studies related to achieving 33 percent renewables by 2020 (or on higher levels of renewables in general) that should be included in this summary?


Answer: N/A

9. What other studies are planned or underway related to achieving 33 percent renewables by 2020 (or on higher levels of renewables in general)?

Answer: The IOUs' Nexant study, the CPUC Energy Division's study in the LTPP, upcoming CAISO studies regarding renewable integration, and the CAISO study of future planning reserve margin requirements.

10. What additional studies are needed to better understand the impacts of higher levels of renewables on the system and/or to identify ways to mitigate those impacts?

Answer: The CAISO needs to finish its integration studies. Additional studies may also be required to compare results and attempt to find consistent or similar results. These additional studies are needed to assess, among other things, transmission needs, local reliability impacts, land use, and other factors. The CAISO needs to undertake and complete a study to identify the operating issues to maintain the grid reliability with 33% RPS.

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