STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

Implementation of Renewables Portfolio Standard Legislation (Public Utilities Code Sections 381, 383.5, 399.11 through 399.15, and 445; [SB 1038], [SB 1078])	)	Docket No. 03-RPS-1078 RPS Proceeding

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and

Implementation of Renewables Investment Plan Legislation (Public Utilities Code sections 381, 383.5, and 445 [SB 1038])	)	Docket No. 02-REN-1038 Renewable Energy Program: Notice of Renewables Committee Workshop

re: **COMMENTS OF SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) ON RENEWABLES COMMITTEE'S REPORT ON THE CALIFORNIA RENEWABLES PORTFOLIO STANDARD RENEWABLE GENERATION INTEGRATION COST ANALYSIS, PHASE 1**

On February 20, 2004, the Renewables Committee of the California Energy Commission (the "Commission") held workshops on the proposed final report (the "Report") on the Analysis of Integration Costs of Intermittent Renewable Resources issued by the Commission's Renewables Committee (the "Committee"). The Report comprises the CEC Consultant's recommendations to the Committee on Phase I of the analysis for use in the Renewables Portfolio Standard ("RPS") proceeding. SCE has, as you know, participated in workshops on the development of the Report. On October 9, 2003, SCE submitted comments on a draft of the Report. Many of those comments are pertinent to the Report. SCE incorporates these comments herein. Southern California Edison Company ("Edison") appreciates the opportunity to file comments on the Report. At a workshop on February 20, 2004, SCE presented a summary of an analysis by Dr. Ed Kahn of the Analysis Group which took issue with several of the Report's

conclusions. SCE provides Dr. Kahn's written comments herewith and asks the Commission take these comments into consideration.

As Dr. Kahn pointed out at the February 20 workshop, the Report is not based upon publicly available data. Therefore the process utilized by the Report to reach its conclusions is not transparent. More importantly, the results of the Report cannot be replicated. The Report's conclusions specifically with respect to the Effective Load Carrying Capacity ("ELCC") of wind generation facilities, as well as more generally those related to load following and regulation costs, are significantly at variance with SCE's experience.

For these and other reasons noted by Dr. Kahn and by SCE at the workshop and in prior comments, SCE believes that the Commission has failed to demonstrate the reliability of the Report. Unless and until the Report's conclusions can be established through a transparent and defensible process, it would be highly improper for the Report to be used in any authoritative respect for purposes of Renewable Portfolio Standard ("RPS") implementation and SCE fully reserves its rights to challenge use of the Report in any appropriate forum. SCE is willing to support further analysis of the ELCC of wind resources and other relevant issues and would be pleased to lend its support to the Committee. SCE urges the Committee to "get it right," and, accordingly, to delay issuance of the Report until its conclusions can be properly and adequately verified.

Southern California Edison Co.
Comments on California Renewables Portfolio Standard
Renewable Generation Integration Cost Analysis
Phase 1: One Year Analysis of Existing Resources
Results and Recommendations
Final Report
Dated: October 9, 2003

Introduction

Southern California Edison Co. is pleased to review the subject report and acknowledges the time and effort expended by its principle contributing parties:

- Oak Ridge National Laboratory;
- National Renewable Energy Laboratory;
- California ISO; and,
- California Wind Energy Collaborative

SCE finds numerous issues that are not dealt with in the report which raise many concerns about the validity of the results.

Discussion

With respect to imbalance costs, SCE was surprised with the result and assume you were also, given that it was so much lower than the estimates provided from other research efforts. For example, Brendan Kirby was a co-author on a joint paper delivered at a June 2003 wind conference. Table 6 from that paper summarizes the state of the art findings: SCE also noted the result shown in a paper presented by researchers in Denmark in 2001 at http://www.windpower.org/en/tour/wres/dkmap.htm

In that paper, the payment for "realtime imbalance power" is listed at DKK 65 million or DKK 0.02/kWh from 3372 GWh of wind. At 6.7 DKK/dollar, this is 2.9 mills/kWh. I note that it is unclear if this is the total system cost impact for this IOU due to wind power or a subset of the total cost picture.

Table 6. Summary of Study Results

Study and Relative Wind Penetration	Analytic (A) or Case Study (C)	Regulation	Load Following (L) or Imbalance (I)	Reserves	Unit Commitment	Allocation Method M=Market, I=Incremental O=ORNL	Cost $/MWh from Studied Time Scales
Hirst PJM 0.06%-0.12%	(A)	Y	I			M	$.0.05-$0.30/MWh Regulation
Milligan IA up to 22.5%	(A)		L, I	(1)		O	(2)
UWIG / Electrotek Xcel 3.5%	(C)	Y	L, I (3)	Y	Y	I	$3.00/MWh
PacifiCorp IRP 20%	(C)		I	Y		I	$5.50/MWh
Hirst BPA 5.9%	(C)	Y	L, I		Y	O	$1.37-2.17/MWh

(1) Used 3 x standard deviation as indirect estimate of reserve requirements.
(2) Cost was not estimated in this study. Allocation of system variation (based on standard deviation) to wind ranged up to 2.5% of the wind rated capacity for load following and up to 4% for imbalance, for penetration rates up to 22.5% based on capacity.
(3) Imbalance energy costs determined from Unit Commitment production cost simulations

SCE assumes that, given that the value shown in the report was almost 15 times smaller than this 2.9 mill value and well below any value presented in Table 6 for nontrivial penetration levels, it should be the cause for concern.

How has this inconsistency been addressed and confirmed the robustness of the result? If the 0.2 mills value is just the regulation component, is the report doing a disservice to ratepayers by ignoring 93% of the potential total imbalance costs associated with intermittent resources relative to non-intermittent resources?

With respect to ELCC, SCE noted that the ELCC for solar was 39% of nameplate (subsequently revised to 56.6%) and those for geothermal and biomass were much larger. Frankly, this result surprises us unless the solar data you used were based on a pure solar project (e.g., PV) and not a gas-assisted solar project. If it were supposed to be reflective of the latter, it fails a fundamental logic test. SCE's solar thermal units have over the past 10 years consistently realized close to 100% of their maximum capacity bonus payments. These payments are directly related to the plants' capacity factor in the summer on peak hours and reflect performance at or close to 100% capacity factor during summer onpeak hours. Insofar as your ELCC is supposed to reflect top load hours and insofar as most of Edison's top load hours occur in the summer on peak hours, then a 39% result for gas assisted solar is questionable.

In a prior discussion, SCE suggested that your ELCC calculations be done for each time of delivery period ("TOD") separately and then aggregated in proportion to the value associated with each such TOD period (or based on the % of top load hours in that TOD period). I also suggested that August and September needed to be differentiated from June and July, given that we have far more high load hours in August and September than in June and July. If you have not done this, then your solar number is too low and your wind number likely too high.

SCEs other question is if the data used for your calculations were aggregated data—that is, if all projects with a given fuel were combined together to produce the generation profile. I assume that you used aggregate data, for, if you did not, I would expect that you would have presented your results as ranges of value rather than a single value, reflecting likely local variations. If you did use aggregate data, I think it appropriate to keep in mind the goal here--to assist in a bid evaluation process in which we have to distinguish between adding a geothermal project or a wind project. In this context, I believe that the ELCC calculation must be TOD-weighted AND that it must reflect the output of a specific geothermal project or of a specific wind project, not the aggregate output of many wind projects or of many geothermal projects. Are you able to generate project-specific ELCC value ranges?

Finally, SCE has attempted on numerous occasions to validate the input data with the representatives of the CaISO. CaISO has been entirely unresponsive to SCEs repeated requests. SCE questions the validity of the input data since during the workshop in Sacramento on September 12, 2003, it was stated that the Geysers geothermal plants were utilized for the representative geothermal production profile; that none of the LUZ-SEGS facilities were utilized for the solar generation profile, and that 1200 MW of wind were utilized for the wind profiles, but that they were unable to specify which plants in which resource areas were included (SCE alone has over 1,000 MW of wind). The Geysers production profile is entirely unrepresentative for SCE's geothermal plants. The LUZSEGS plants are more representative of the likely future solar generation than any other solar facility. And it is unclear if the wind facilities that were utilized were in fact representative of SCE wind resource areas. As a result, one cannot be assured that the results are representative for the purpose that they are being prepared, specifically, to produce cost adders which can be added to a project's bid price during the bid selection process (see page xi).