Memorandum

To: ISO Board of Governors
From: Keith Casey, Vice President, Market & Infrastructure Development
Date: March 20, 2013
Re: **Decision on the ISO 2012/2013 Transmission Plan**

This memorandum requires Board action.

EXECUTIVE SUMMARY

Each year the California Independent System Operator Corporation undertakes a comprehensive assessment of the transmission needs of the system over a 10-year planning horizon and produces an annual transmission plan. The ISO 2012/2013 transmission plan provides a comprehensive evaluation of the ISO transmission grid to identify upgrades needed to successfully meet California's policy goals, in addition to examining conventional grid reliability requirements and transmission projects that can bring economic benefits to consumers. The tariff requires Board approval of the transmission plan. Accordingly, Management is recommending the Board approve the ISO transmission plan for the 2012/2013 planning cycle.

In addition to approving the overall findings and conclusions documented in the transmission plan and summarized in this memorandum, Management requests that the Board approve the following transmission upgrades:

- A total of thirty-six reliability driven transmission projects were identified as needed, representing an investment of approximately $1.35 billion in infrastructure additions to the ISO-controlled grid. Eight projects having costs greater than $50 million and a combined cost of approximately $907 million are recommended for approval. The remaining twenty-eight of these projects cost less than $50 million each, totaling $436 million, and were approved by Management consistent with the tariff. These thirty-six reliability projects are necessary to ensure compliance with NERC and ISO planning standards.

- Five policy driven transmission projects totaling approximately $421 million were identified as needed for meeting state policy needs associated with 33% RPS objectives.

The transmission plan also identified four areas which require further study, and which may result in Management making further recommendations to the Board of Governors and seeking additional Board approvals of certain amendments to the 2012/2013 transmission plan at a future meeting:

- Addressing the potential need for transmission reinforcement of the San Francisco Peninsula due to outage concerns related to extreme contingencies;

- Addressing potential overload concerns on the "West of the River" transmission path into the ISO footprint related to renewable generation in the Imperial Valley area;

- Reviewing the economic benefits of a Delaney-Colorado River 500 kV transmission line addition; and

- Reviewing the economic benefits of an Eldorado-Harry Allen 500 kV transmission line addition, once existing study work with NV Energy is completed and the ISO evaluates possible alternatives.

The ISO produced this transmission plan after engaging in an extensive stakeholder process. We communicated preliminary results through stakeholder presentations on September 26 and 27, and on December 11 and 12. The ISO released a draft plan on February 1 and presented it at a stakeholder session on February 11. Based on comments received from stakeholders, we conducted additional review and made further revisions, culminating in the final ISO 2012/2013 transmission plan. Management proposes the following motion:

> ***Moved, that the ISO Board of Governors approves the ISO 2012/2013 transmission plan attached to the memorandum dated March 13, 2013.***

The Revised Transmission Planning Process

A core responsibility of the ISO is to plan and approve additions and upgrades to transmission infrastructure so that as conditions and requirements evolve over time, it can continue to provide a well-functioning wholesale power market through reliable, safe and efficient electric transmission service. Since it began operation in 1998, the ISO has fulfilled this responsibility through its annual transmission planning process.

Under the transmission planning process, Board approval of the transmission plan is required. Specifically, section 24.4.10 of the tariff states:

> *The revised draft comprehensive Transmission Plan, along with the stakeholder comments, will be presented to the CAISO Governing Board for consideration and approval. Upon approval of the plan, all needed transmission addition and upgrade projects and elements, net of all transmission and non-transmission alternatives considered in developing the comprehensive Transmission Plan, will be deemed approved by the CAISO Governing Board. Transmission upgrade and addition projects with capital costs of $50 million or less can be approved by CAISO management and may proceed to permitting and construction prior to Governing Board approval of the plan. Following Governing Board approval, the CAISO will post the final comprehensive Transmission Plan to the CAISO website.*

Collaborative Planning Efforts

Responding to the need for coordinated action, the ISO, utilities, the California Energy Commission, the California Public Utilities Commission and other stakeholders worked closely to assess how to meet the environmental goals established by state policy. The collaboration among these entities is evident in the following initiatives:

Transmission Planning Memorandum of Understanding (MOU)

The ISO and CPUC executed a Memorandum of Understanding in May 2010 to formalize coordination between the ISO revised transmission planning process and the CPUC transmission siting, permitting and long-term transmission planning processes. The MOU clarifies that the ISO will consider and incorporate into its planning process the generation scenarios from the CPUC long-term planning process. The CPUC, in turn, will give substantial weight in its siting assessment to project applications that are consistent with the ISO transmission plan.

The ISO coordinated closely with CPUC staff in developing the renewable generation portfolios used in the transmission plan. This coordination included stakeholder consultation, which led to several modifications of the initially proposed portfolios.

California Transmission Planning Group

The California Transmission Planning Group was formed in the fall of 2009 to conduct joint transmission planning by transmission owners (investor owned utilities and publicly owned utilities) and the ISO. During past planning cycles the ISO worked closely with the CTPG to develop a statewide approach to the transmission needed to meet the 33% RPS targets by 2020. During their individual planning cycles, CTPG members completed a significant amount of technical analyses to

develop a framework for preparing a statewide transmission plan. CTPG evaluates alternative renewable resource portfolios based on participant interest, which reflected input from the Renewable Energy Transmission Initiative, other stakeholders, and state agencies. Their intent is to develop a conceptual, least regrets transmission plan that CTPG members who are the planning entities for their balancing authority areas would assess in greater detail as part of their own respective planning processes. The CTPG produced its latest plan in March 2012, which was relied upon by the ISO in the development of a 2012 conceptual statewide plan for consideration in the 2012-2013 planning cycle.

Nuclear Generation Backup Plan Studies

In the course of the 2012/2013 transmission planning cycle, the ISO examined the grid reliability impact of the absence of the two nuclear generating stations, Diablo Canyon Power Plant (DCPP) and San Onofre Nuclear Generating Station (SONGS), which are located in the ISO balancing authority area. This work consisted of both a mid-term and a long-term assessment.

The mid-term assessment addressed the extended outage scenario at DCPP and SONGS for an intermediate timeframe of 2017-2018. The mid-term study is considered contingency planning for future unplanned long-term outages. The study addressed a recommendation from the CEC in the 2011 Integrated Energy Policy Report, which was made in consultation with the CPUC, that, “to support long-term energy and contingency planning, the California ISO (with support from PG&E, SCE, and planning staff of the CPUC and the CEC) should report to the Energy Commission as part of its 2013 IEPR and the CPUC as part of its 2013 Long-Term Procurement Plan on what new generation and/or transmission facilities would be needed to maintain system and/or local reliability in the event of a long-term outage at Diablo Canyon, SONGS, or Palo Verde.” The study also incorporates once-through cooling policy implications for generating units that have compliance schedules up to the intermediate 2018 and longer 2022 time frame. The mitigation measures focus on actions that are reasonably implementable by summer 2018.

The long-term assessment considered the reliability concerns and potential mitigation options in the 2022 time frame and beyond to address the potential absence of one or both plants. The study related to DCPP absence focuses on grid reliability implications for northern California and the ISO overall. The study related to SONGS absence focuses on grid reliability implications for southern California and the ISO overall. The combined DCPP and SONGS absence studies also focused on the grid reliability assessment for the ISO bulk transmission system.

The ISO analysis did not reveal concerns for transmission system reliability due to the absence of the Diablo Canyon nuclear generation. The analysis did, however, identify a number of potential mid-term mitigations and a range of potential longer-term mitigations in the absence of SONGS. This analysis was taken into account in assessing the need to proceed on "least regrets" upgrades as well as providing additional context in considering the selection of recommended alternatives to address other needs, as discussed below.

It is important to note that these assessments focused on just transmission system reliability. The absence of DCPP or SONGS may have other adverse impacts with respect to meeting system resource needs and greenhouse gas reduction goals.

Findings and Transmission Projects

Our comprehensive evaluation of the areas listed above resulted in the following key findings:

- The ISO identified 36 transmission projects with an estimated cost of $1.35 billion, as needed to maintain the reliability of the ISO transmission system;
- One service area, the San Francisco peninsula, has been identified by PG&E as being particularly vulnerable to lengthy outages in the event of extreme (NERC Category D) contingencies, and further studies have been initiated to determine the need and urgency for reinforcement. Depending upon the results, this issue may be brought forward for consideration at a future Board meeting;
- A need for five relatively small policy-driven transmission upgrades that are specified in this transmission plan;
- A potential policy-driven need relating to potential overloads of the "West of River" transmission path leading into the ISO footprint from Arizona under the base and sensitivity renewable generation portfolio, which the ISO discovered through review of the policy driven maximum resource adequacy import capability analysis in the draft transmission plan. This issue requires further study by the ISO;
- One economic-driven 500 kV transmission project, the Delaney-Colorado River transmission project, which requires further study and, depending on the results of those studies, may be brought forward for consideration at a future Board meeting; and
- One other economic-driven project, a 500 kV transmission line from Eldorado to Harry Allen, which has the potential to provide significant benefits and which

the ISO will evaluate further as part of an ongoing joint study with NV Energy and its consideration of possible transmission and non-transmission alternatives.

RELIABILITY DRIVEN TRANSMISSION PROJECTS

This plan proposes thirty-six reliability driven transmission projects, representing an investment of approximately $1.35 billion in infrastructure additions to the ISO controlled grid. The majority of these projects (twenty-eight) cost less than $50 million each, has a combined cost of $436 million, and has been approved by Management earlier in the planning cycle. The remaining eight projects with costs greater than $50 million each have a combined cost of $907 million. These reliability projects are necessary to ensure compliance with the NERC and ISO planning standards. The eight reliability transmission projects with costs greater than $50 million consist of the following:

- ***Atlantic-Placer 115 kV Line –*** A reinforcement and upgrade project of the 115 kV system within the Central Valley area of the PG&E system to address a number of potential overload and voltage conditions in the area. ($55 - 85 million)
- ***Gates #2 500/230 kV Transformer Addition –*** The addition of a 500/230 kV transformer at the Gates substation in the Greater Fresno area of the PG&E system to address potential overload conditions in the area. ($75 - 85 million)
- ***Gates-Gregg 230 kV Line –*** The addition of a new 230 kV line into the Greater Fresno area of the PG&E system to address potential overload and voltage conditions in the area. The line also provides for expanded utilization of HELMS pump storage facility for ancillary service and renewable integration flexibility needs. ($115 - 145 million)
- ***Midway-Andrew 230 kV Project –*** A new 230/115 kV substation and 115 kV reinforcements and upgrades within the Central Coast and Los Padre area of the PG&E system to address a number of potential overload and voltage conditions in the area. ($120 - 150 million)
- ***Northern Fresno 115 kV Reinforcement –*** A new 230/115 kV substation and 115 kV reinforcements and upgrades within the Greater Fresno area of the PG&E system to address a number of potential overload and voltage conditions in the area. ($110 - 190 million)
- ***Lockeford-Lodi Area 230 kV Development –*** A 230 kV reinforcement and substation to supply the Lodi area within the Central Valley area of the PG&E system to address a number of potential overload and voltage conditions in the area. ($80 - 105 million)
- ***Install Dynamic Reactive Support at Talega 230kV Substation –*** The addition of a dynamic reactive power source in the vicinity of the Talega Substation to provide voltage support to the transmission system in the Orange County area. ($58 - 72 million)

- ***Orange County Dynamic Reactive Support –*** The addition of a dynamic reactive power source in the vicinity of the SONGS switchyard to provide voltage support to the transmission system in the Orange County area. ($50 - 75 million)

A summary of the number of reliability-driven transmission projects and associated total costs in each of the three major transmission owners' service territories is listed below in Table 1. The ISO has operational control over PG&E and SDG&E lower voltage transmission facilities (i.e., 138 kV and below) and therefore there were more reliability projects identified for those service territories in comparison to the SCE higher-voltage bulk system.

In arriving at these projects, the ISO and transmission owners performed power system studies to measure system performance against the NERC reliability standards and ISO planning standards as well as to identify reliability concerns that included, among other things, facility overloads and voltage excursions. The ISO then evaluated mitigation measures and identified cost-effective solutions.

Table 1 – Summary of Approved Reliability Driven Transmission Projects in the ISO 2012/2013 Transmission Plan

Service Territory	Number of Projects	Cost
Pacific Gas & Electric (PG&E)	31	$1,168 M
Southern California Edison Co. (SCE)	0	$0 M
San Diego Gas & Electric Co. (SDG&E)	5	$175 M
Valley Electric Association (VEA)	0	$0 M
Total	36	$1,343 M

TRANSMISSION ELEMENTS SUPPORTING RENEWABLE ENERGY GOALS

Table 2 provides a summary of the various transmission elements of the 2012/13 transmission plan for supporting California's renewable energy goals. These elements are comprised of the following categories:

- The major transmission projects that have been previously approved by the ISO and are fully permitted by the CPUC for construction;
- Additional transmission projects that the ISO interconnection studies have shown are needed for access to new renewable resources have been identified in large generator interconnection agreements or are still progressing through the approval process;
- Policy driven transmission elements already approved but not yet fully permitted; and
- Additional policy-driven transmission elements being recommended for approval.

Table 2: Elements of the 2012/13 ISO Transmission Plan Supporting Renewable Energy Goals

Transmission Facility	Online
Transmission Facilities Approved, Permitted and Under Construction	
Sunrise Powerlink (completed)	2012
Tehachapi Transmission Project	2015
Colorado River - Valley 500 kV line	2013
Eldorado – Ivanpah 230 kV line	2013
Carrizo Midway Reconductoring	2013
Additional Network Transmission Identified as Needed in ISO Interconnection Agreements but not Permitted	
Borden Gregg Reconductoring	2015
South of Contra Costa Reconductoring	2015
Pisgah - Lugo	2017
West of Devers Reconductoring	2019
Coolwater - Lugo 230 kV line	2018
Policy-Driven Transmission Elements Approved but not Permitted	
Mirage-Devers 230 kV reconductoring (Path 42)	2015
Imperial Valley Area Collector Station	2015
Additional Policy-Driven Transmission Elements Recommended for Approval	
Sycamore – Penasquitos 230kV Line	2017
Lugo – Eldorado 500 kV Line Re-route	2020
Lugo – Eldorado series cap and terminal equipment upgrade	2016
Warnerville-Bellota 230 kV line reconductoring	2017
Wilson-Le Grand 115 kV line reconductoring	2020

The five additional policy-driven transmission elements shown in Table 2 that are being recommended for approval have a total cost of approximately $421 million and consist of the following:

Sycamore – Penasquitos 230 kV Line ($111 - 211 million) – An 11 mile 230 kV transmission line to alleviate thermal overloading due to increased renewable generation in the Imperial Valley or San Diego counties, or in the absence of SONGS generation.

Lugo – Eldorado 500 kV Line Re-route ($36 million) – Rebuilding up to 6 miles of the Eldorado-Lugo line to increase its physical separation from the Eldorado-Mohave 500 kV line at Eldorado reduces the risk of a simultaneous outage, and supports renewable

generation development in the Eldorado and southeast California area by allowing higher flows under normal operating conditions under WECC planning criteria.

Lugo – Eldorado series cap and terminal equipment upgrade ($121 million) – The upgrade of the thermal capacity of the series capacitors and terminal substation equipment allows the system to remain within operating limits under certain double-contingency outages. This increased capacity supports additional renewable generation in the Eldorado and southeast California area.

Warnerville-Bellota 230 kV line reconductoring ($28 million) – Reconductoring the Warnerville-Bellota 230 kV transmission line with conductor with higher thermal capacity will prevent overloading under a number of conditions resulting from additional renewable generation in the Greater Fresno Area.

Wilson-Le Grand 115 kV line reconductoring ($15 million) - Reconductoring the Wilson – Le Grand 115 kV transmission line with conductor with higher thermal capacity will prevent overloading under a number of conditions resulting from additional renewable generation in the Greater Fresno area.

In addition to these five upgrades, the ISO identified a potential policy-driven need relating to potential overloads of the "West of River" transmission path leading into the ISO footprint from Arizona. The ISO identified this potential need through its review of the draft transmission plan results for the base and sensitivity renewable generation portfolios. Since this issue has just recently been identified, it will require further study.

ECONOMICALLY DRIVEN TRANSMISSION PROJECTS

The objective of the ISO's economic studies is to identify transmission congestion and analyze if the congestion can be cost effectively mitigated by network upgrades. Generally speaking, transmission congestion increases consumer costs because it prevents lower priced electricity from serving load. Resolving congestion bottlenecks is cost effective when ratepayer savings are greater than the cost of the project. In such cases, the transmission upgrade can be justified as an economic project.

Through its own analysis and the input of stakeholders, the ISO identified five high priority studies that were evaluated in the 2012-2013 planning cycle. The analyses compared the cost of the mitigation plans to the expected reduction in production costs, congestion costs, transmission losses, capacity or other electric supply costs resulting from improved access to cost-efficient resources. The ISO's preliminary analysis was documented in the draft 2012-2013 transmission plan released on February 1, 2013, and indicated financial benefits exceeding costs for two projects. However, in the course of further reviewing those results, the ISO determined that the benefits for one of the projects (Delaney-Colorado River) may have been overestimated, primarily due to the treatment of greenhouse gas emissions relating to imports, and that the second project (Eldorado - Harry Allen), requires additional analysis and consideration of alternatives.

Management therefore concluded:

- One economically-driven 500 kV transmission project, the Delaney-Colorado River transmission project, requires further study and, depending on the results, may be brought forward later this year for Board decision.
- One other economically-driven project, a 500 kV transmission line from Eldorado to Harry Allen, has potential significant benefits, and the ISO will further evaluate it as part of an ongoing joint study with NV Energy and the ISO's general consideration of possible alternatives.

Special Study To Inform CPUC's CPCN Proceeding– Comparison of Alternatives to the Coolwater-Lugo Project

The Coolwater-Lugo 230 kV transmission line was triggered by a Large Generator Interconnection Agreement (LGIA) with ISO generation project #125 as a delivery network upgrade needed to mitigate the overloads on the Kramer-Lugo #1 & #2 230 kV Lines. The agreement was executed in 2010 and by order issued January 28, 2011, the Federal Energy Regulatory Commission accepted this LGIA effective January 30, 2011.

SCE's application to the CPUC for a Certificate of Public Convenience and Necessity (CPCN), for the Coolwater-Lugo project is expected in 2013. In anticipation of that filing, the CPUC has indicated that alternatives to Coolwater-Lugo supporting west Mohave renewable generation will need to be considered in the upcoming CPCN proceedings. The AV Clearview Transmission Project was suggested in comments submitted during the planning process as an alternative to the Coolwater-Lugo 230 kV transmission line. Thus, in light of the of the CPUC's stated need to meaningfully discuss alternatives in the CPCN process, the ISO decided to study AV Clearview as an alternative in preparation for the CPCN proceeding. Conducting this analysis during the transmission planning process provides a consistent study framework for the analysis and greater transparency to stakeholders about an alternative that is likely to be considered in the CPCN proceeding.

In addition to our own review, the ISO had an opportunity to review the benefits estimated in a study prepared on behalf of the AV Clearview proponents Critical Path Transmission, Inc. (Critical Path), which was submitted to the ISO as a stakeholder comment.

These reviews have led to the following findings:

- The AV Clearview project would provide additional access to potential renewable generation (relative to the Cool Water-Lugo alternative), but at levels beyond those supported by the CPUC-provided renewables portfolios the ISO relies on for planning purposes, and at a higher estimated cost. The benefit of this additional renewable generation access is unclear given there is no state policy direction to support higher levels of renewable development in this area.

- The bulk of the financial benefits attributed to the project in the study prepared on behalf of Critical Path are likely to be less than reported due to the amounts and manner in which renewable generation was modeled in the analysis. Other benefits cited in the study are, in the ISO's view, largely subjective.

- Additional unresolved technical and siting issues were identified by SCE, as the owner of the facilities to which the AV Clearview project would interconnect.

A more detailed description of the above findings can be found in our response to stakeholder comments posted on the ISO's website. The ISO provided this feedback to Critical Path and remains open to reviewing further input and refining our analysis. However, our review to date of the AV Clearview project has not caused us to recommend AV Clearview as an alternative to Coolwater-Lugo in the CPUC proceeding.

In response to the feedback provided by the ISO, Critical Path provided a revised project proposal on February 25, 2013. Having just received this proposal, the ISO did not have adequate time to comprehensively review it prior to finalizing its 2012/2013 Transmission Plan for the March Board meeting. However, we intend to review the latest proposal after the March Board meeting, and will make our conclusions and supporting analysis publicly available for consideration by interested parties.

COMPETITIVE SOLICITATION FOR NEW TRANSMISSION ELEMENTS

The ISO's revised transmission planning process includes a competitive solicitation process for policy-driven and economic-driven transmission elements, as well as for reliability-driven elements that provide additional policy and economic benefits. Upgrades to or additions on an existing participating transmission owner facility, the construction or ownership of facilities on a participating transmission owner's right-of-way, and the construction or ownership of facilities within an existing participating

transmission owner's substation are excluded from competition. Reliability-driven projects eligible for competition will trigger the competitive solicitation process if they provide economic benefits that equal or exceed 10% of the project cost or eliminate the need for or reduce the size or scope of what would otherwise be a policy-driven transmission element.

Based on the review conducted by the ISO, we have identified two elements eligible for competitive solicitation in this transmission plan:

- Sycamore – Penasquitos 230 kV Line ($111 - 211 million)
- Gates-Gregg 230 kV Line ($115 - 145 million)

Also, the Delaney – Colorado River project, which as previously discussed is being reviewed further, would be eligible for competitive solicitation as well if it is recommended for inclusion in the transmission plan later this year and approved by the Board. Some of the other areas identified for further study could also trigger additional needs that, if approved by the Board, could be eligible for competitive solicitation.

Stakeholder Feedback

Stakeholders have provided feedback on the draft ISO 2012/2013 transmission plan that was released on February 1 and presented at a stakeholder meeting on February 11. The more significant stakeholder concerns, and our response to those concerns, are summarized below.

- ***Support for individual projects –*** Stakeholder support for the following projects was mixed, ranging from strong support to concern with certain projects proceeding and to concern for certain projects not being recommended for approval:
    - Delaney-Colorado River 500 kV transmission line
    - Lockeford-Lodi Area 230 kV development
    - San Diego area reliability project submissions
    - San Francisco peninsula reinforcement
    - The Central California results (in particular the Gates-Gregg 230 kV transmission line)
    - Mid-term mitigations identified in the analysis of no-nuclear generation scenarios.

  ISO response: The ISO has reviewed all of the comments carefully, especially in areas where there were suggestions that we were inconsistent in our considerations and application of the various planning criteria. We have

concluded that the recommendations made in this memorandum and transmission plan are appropriate.

- ***The load forecasts and assumptions -*** Some stakeholders expressed concern for the consistency of the load forecasts used in the transmission plan and in other ISO studies, as well as in other regulatory proceedings such as the CPUC's long-term planning process.

  ISO response: The ISO agrees that consistency is an important principle, and strives to ensure consistent study assumptions are used. However, consistency does not mean using the same forecast in all circumstances where it is not warranted. For example, as is indicated in the 10-year plan, more conservative (higher) demand forecasts are used to test the reliability of the system than the less conservative forecasts used to assess economic benefits. Moreover, in an effort to get consistent forecast assumptions between the ISO, CEC, and CPUC for use in long-term procurement and planning assessments, the ISO has committed to actively participate in the Demand Analysis Working Group at the California Energy Commission.

- ***Level of detail and range of alternatives studied in developing recommendations –*** Some stakeholders expressed the view somewhat generically, as well as in specific examples, that broader ranges of alternatives should be examined, and that the ISO should provide more detail in the transmission plan regarding each recommendation. The emphasis in particular was on greater reliance on energy efficiency, distributed generation and demand response.

  ISO response: The ISO does its best to respond to requests for additional details in the transmission plan and believes the level of analysis and detail in the transmission plan is generally reasonable. Stakeholder consultation takes place throughout the development of the transmission plan to enable suggestions regarding possible alternatives, and the ISO responds to that feedback. However, the geography and electrical system topology can, at times, limit the number of viable alternatives.

  The ISO consultation process has commenced on the study assumptions for the 2013/2014 transmission planning cycle, and we have encouraged participation in that forum. The ISO has already indicated its intention to incorporate into its analysis the "low" uncommitted energy efficiency demand reduction from the 2011 CEC forecast, and is considering potential study framework changes that could provide for greater consideration of demand response alternatives in the 2013/2014 planning cycle and beyond.

- ***Distinction between "local delivery network upgrades" identified in the Generator Interconnection Process and policy-driven upgrades identified in the Transmission Planning Process –*** Some stakeholders expressed the concern that it is difficult to understand how the ISO categorizes some upgrades as local delivery network upgrades that are identified in the generator interconnection process and form part of the cost responsibility of interconnection customers and some upgrades as policy-driven upgrades in the transmission planning process that are a system cost.

  ISO response: The ISO believes the framework set out in the tariff provides a solid foundation for the decisions in this area, and agrees that explanations are appropriate on a case by case basis to ensure that interconnection customers are treated fairly.

  In summary, the ISO comprehensively reviews the separation of all local delivery network upgrades from "area" delivery network upgrades that would become policy-driven projects if adequately supported by the CPUC portfolios. Simplistically, the fundamental distinction is that area network upgrades are required to meet portfolio amounts in an area regardless of which combination of resources in the area actually materialize. Local upgrades are those upgrades that are required only for specific combinations of resources materializing in an area.

- ***Consistent treatment of load shedding for extreme contingency events –*** Some stakeholders disagreed with our rationale for finding transmission projects to be needed to avoid load shedding in the event of multiple contingencies where load shedding is permitted by NERC planning criteria. Other stakeholders have suggested that additional projects should be approved in other areas of the transmission system to eliminate load shedding in the event of multiple contingencies in those areas as well.

  ISO response: The ISO acknowledges that judgment is called for as part of the criteria and is to be applied in determining when load shedding should not be accepted as a consequence for extreme contingency events. Consistency is also important in applying that judgment. Based on previous feedback, the ISO has considered consistent parameters in evaluating proposed projects, and has enhanced its planning standards to provide additional guidance and direction regarding consistency. Those revisions were approved by the Board on July 13, 2011. Also, the ISO acknowledges the concern expressed by some stakeholders that special protection systems have perhaps been over-utilized and the ISO has conducted a review of existing special protection systems in its 2012/2013 transmission plan.

- ***Deliverability requirements being considered in assessing policy related transmission reinforcement requirements –*** Some stakeholders questioned the rationale for applying our deliverability methodology in considering the need for policy-driven upgrades, noting that the 33% RPS objective applies to energy and not capacity. Stakeholders have also questioned the validity of the deliverability methodology.

  ISO response: The ISO notes that the CPUC portfolios put a heavy weighting on generation that is viable, and in particular, the "commercial interest" portfolio has been selected as the base case. Virtually all projects in the discounted core are seeking full capacity delivery status (e.g. deliverability). Based on the ISO's experience working with generation interconnection customers, full capacity delivery status has been demonstrated as a necessity in advancing generation projects. The ISO has therefore included the deliverability analysis in assessing the need for policy-driven upgrades since the framework for approving policy-driven upgrades was introduced. Regarding the methodology, the ISO notes the feedback from stakeholders. As the deliverability analysis is admittedly complex, the ISO has taken preliminary steps to provide broader education on the methodology itself, and has further committed to industry to prepare more in-depth material providing more detailed explanations and relevant examples of the methodology.

- ***Forecast increase in the high voltage transmission access charge and the ISO's model–*** Some stakeholders have noted that the ISO has included a high level model approximating the impacts on the high voltage TAC of the transmission recommended for approval in this plan, and cited the increase as the basis for why certain projects should not move forward. Further, others have asked for the model to be made public, and for the ISO to provide TAC cost increase analysis, splitting the increases by utility service area and by the type of the project.

  ISO response: The ISO acknowledges that increasing rates is a concern, and that all projects merit appropriate examination. The ISO's review is on a case by case basis applying national, regional and local standards. The ISO is finalizing a review of the basis input assumptions with the participating transmission owners whose costs are reflected in the high voltage transmission access model, and will be making the model available upon completion. However, because the model approximates certain costs and applies cost parameters on a system-wide basis, many of these assumptions may be appropriate on a system-wide basis but would not accurately reflect an individual PTO's cost structure. Also, transmission projects are identified in the ISO transmission planning process by the stage at which they were

identified (e.g. reliability, policy, or economic) but projects defined at later stages generally address earlier issues as well, and therefore the classification for tariff purposes is not indicative of the whole function of the facility. For example, policy-driven projects often also address previously identified reliability concerns, but have been enhanced to address policy issues as well. The ISO is therefore unwilling to attempt to parse these cost impacts into more granular categories recognizing the risk of misinterpretation and misunderstandings that this would create.

- ***Identification of project elements eligible for competitive solicitation –*** Some stakeholders have challenged the ISO to increase the number of transmission elements eligible for competitive solicitation based on broader interpretations of policy or economic benefits.

  ISO response: The ISO has conducted its review and determinations in this draft transmission plan based on a fair interpretation of the applicable FERC-approved criteria as reflected in the existing tariff, and applying the same methodologies as it has in the past. Each area of concern raised in comments was reviewed on a case by case basis.

Conclusions

The 2012/2013 ISO transmission plan provides a comprehensive evaluation of the ISO transmission grid to identify upgrades needed to adequately meet California's policy goals, in addition to examining conventional grid reliability requirements as well as projects that can bring economic benefits to consumers. This year's plan identified 41 transmission projects, estimated to cost a total of approximately $1.76 billion, as needed to maintain the reliability of the ISO transmission system, meet the state's renewable energy mandate, and deliver material economic benefits. While this plan shows that the transmission approved to date can accommodate a diverse range of plausible renewable development scenarios, the ISO will continue to work with state agencies and all stakeholders to evaluate development trends and policy directives beginning with next year's planning cycle and will reassess the transmission needs accordingly.

The transmission plan also identified four areas which require further study, and which may result in management making further recommendations to the Board of Governors and seeking additional Board approvals of certain amendments to the 2012/2013 transmission plan at a future meeting:

- Addressing the potential need for transmission reinforcement of the San Francisco Peninsula due to outage concerns related to extreme contingencies;

- Addressing potential overload concerns on the “West of the River” transmission path into the ISO footprint related to renewable generation in the Imperial Valley area;

- Reviewing the economic benefits of a Delaney-Colorado River 500 kV transmission line addition,; and

- Reviewing the economic benefits of an Eldorado-Harry Allen 500 kV transmission line addition, once existing study work with NV Energy is completed and the ISO evaluates possible alternatives.

MANAGEMENT RECOMMENDATION

Based on the findings that the transmission projects and the element listed above are the most cost-effective, feasible solutions for meeting the identified reliability and policy-driven transmission needs in the ISO system, Management recommends that the Board approve the attached ISO 2012/2013 transmission plan.