CALIFORNIA ISO

California Independent
System Operator

Memorandum

To: Grid Reliability/Operations Committee

From: Terry M. Winter, President and Chief Executive Officer
Kellan Fluckiger, Chief Operations Officer

Date: April 18, 2000

Re: *Policy Issues Regarding Alternatives to Transmission and Recommendation on Tri-Valley RFP*

Board action is required on this item.

EXECUTIVE SUMMARY

The Tri-Valley RFP raises two fundamental policy issues. First, does the ISO believe that transmission, generation and demand-based projects can compete on an equal basis? Second, if transmission, generation and demand can compete to provide necessary grid reliability services, how does the ISO fairly and objectively evaluate each alternative? While we believe that these issues need not necessarily be resolved in the context of the Tri-Valley proposal, we do believe they warrant consideration by the Board at this time. In order to properly guide future deliberations on the ISO's Long-Term Grid Planning (LTGP) process, we believe it is necessary for us to get the Board's guidance on these issues. Specifically, should we proceed with the development of a LTGP process that specifically provides for competition between transmission, generation and load, and, based on resolution of the first issue, how to evaluate the alternatives? The first part of this memo addresses the policy issues and the second part addresses the specifics of the Tri-Valley proposal.

Part I – Policy Issues Regarding Long-Term Grid Planning

Policy Issue 1: Should the ISO provide for direct competition between transmission, generation and load-based projects?

There are three options for addressing the issue as to whether the ISO's LTGP process should specifically provide for competition between transmission, generation and load-based alternatives. We briefly describe each option below and the pros and cons of each approach.

Option 1: Create a comprehensive competitive solicitation process whereby the ISO determines if there are cost-effective and reliable non-wires alternatives to each transmission project identified in a Participating Transmission Owner's annual transmission plan. This proposal is consistent with the approach originally approved by the Board last year on the ISO's revised LTGP process.

Pros: Provides for a complete assessment as to whether there are cost-effective alternatives to proposed least-cost transmission projects and should ensure that the ISO Controlled Grid is expanded in a least cost manner. This approach may also recapture some of the "efficiencies" lost as a result of the separation of the generation from the transmission system. For example, while it is presumed that a market –based (i.e., unbundled) approach to pricing the generation or energy component of previously bundled service will reduce costs, such unbundling eliminates the opportunity for the previously bundled service provider to use generation (redispatch) to explicitly support the transmission system.

Cons: May require the execution of multiple non-wires performance contracts to ensure grid reliability. Such an approach is likely to lead to Market Participants and regulatory concerns regarding the proliferation of RMR-type contracts. Application of this approach may also raise concerns that the ISO is underwriting the market activities of competitive generators and, depending on whether such non-wires costs are recovered through transmission rates, may raise concerns that the ISO is effectively "rebundling" services. Finally, the appropriateness and necessity of such an approach may be questioned in the presence of a congestion pricing regime that sends accurate locational price signals.

Option 2: On a case-by-case basis, determine if there are cost-effective alternatives to a specific project, similar to what the ISO has done regarding PG&E's Tri-Valley project. Under this approach, the Board could specifically identify projects where there is likely to be competitive alternatives, based on a dollar threshold, location, or other criteria.

Pros: Would not lead to a proliferation of non-wires contracts, easing the concerns of Market Participants and regulators alike and easing the burden on the ISO of administrating such contracts. In addition, this approach would enable the ISO to target high-value projects, where the benefits of competition are the greatest and where it is likely that there are competitive non-wires alternatives.

Cons: Does not ensure that the grid is expanded in a least-cost manner and potentially loses some of the efficiencies gained from integrated planning.

Option 3: Do not explicitly provide for competition between transmission, generation and load-based projects and only determine the "best transmission solution" in evaluating and developing the ISO Controlled Grid-wide transmission plan.

Pros: Keeps the ISO from entering into non-wires performance contracts that raise concerns that the ISO is "subsidizing" market generation and that the ISO is unnecessarily paying generation a "locational incentive" which should come from effective Congestion Management protocols that send accurate locational signals.

Cons: Does not provide for any examination as to whether there are cost-effective alternatives to proposed transmission projects. As a result, this approach may not result is least-cost expansion of the grid.

Policy Issue 2: How should the ISO evaluate the non-wires alternatives to proposed transmission projects?

There are two options for evaluating between alternatives. We briefly describe each option below and the pros and cons of each approach.

Option 1 - Deferral:: Compare the cost of a non-wires project against the cost or value of "deferring" the proposed transmission project for a certain number of years. The fundamental premise of this approach is that any such non-wires alternatives are likely to only defer construction of a proposed transmission project, but that ultimately, due to load growth, the transmission project would have to be built. Therefore, based on that premise, the value of a non-wires project could be determined by calculating the present value of the costs that otherwise would have been incurred for the transmission project during the deferral period. Such costs can be estimated by applying a reasonable carrying charge to the total cost of the transmission project. A carrying charge is the amount of money needed to cover a reasonable return on the investment (debt and equity), taxes, operation and maintenance, etc. A typical carrying charge on such transmission investments is around 15%. A very conservative number is 20%.

Pros: The deferral methodology is consistent with the direction provided by the Board last year. At that time, the Board directed management to proceed with the development of the ISO's revised LTGP process but not to consider non-wires alternatives priced at "avoided costs." In the context of the discussions, avoided costs meant the total costs (displacement) of the transmission project. Moreover, the deferral method necessarily recognizes the benefits of transmission expansion (e.g., greater access to regional markets, increased operating flexibility) and therefore results in more transmission being built.

Cons: Based on the costs of deferral likely to result from application of such a methodology, it is unlikely that generation and perhaps load-based projects will ever be able to effectively compete with transmission.

Option 2 - Displacement : Compare the cost of a non-wires project against the cost or value of permanently "displacing" the transmission project. Under this approach a non-wires project would be compared to the total cost incurred from building the transmission project. The value of displacing the transmission project would then be determined by calculating the present value of the stream of payments for the transmission project over the life of the facility.

Pros: The displacement method will enable generation and load-based projects to compete more effectively with transmission.

Cons: Displacement is inconsistent with the Board's previous direction. Moreover, the displacement method does not recognize the other benefits of transmission expansion, such as increased operating flexibility and increased access to the market. Furthermore, the "displacement" method requires continued reliance on the non-wires project and therefore raises concerns both with respect to reliance on non-wires contracts and market power issues (e.g., the non-wires project may be the only "solution" that exists).

Requested Action

Management is not at this time asking the Board to vote on these matters. However, as noted above, we believe that it will help inform future deliberations if the Board provides guidance at this time. In addition, while specific Board action on the Tri-Valley proposal is necessary now, we do not believe that such Board action on Tri-Valley need determine the Board's final disposition of these issues.

Part II - Tri-Valley RFP

In order to fulfill its obligation to ensure the reliable and cost-effective expansion of the ISO Controlled Grid, the ISO embarked upon a pilot-program initiative to determine if there were reliable and cost-effective non-wires alternatives to

PG&E's Southern Tri-Valley Transmission Expansion Project. The ISO Governing Board approved PG&E's transmission project at the January Board meeting, subject to the outcome of the Tri-Valley RFP. The ISO received four responses to the Tri-Valley RFP. As discussed further below, Management recommends that the ISO direct PG&E to proceed with the development and construction of the proposed transmission project. While Management believes that the proposed alternatives are reliable alternatives to the PG&E transmission project, Management does not believe that they represent cost-effective alternatives.

Moved, that the Committee recommends that the ISO Governing Board direct the President and Chief Executive Officer to inform Pacific Gas and Electric Company that it should proceed with the development and construction of the Southern Tri-Valley Transmission Expansion Project, as approved by the ISO Governing Board at its January 27, 2000, meeting.

BACKGROUND

On January 18, 2000 the ISO issued a "Request for Proposal to Provide Southern Tri-Valley Area Transmission Expansion Alternatives" (Attachment A is the Tri-Valley RFP. To view this attachment go to http://www.caiso.com/pubinfo/notices/). The purpose of the Tri-Valley RFP is to determine if there are cost-effective and reliable non-wires alternatives to the Southern Tri-Valley Transmission Expansion Project approved by the ISO Governing Board at its January meeting. The Board motion is included as Attachment B. As stated in the RFP, the ISO was soliciting proposals from generation and/or load-based alternatives to the proposed PG&E transmission project. The peaking capability and the peak load management service sought through this RFP must be available for the ISO's call up to 500 hours per year during the hours of 8:00 a.m. to 1:00 a.m. ("Peak Hours"), April 1 to October 31 ("Peak Periods") each year from 2001 through 2005. ISO calls would be for a minimum period of 4 hours. The ISO sought call rights for approximately one hundred and seventy five megawatts (175 MW) of such service. In response to this RFP, Respondents could offer such capability or service in quantities of from one to forty-nine megawatts (1 - 49 MW) per Qualified Resource, in increments of one megawatt (1MW).

On February 1, the date specified in the RFP, the ISO received four "letters of intent to respond" to the Tri-Valley RFP. One other party that did not submit a letter of intent also expressed an interest in submitting a response to the Tri-Valley RFP. Certain parties subsequently expressed concern that 45 days did not provide sufficient time to prepare meaningful responses to the RFP. Management then granted a two-week extension until March 20.

<u>Responses to the RFP</u>

On March 20th, four entities submitted responses to the RFP. Table 1 below summarizes the salient features of each proposal. The four proposals offer a total of 220 MW of generation and 5 MW of load management programs starting in 2001. The proposals also included an additional 44 MW of generation available in 2003, and 15 MW of load management available in 2002 and 30 MW in 2003.

Table 1

Entity	Resource Type/Technology	MW Bid	Price Bid
Respondent A	Respondent proposes two projects at different sites: Each project is primarily combustion turbine but also includes integrated photovoltaic (up to 200 kW);	Option 1 – 49 MW Or Option 2 – 91 MW (49 MW facility plus 42 MW facility)	Option 1: $220,000/MW Option 2: $197,500/MW
Respondent B	Combustion turbine	85 MW (42.5 MW at two sites)	$340,000/MW
Respondent C	Respondent proposes to provide load management in prescribed, cumulative power blocks by starting up gas fired generation.	5 MW by 4/1/01; 15 MW by 4/02; 30 MW by 4/03.	$296,000/MW
Respondent D	Simple cycle gas turbine and transmission system enhancements	44 MW on line 2001 88 MW on line by 2003	One unit: $550,591/MW Two Units plus T&D upgrade: present value, $36,706,000

Evaluation of Proposals

Consistent with the ISO's statutory obligations, Management evaluated each proposal based on two broad criteria: reliability and cost-effectiveness. That is, Management first determined whether the proposed non-wires solution satisfied the ISO's planning and operating criteria and, if it did, whether the proposed alternative is cost-effective as compared to the transmission solution. More specifically, the Tri-Valley RFP provided that the ISO will evaluate each proposal based on cost efficiency subject to the following constraints:

1) The Qualified Resource's capability to commence providing peak capability or peak load management service on the Availability Date;

2) The Qualified Resource's operating characteristics, including such Resource's capability to fully meet the reliability concerns addressed by the transmission expansion alternative;

3) For proposals to provide service through Grid Generation Facilities, Respondent's agreement to execute a PGA in the form of the PGA *Pro Forma* attached as Exhibit B and Pilot Agreement in the form of the *Pro Forma* attached as "Exhibit C"; and for proposals to provide service through Peak Load Management Projects, Respondent's agreement to execute a PLA in the form of the PLA *Pro Forma* attached as Exhibit D and Pilot Agreement in the form of the *Pro Forma* attached as "Exhibit C";

4) The adequacy of the type and amount of performance security Respondent proposes to provide to secure its performance of contractual commitments made under any awarded agreement;

5) The adequacy of Respondent's cost justification for the locational incentive proposed in its bid;

6) Ability to provide proposed services;

7) Safety;

8) Future impact on all markets;

9) Environmental implications, and

10) Impact, if any, on ISO's tax exempt financing.

Based on Management's evaluation, we believe that all non-wires respondents either satisfy or do not raise concerns regarding criteria 7 though 10. Attachment C details how each non-wires respondent either satisfies or does not satisfy criteria 1 through 6 above. Management's evaluation of the cost-effectiveness of each proposal follows. Attachments D contains the ISO Grid Planning department's analysis of the non-wires alternatives to PG&E's proposed transmission project.

Cost-Effectiveness Evaluation

As outline in more detail below, PG&E's proposed Southern Tri-Valley Transmission Expansion Project is projected to cost approximately $29 million. PG&E's proposed project consists of two new 230/21 kV substations, each of which would be fed by new 230 kV transmission lines off of an existing 230 kV line. The project is designed to reduce loading on the existing 60/21 kV system.

As noted earlier, there are two conceptual approaches to comparing the cost of wires and non-wires alternatives:

Option 1 - compare the cost of a non-wires project against the cost or value of deferring the proposed transmission project for a certain number of years. The fundamental premise of this approach is that any such non-wires alternatives are likely to only defer construction of a proposed transmission project, but that ultimately, due to load growth, the transmission project would have to be built. Therefore, based on that premise, the value of a non-wires project could be determined by calculating the present value of the costs that otherwise would have been incurred for the transmission project during the deferral period. Such costs can be easily estimated by applying a reasonable carrying charge to the total cost of the transmission project. A carrying charge is the amount of money needed to cover a reasonable return on the investment (debt and equity), taxes, operation and maintenance, etc. A typical carrying charge on such transmission investments is around 15%. A very conservative number is 20%.

Option 2 - compare the cost of a non-wires project against the cost or value of permanently "displacing" the transmission project. Under this approach a non-wires project would be compared to the total cost incurred from building the transmission project. The value of displacing the transmission project would then be determined by calculating the present value of the stream of payments for the transmission project over the life of the facility.

<u>Management Uses Deferral</u>

The ISO has consistently taken the position that it would actively consider viable non-wires alternatives to Participating Transmission Owner (PTO) sponsored transmission projects. As part of that consideration the ISO believes, consistent with the Board's direction, that it is appropriate to value such alternatives against the cost of "deferring" the transmission project. Therefore, Management recommends Option 1 be used to evaluate the cost of non-wires alternatives against PG&E's proposed Tri-Valley project. Based on this approach, the nominal and present value of deferring PG&E's proposed project can be determined as follows:

Transmission Lines (Overhead and underground):[1]

Rights-of-way acquisition and permitting	$2,097,000
Overhead and underground transmission line construction	$22,041,000
Conversion of Vineyard Substation to 230 kV	$5,193,000
Total Cost of the Southern Tri Valley Transmission Alternative	$29,331,000
Net present value of this alternative	$23,505,000.

The ISO Grid Planning performed a study to determine what amount of additional capacity associated with the PG&E's proposed Southern Tri-Valley transmission project. Using power flow studies that modeled the system with and without the transmission alternative, the ISO calculated the highest load the transmission system could support without overloading any facility. With the transmission reinforcements in place the system can support a load level 615 MW higher than without the reinforcements. Therefore, the price of the transmission alternative per MW is $38,219/MW. Alternatively, based on use of the 175 MW solicited in the RFP, the cost would be $134,314/MW.

Table 2 lists the present value costs of the PG&E transmission project, the value of deferring the project, the value of displacing the project, and the bid price for each Respondent, including the total cost of the "portfolio" of non-wires projects necessary to satisfy the 175 MW requirement.[2] In order to determine this portfolio, the ISO selected the non-wires

[1] These costs do not include the related Distribution System upgrades, since these enhancements are needed regardless of whether the Transmission project or the non-wires alternatives are selected.
[2] The Tri-Valley RFP stated that the ISO was soliciting 175MW of peaking capability and/or peak load management service and that respondents may offer such capability or service in quantities of from one to forty-nine megawatts per

projects with the lowest costs that, in sum, satisfied the 175 MW requirement. Therefore, in order to satisfy the requirement beginning in 2001, the ISO would have to select all four proposals, for a total of 182.5 MW.[3]

Table 2

Project	Cost (Present Value in $/MW)
PG&E Transmission Project	$38,219
PG&E Transmission Project – Deferral[4]	$38,219
PG&E Transmission Project – Displacement[5]	$97,995
Respondent A	$198,000
Respondent B	$340,000
Respondent C	$296,000
Respondent D	$336,000
Total – Non-wires[6]	$267,025

Positions of the Parties

Respondents generally assert that the ISO should view their proposals as effectively "displacing" PG&E's proposed project. Moreover, one Respondent cautions the ISO that it should seriously consider, and factor into its evaluation, the local community's opposition to PG&E's proposal and the likelihood that representatives of the community will be able to successfully defeat or delay PG&E's Certificate of Public Convenience and Necessity application before the California Public Utilities Commission.

Potential FERC Filing

To the extent that the Board ultimately decides to pursue a non-wires alternative to PG&E's proposed transmission project, Management will need to develop the necessary FERC filing to ensure cost-recovery of the costs incurred under this pilot program. Consistent with the approach outlined in the ISO's revised long-term grid planning process approved last fall, the FERC filing would seek acceptance of the necessary modifications to the ISO Tariff to provide for the recovery, from PG&E, of the costs the ISO incurs as a result of entering into a pilot agreement with the winning non-wires project, as outlined in the Tri-Valley RFP and *Pro Forma* Pilot Service Agreement. The filing would also provide that PG&E collect such costs through its Transmission Owner Tariff.

Management Recommendation

Management recommends that PG&E be directed to proceed with its proposed transmission expansion project.

"Qualified Resource" and that respondents could propose more than one Qualified Resource. None of the four respondents' proposals individually satisfies the 175 MW requirement in 2001.

[3] The ISO would have to select all the capacity associated with Respondent's A (91 MW),C (5 MW) and D (44 MW) and half of the capacity associated with Respondent B's proposal (42.5 MW).

[4] To calculate the "deferral" cost, we applied a 20% carrying charge to the present value cost of the transmission project and multiplied that by 5 (5 years – the deferral period).

[5] To calculate the "displacement" costs, we applied a 20% carrying charge to the present value cost of the transmission project and multiplied that by 30 (30 years or the assumed life of the facility).

[6] Weighted average cost based on MW selected from each Respondent.