

**Comments of the State-Provincial Steering Committee on the  
Draft Summary 10-Year Regional Transmission Plan**

**June 24, 2011**

**Introduction**

The State-Provincial Steering Committee (SPSC) would like to thank the Western Electricity Coordinating Council (WECC) for the opportunity to comment on the Draft Summary 10-Year Regional Transmission Plan (Plan).

The development of the first ever interconnection-wide transmission plan under WECC's Regional Transmission Expansion Plan (RTEP) project is a major step. We believe that WECC has made significant advances over the past five years in transmission planning. The RTEP project has raised the bar with increased stakeholder outreach, the commitment of WECC's talented staff, the acquisition of new modeling tools, and the close coordination with subregional planning groups.

We would also like to thank WECC for its collaboration with the SPSC on transmission planning issues, and for its willingness to model and implement SPSC study requests in the 2010 Study Program that include the 2020 Reference Case, the High Load Case, the High DSM Case, and the Low Carbon case.

We recognize that it is a significant new step to move from a report on transmission planning to the creation of a transmission plan. We understand that WECC intends for this 10-Year Plan to be informational. The Plan will not provide a blueprint for specific transmission projects to be built. WECC does not have the authority to order transmission lines be built, or any authority over siting, permitting, or cost allocation.

We do believe that this first Plan sets a standard that will be improved upon in future 10-year plans. Moreover, we anticipate new insights from the newly acquired Long-term Planning Tool that will facilitate the development of a 20-year plan in 2013.

Our SPSC comments are offered with the intent and spirit of improving the value of the first 10-year Plan. In brief, the comments make the following points:

- Congestion analysis is not enough by itself to demonstrate the need for new transmission. We believe new transmission is warranted if it is needed to maintain reliability or it yields significant and demonstrable economic efficiency benefits.
- The Foundational Projects are a key embedded element of the current 10-Year Plan and should be highlighted in the observations. We believe more stringent and objective criteria should be applied to the process of identifying Foundational Projects in future plans. The current Plan should include an appendix that includes comprehensive information about the Foundational Projects.

- The findings of congestion on Montana to Northwest (Path 8) and the Pacific Ties (Paths 65 and 66) lead to WECC recommendations targeting the need for transmission expansion. However, absent the commitment of buyers for long-term resources to be carried across these paths, or formal resource planning endorsement of scenarios requiring such transmission expansion it is unlikely they would be expanded. Neither of the above has been demonstrated.
- We believe WECC’s findings on the resource relocation cases and transmission expansion is a critical step towards a regional analysis. We recommend that this type of economic analysis be expanded interconnection-wide for future plans. We believe the economic analysis is more useful than the congestion analysis in developing consensus for likely future generation development and the corresponding demand for transmission expansion. However, such analysis must either more fully address key cost uncertainties as well as important resource planning criteria and constraints not yet included in WECC’s alternative resources analyses, or else recognize that such critical additional dimensions of analysis are expected to be provided at the subregional, state and LSE levels.
- SPSC strongly supports the recommendation in Section 4.5 that future transmission and resource planning studies at all levels include a comprehensive review of integration issues.
- The draft Plan asserts that RPS compliance beyond the 2020 time horizon will require remote renewable resources that will necessitate additional new transmission. There is virtually no analysis or documentation to support this claim.
- We disagree with recommendations on regional cooperation in section 4.6 and we propose alternative text for planning cooperation.
- SPSC agrees with WECC’s assessment in section 4.9 that strides have been made but gaps remain. SPSC finds there are a number of additional enhancements that are critical to a regional transmission plan. We offer specific text outlining additional enhancements that should be made to future plans.

SPSC’s comments have been developed prior to the completion of the reliability analysis. For this reason, all comments are conditional and presume there are no reliability issues in the generation and transmission network under the Plan. SPSC intends to provide additional comments to the Final Draft of the Plan when it is released in July.

Our comments are divided in two sections. The first section addresses general comments on the Plan that include the Plan’s major recommendations and observations. The second section proposes specific text additions and edits to the current draft.

## **GENERAL COMMENTS**

### **1. Criteria to judge the merits of the plan**

The SPSC concurs with the Plan’s objective stated at the beginning of Section 2 (Introduction): “the Plan is to provide sufficient information to support decision-makers in

determining where and when to build new transmission, or to take other related actions to help ensure that the Western Interconnection is reliable, low-cost, and environmentally sound.” The SPSC has considered what information is important to guide state/provincial decision-makers, and propose the following three part criteria to judge the merits and usefulness of the Plan.

- The Plan should ensure that our power system is reliable over a wide range of plausible futures.
- The Plan should identify significant and demonstrable economic efficiency benefits that can be captured through transmission line expansion.
- The Plan should ensure that there are no major long-run “lost opportunities” (i.e., if we do not build the line now or lock down the transmission path now we could lose substantial likely benefits after the 10 year planning period).

These criteria proposed text changes in the Plan at page 9, Section 2 (Introduction).

## **2. Importance of the Foundational Projects in the Plan**

The Foundational Projects were developed early in the planning cycle as an input assumption in the analysis of the 2020 transmission network, providing the baseline of existing and certain-to-be-built transmission lines on which to model the need for further transmission expansion. As a result of participating in the process leading to the development of the Plan, SPSC members have gained a keen appreciation of the central role played by the Foundational Projects in the Plan.

The Foundational Projects encompass 44 projects and more than 5,500 line miles - a substantial addition to the Western Interconnection. When the transmission network is modeled with a large number of Foundational Projects, it can mask congestion problems on the existing grid and appear to eliminate the need for additional lines. Significantly, we understand that the Plan implicitly concludes that under the 2019 and 2020 Reference cases, we do not need to build any additional lines beyond the Foundational Projects to maintain a reliable power system.

To the extent that the Foundational Projects List accurately reflects lines that are far along in the development process and are thus certain to be built, this result is appropriate. However, if the process for compilation of the Foundational Projects List is not sufficiently rigorous, WECC runs the risk that this preliminary step will effectively subsume the rest of the process by allowing some projects that are not truly “foundational” to avoid comparative analysis in the modeling.

Given the important role of Foundational Projects in developing a transmission plan, SPSC recommends that future transmission plans adopt a more stringent, objective and consistent set of criteria for identifying projects on the Foundational Project List. We recommend that projects must be: (i) under construction, (ii) fully permitted, or (iii) meet other objective criteria that provide a very high level of confidence the project will be built over the 10-year time horizon. The SPSC will propose more specific criteria to the Subregional Coordinating Group in its development of the next Foundational Project List in 2011.

We also recommend that the current Plan include an appendix that provides comprehensive information about the Foundational Projects including: (i) project line miles; (ii) projects under construction; and (iii) project status in the permitting process.

The Plan should explicitly state its implicit conclusion that under the 2019 and 2020 Reference cases we do not need to build any additional lines beyond the Foundational Projects to maintain a reliable power system. Other projects may be justified on economic grounds or localized reliability issues. This conclusion is conditional on the reliability analysis that will be completed in the next month.

### **3. Limitations of the Plan**

Section 2.3 identifies the limitations of the Plan. This is a very important section because it spells out data, modeling and scope issues that qualify the findings of the analysis and what can be concluded from the remaining sections of the Plan. The Plan's discussion of its limitations requires a more detailed discussion of key uncertainties and their implications such as for resource and transmission costs. Moreover, the limitations section should note important factors in resource and transmission planning decisions that were explicitly not included in the analyses. For example, such factors include the siting and permitting of generation and transmission, integration of variable generation, and local economic development as represented in Figure 11 at page 28 of the Plan. Figure 11 should be moved from page 28 in Section 3 to the discussion on limitations in Section 2.3. The key limitations warrant repeating in the more substantive sections of the report, especially sections 4.1, 4.2, and 4.4.

Text edits are provided in Section 2.3 of the Plan along with two figures for insertion.

### **4. Congested Path Analysis Recommendations**

The Plan identifies two major transmission paths (Montana to Northwest and Pacific Tie Paths) with increasing congestion over the next ten years and calls for decision maker action in support of transmission expansion or other congestion relief measures.

WECC staff exercised creativity and ingenuity in developing a new set of congestion metrics that serve to quantify transmission line use and make comparisons across the Western Interconnection. The new concepts of utilization, risk and value congestion metrics, and the recurrent count and total recurrent congestion score, makes an important contribution to our ability to measure and compare transmission flows. It is essential that these metrics, their rationale, and their use in "screening" be more fully and clearly explained at the start of Section 4 that describes path analyses.

After reviewing the combined information on historical and modeled congestion analysis, we find the body of evidence interesting, but it does not provide a conclusive, affirmative demonstration to support new investment in transmission on these two paths. As stated above, we believe new transmission is warranted if (i) it is needed to maintain reliability or (ii) it yields significant and demonstrable economic efficiency benefits. The congestion metrics relied on so heavily in the analysis of the Plan provides useful information but not conclusive evidence to justify investment in transmission projects.

While the relief of congestion is not an end in itself, relieving congestion does have an inherent value in that it better opens the grid to uses which have not matured in the West, including a potential ancillary-services market. Enduring congestion will also make it less likely that remote resources, even if economically efficient, will develop because of the considerable time horizon required to build out transmission and accommodate new generation. These benefits derived from the relief of congested pathways should be realistically assessed in the Plan and/or in other studies, and be objectively weighed against the transmission expansion financing, siting and permitting risks.

#### **5. Recommendation 4.1: Montana to Northwest (Path 8)**

The Montana to Northwest or Path 8 has some unique and distinct characteristics compared to other paths. As noted on page 29, Path 8 was built and sized with a path rating of 2200 MW to deliver base load power from the Colstrip coal plants (nameplate capacity of 2100 MW) to loads in the Northwest. Path 8 was appropriately designed for high utilization levels and falls into the category of “design congestion”. Under the 2020 Reference Case which reflects current utility plans, an additional 793 MW of generation was added in Montana that includes 455 MW of wind generation. Certain cases exploring resource alternatives added greater amounts of wind generation in Montana.

The critical question that drives future transmission expansion on Path 8 is how much demand there is to develop Montana’s abundant wind resources. The most promising buyers of Montana wind energy are the load serving entities (LSE) serving customers in the Northwest and California. Those LSEs must make an economic calculation to buy power and meet their RPS requirements either by developing local renewable resources and/or purchasing remote renewables from a number of possible resource locations that may rely on transmission expansion to deliver the power. To date, we understand that resource planners from the Northwest and California have looked at the local versus remote renewable options and have tended to rely mostly on local options.

However, large commercial wind developers, as well as Montana’s dominant T&D company, retain an expectation that a demand for remote wind will mature, notwithstanding the apparent recent preference of LSEs in coastal states to select in-state resources. The fluidity of public policy in the renewable energy arena has left a lack of certainty surrounding decisions of where to develop renewable energy resources.

WECC’s interconnection-wide analysis may find new opportunities for remote resource development and transmission expansion that have not been given high priority by individual utilities based on their own perspectives regarding time horizon, economies of scale, project viability and resource potential, as well as their market experience to date. Resource planners may have access to confidential data, site-specific conditions, and other factors to consider in making generation resource and transmission investments.

We believe the WECC’s finding on the Montana relocation case, and other resource relocation cases and transmission expansion cases, are valuable and warrant follow up discussions and analysis. We believe that ultimately economic analysis is more useful than congestion analysis in developing both interest and consensus regarding likely future generation development and the corresponding value for transmission expansion.

## **6. Recommendation 4.2: Pacific Tie Paths (Paths 65 and 66)**

The Pacific Tie Paths (Paths 65 and 66) link the Northwest's hydro and growing wind resources to California loads. The congestion analysis of the combined Pacific Tie Paths entails several issues that raise concerns about the resulting recommendation.

First, the two paths were statistically grouped together as a post-modeling technical fix to problems in the production cost model used in the 2010 Study Program as discussed at page 45. To their credit, WECC staff discovered that the PROMOD optimizing algorithm exhibits a bias such that AC lines are loaded up faster than DC lines. The bias was assumed to be neutralized subsequently by analyzing the two lines as a common path. We are concerned whether we would come to a different conclusion if the individual paths could be accurately analyzed as separate units without a modeling glitch.

Second, the historical congestion analysis discussed on page 41 does not convey a compelling case that the Pacific Ties have been historically congested. Neither Path 65 nor Path 66 was in the top 10 most heavily congested paths for the 2009 path utilization study. Other congestion metrics identified did not appear to match the current assessment that puts the Pacific Tie Paths among the top 2 most congested paths.

Third, the congestion metrics based on modeling cases from the 2010 Study Program showed high congestion potential levels for the Pacific Tie Paths. Key drivers for these results were assumptions for increased future wind development in the Northwest and the export of surplus hydro power. By contrast, the recently developed California Independent System Operator (CAISO) transmission plan and the separate California Transmission Planning Group (CTPG) transmission plan both found that under some future resource scenarios additional transmission capacity between the Northwest and California is desirable. However, based on current information regarding renewable energy development and planning such transmission cannot be identified as a high priority. We thus note the critical manner in which our input assumptions can drive the modeling results and subsequent conclusions. This is especially important when there is a wide range of plausible assumptions that significantly impact modeled congestion and its economic implications, which appears to be the case for the Pacific Tie.

## **7. Recommendation 4.3: Accessing additional renewable resources**

The draft Plan observes, at page 51, that utilities are largely relying on local renewable resources to meet RPS requirements in 2020. It then asserts that RPS compliance beyond the 2020 time horizon will require remote renewable resources that will necessitate additional new transmission. There is virtually no analysis or documentation to support this claim.

Almost all cases modeled and analyzed in the 2010 Study program were 10-year cases. The only exception was the 2029 case that modeled the Western Interconnection assuming a 33% renewable penetration for the purpose of exploring a large grid overlay transmission network. The 2029 case with 33% renewable penetration required 376,249 GWh of renewable generation, more than double the 164,742 GWh in the 2020 Reference Case. At such high levels of renewables, the case postulated full development of many of the remote renewable energy hubs identified in the Western Renewable Energy Zone (WREZ) project. However, this was a

special case that specified a very high level of renewables. There was no consideration of the operational feasibility of the case.

A number of states have pursued their own state specific renewable energy zone projects. These state analyses have taken a more granular and extensive assessment of renewable resources available in individual states compared to the WREZ project. The state specific renewable energy zone projects have generally found a high level of potential renewable energy available for future potential development. The aggregate potential in these states suggests that local renewables are potentially available – the critical question is at what cost?<sup>1</sup>

The question of what additional renewable energy sources would or should be accessed to meet post-2020 RPS requirements is thus open-ended and complex. While it deserves consideration for the upcoming 20-Year Plan studies, the present 10-Year Plan study cycle has not addressed, let alone resolved the issue.

The points above are converted to proposed text in the Plan at page 51, Section 4.3.

#### **8. Recommendation 4.4: Some remote renewable resources appear cost-effective**

The 2010 Study Program included a series of resource relocation cases that evaluated the impact of shifting 12,000 GWh of renewable generation assumed to be located in California under the 2019 Reference case to eight different resource areas (AZ/N.NV, N.NV, NM, WY, MT, AB, BC, NW Coastal) in the Western Interconnection. Proposed transmission projects were matched to, and modeled with, the different resource cases. Economic analysis was performed to compare the combined capital and operating costs of the original 2019 Reference case versus revised cases that shift renewable resources to these various areas, also adding the associated transmission projects. Key findings from this analysis “suggest significant total cost savings result under the alternative resource futures.” Page 50. Table 4 on page 51 summarizes the estimated savings in six resource relocation cases linked to transmission expansion, driven by estimates of resource capacity factors (energy v. MW) and the capital costs for developing potential large transmission projects and generic renewable generation facilities in remote areas.

We believe WECC’s findings on the resource relocation cases and transmission expansion is a critical step towards a regional analysis. We recommend that this type of economic analysis be expanded and improved for future interconnection-wide plans. We believe the economic analysis is more useful than the congestion analysis in developing consensus for likely future generation development and the corresponding demand for transmission expansion.

This analysis should be extended through additional in-depth assessment of resource and transmission cost uncertainties and through inclusion of at least some of the important additional planning and investment criteria not included in the present analysis (see Section 2.3 with recommended expansion and addition of 2 figures). In the future there should also be consideration of remote renewables procured by states other than California. WECC’s analysis with its broad perspective across the entire interconnection, potential economies of scale, and long planning horizons may identify resource-plus-transmission opportunities not as apparent or attractive to individual utilities. However, important planning criteria and cost risks not captured

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<sup>1</sup> California, Colorado, Arizona, Nevada and Utah have all evaluated the substantial potential of in-state renewable resources.

in the present analyses will still have to be examined by individual states and LSEs who choose to follow up on the WECC studies. One important challenge is to incorporate the risk associated with the uncertainty and environmental tradeoffs for permitting and siting a proposed long transmission project, and the long lead time for resources dependent upon that transmission. It is important that WECC analyses and their interpretation recognize that important risks have already been reduced by major permitting, procurement and development activity in some areas including California, which substantially changes the overall risk/value “equation.”

We note that WECC provided informative responses to stakeholder questions arising from preliminary analyses of relocation cases. First, WECC staff solicited outside consultants to examine key assumptions and engaged in extended discussions with stakeholders to vet and build consensus over the data, assumptions and methodology. Second, recent discussions on the economic analysis of resource relocation cases by the Technical Advisory Subcommittee led to consideration of sensitivity analyses regarding how project net benefits varied with changed assumptions of generation resource costs and transmission costs. These responses to stakeholder concerns were much appreciated and improved the quality and understanding of the work. We believe this was a noteworthy success and recommend that such vetting and sensitivity analysis should play an important role in the RTEP process. We support a larger and earlier role of sensitivity analysis in future planning cycles, particularly as we are dealing with large investments involving complex and unique infrastructure projects having diverse locations and technologies.

Sections 4.4 and 4.6 state that “...local and state jurisdictions should consider these [remote] opportunities” (page 51) and “...recommend(s) that decision-makers take positive steps toward greater regional transmission and resource planning” (page 55). At least for California, which is the only state for which procurement of remote resources was analyzed, the main factors limiting out-of-state procurement to date have been the actual market for renewables in response to solicitations – including the ability of remote resources to compete with local options on factors extending beyond cost, including risk and development time – and the ability to deliver the resources to California. This illustrates how important factors other than those included in WECC’s current analysis come into play.

While there may well be some west-wide de facto bias toward in-state development, this bias can be seen both in states with ambitious renewables procurement policies and in states wishing to develop renewables for export. The challenge is to provide objective information, and for all parties to find practical solutions that are in their mutual self-interest, as has occurred in past development of generation and transmission across the west.

Renewable energy development is strongly policy driven and policies may remain fluid due to the novelty and multiplicity of state laws and commission practices guiding renewable development, and because of rapidly changing market and technological conditions including ongoing procurement, siting and permitting activity. Policy preferences and apparent economic efficiency occasionally conflict, and we agree with WECC that in such situations, economic efficiency should receive substantial weight, recognizing that ultimate measures of economic efficiency for commercial and regulatory decisions may include value and risk factors besides those included in the present resource relocation studies.

We believe the RTEP process can be a transparent and constructive forum for such sharing and comparison of transmission and resource planning information among diverse parties, especially when that process responds to stakeholder concerns as discussed above, and recognizes the role of additional planning criteria not yet factored into WECC analyses.

#### **9. Recommendation 4.5 Operational impacts of variable generation**

SPSC strongly supports the recommendation in Section 4.5 that future transmission and resource planning studies at all levels include a comprehensive review of integration issues. The Plan observes that all 10-year cases analyzed in the 2010 Study Program had high levels of variable generation. WECC describes that the high level of variable generation modeled in the system is causing significant and unprecedented levels of conventional generation ramping. In the expected future case (2020 Reference Case), the modeling results showed significant cycling of base-load generation.

One of the SPSC's high priority objectives is to find opportunities to lower the cost of integrating variable generation in the power system. WECC needs to proactively address this challenge in the face of the changing mix of generation in the Western Interconnection.

As it relates to RTEP, SPSC formally submitted a 2011 study request to TEPPC calling for the development of a screening tool to evaluate the technical feasibility and cost of integrating variable generation assumed in cases with a high penetration of variable generation. The evaluation should identify measures to mitigate technical and cost hurdles. This integration screen would be analogous to the reliability analysis that subregional planning groups will be doing on current case studies to supplement the basic TEPPC economic and congestion studies. The need for this tool to augment other measures to address the impacts of variable generation integration is reinforced by Draft Section 4.5. SPSC recommends that WECC add language to Section 4.5 committing to the development and utilization of this screening tool.

#### **10. Recommendation 4.6: Planning cooperation**

Section 4.6 of the draft Plan argues that the regulatory environment for electricity planning and procurement is state- and provincial-centric, which may lead to electric infrastructure decisions that do not maximize the efficient use of capital and land. The draft Plan finds there are opportunities for regional transmission and renewable resource development that should be recognized as states implement their energy policies. The draft Plan proceeds to make six recommendations to state and provincial decision-making authorities: (1) Joint commission hearings or investigatory dockets; (2) Coordinated regional IRPs; (3) Hearings/investigations to determine costs/benefits of regional energy markets; (4) Identify state regulatory/statutory changes to achieve broader regional cooperation; (5) Consider regional planning processes in Subregional Transmission Planning Groups; and (6) Reconcile data sets between regional/sub-regional transmission planning and procurement processes.

We have two general criticisms about this section. First, the section overlooks statutory limits on the authority of some state commissions to undertake one or more of these joint efforts.

Second, Section 4.6 fails recognize the historical role the states and provinces have played in promoting interconnection-wide transmission planning. For more than a decade,

Western Governors and states and provinces have played an active role in promoting the development of regional transmission planning:

- Western Governors initiated the first interconnection-wide transmission planning effort during the midst of the Western Electricity Crisis of 2000-2001.
- The Governors asked the industry to institutionalize interconnection-wide transmission planning which was done within the Seams Steering Group-Western Interconnection.
- In 2005-2006, Western Governors led the Clean and Diversified Energy Initiative (CDEI), a regional stakeholder-driven evaluation of the potential for development of 30,000 megawatts of clean and diversified energy generation by 2015, increasing energy efficiency by 20 percent by 2020, and ensuring the development of adequate transmission capacity over the next 25 years.
- In 2008, Western Governors launched the Western Renewable Energy Zones (WREZ) initiative, with the goal of developing a framework for consensus among the states and provinces throughout the Western Interconnection on how to best develop and deliver energy from renewable resource areas to load centers, in a cost-effective and environmentally sensitive manner.
- Beginning in 2008, the states/provinces were the first parties to utilize the WECC transmission planning open season study request process to evaluate potential factors (e.g., carbon reduction) that could affect the need for transmission across boundaries and throughout the interconnection.
- Western states/provinces are presently in the process of determining if utilities have a common interest in specific renewable energy zones, whether in or out-of-state, as part of Phase 3 of the WREZ project.
- Western Governors are leading the development of data related to wildlife sensitivities and water availability to incorporate in the regional transmission planning process.

States and provinces are looking to the interconnection-wide transmission plan to provide information that can be useful in policy and regulatory decision-making. The SPSC proposes five recommendations to improve planning cooperation:

1. The WECC planning process needs to better engage decision-makers to define the questions they need addressed. The transmission planning process should be improved to better identify the specific conditions under which it is appropriate to build new transmission. The key decision-makers are:
  - a. Purchasers of the power (utility resource planners);
  - b. Regulators who review resource acquisition decisions;
  - c. Regulators who approve cost recovery of transmission investments by jurisdictional utilities or approve contracts for the use of merchant transmission lines; and
  - d. State/provincial policy makers who establish public policy requirements that must be met by utilities and transmission and generation developers.
2. TEPPC should develop a list of questions that are likely to be asked of a proposed transmission project through discussions with utilities, utility regulators, generation

- and transmission permitting agencies and key stakeholders. A formal process needs to be established to generate the list of questions, perhaps through a forum sponsored by the SPSC and WECC. The transmission study work would then generate information that can be used to answer those questions. Specifically, the 10-year plan analysis should include the following:
- a. Provide information to enable decision-makers to compare the costs and benefits of transmission expansion with other alternatives. For example, TEPPC studies should examine alternative generation locations for all states/provinces (not just California).
  - b. Expand efforts to make transmission modeling better reflect real world conditions (e.g., long-term power purchase contracts; limits on the flows on transmission paths due to existing contracts and operational practices; environmental limits on hydro options; challenges to continued operation of existing power plants).
  - c. Test transmission solutions against a range of possible futures.
3. A goal for transmission planning should be to make the analysis in transmission planning as robust and transparent as in utility IRPs.
- a. TEPPC should expand efforts to test the sensitivity of transmission plan results to changes in generation and transmission cost assumptions. The sensitivity analysis process should conduct and communicate the results of sensitivity screening analyses to identify the changes in which assumptions would most affect the study findings. Moreover, it should seek review of the sensitivity analyses, particularly from the buyers of power, regulators and policy makers.
  - b. TEPPC should build upon the experience with challenges to solar and transmission cost assumptions in the first 10-year plan by institutionalizing a transparent process to vet disagreements on critical assumptions.
4. Utilities and PUCs should evaluate transmission solutions developed in the 10-year plan in IRP processes.
- a. Where the benefits of a line identified in the 10-year plan extend beyond one state or province, regulators and policy makers should work in collaboration to evaluate the line in the context of the IRP processes for multiple utilities. This can be done through joint hearings, coordinated dockets and other mechanisms.
  - b. Utilities and their regulators should share information on the criteria and analyses that are used to judge resource and transmission options. These criteria and analytic standpoints should be incorporated into the TEPPC transmission planning analyses.
5. TEPPC and subregional transmission planning needs to be better coordinated. Data sets used in the different planning processes should be reconciled. Next steps in expanding coordination between WECC and subregional transmission planning need to be identified regarding (1) reliability assessments of the Plan, (2) operational challenges in integrating the assumed amount of variable generation in the Plan, and

(3) selection and documentation of “foundational” projects. Results of the 10-year plan need to be incorporated into subregional planning

A proposed text insert is provided for Section 4.6 of the Plan.

### **11. Recommendation 4.9: Gaps in regional transmission planning process**

The SPSC recognizes significant improvements have been made recently in regional planning processes. At the same time, we observe a number of important gaps still exist in our regional transmission planning process.

The draft Plan in Section 4.9 identifies the following proposed enhancements to the TEPPC planning analyses for the 2011-2012 study cycles:

- Further evaluate the potential impacts of enacted and proposed energy policies.
- Further evaluate the reliability ramifications of transmission and generation elements included in future transmission plans.
- Identify the long-term Available Transmission Capacity (ATC) on WECC Paths.
- Further refine capital cost assumptions and calculation methodologies.
- Incorporate generation cycling costs into production cost models.

The SPSC recommends the following enhancements be added to the TEPPC planning analyses for future study cycles:

- 1) Any finding of transmission congestion needs to be coupled with analyses of: (a) whether relieving such congestion could yield reliability benefits; and/or (b) whether transmission expansion on the congested path could generate significant economic benefits.
- 2) WECC’s economic analysis of its resource relocation cases and transmission expansion is a critical step towards a regional analysis. We recommend that this type of analysis be expanded interconnection-wide for future plans.
- 3) Modeling improvements are needed to: (a) better simulate DC line performance; and (b) assess the operational impacts of integrating large amounts of variable generation.
- 4) In response to a SPSC 2011 study request covering all analyses of variable resources and to implement item 3 (b) above, WECC should develop a screening tool to evaluate the technical feasibility and cost of integrating large amounts of variable generation.
- 5) Future studies need to draw conclusions that are relevant to public policy makers. The Long Term Planning Tool and 20-year plan should become the resource to test the outcomes of a broad array of possible futures or “what ifs”, to inform states and provinces on the likely consequence of major policy options.

- 6) In conjunction with item 5 above, a group of planning experts should be brought together to identify a critical grouping of transmission expansion solutions to be tested against a range of plausible futures with major public policy implications.
- 7) WECC should evaluate non-wire alternatives to the extent possible.
- 8) WECC should expand its work on evaluating generation and transmission options that lower the cost and risk for consumers throughout the West.
- 9) WECC should expand efforts to test the sensitivity of transmission plan results to changes in generation and transmission cost assumptions.
- 10) Western Governors are leading the development of data related to wildlife sensitivities and water availability to incorporate in the regional transmission planning process. WECC should proactively work with WGA and the SPSG Environmental Data Task Force (EDTF) to ensure that the data bases being developed are effectively incorporated in the regional transmission planning process.

## **12. Documenting comments on the draft Plan**

The RTEP process developing the Plan has been an open stakeholder process. We believe that the WECC Board and other readers of the Plan would benefit by including an appendix that documents or briefly summarizes written comments received on the draft Plan. This section should include reply comments from WECC. These supplemental comments will help frame the context of the Plan without the necessity of having every stakeholder to agree on precise wording.

## **SPECIFIC COMMENTS**

### **TEXT INSERT ESI**

#### **Page 3 under Executive Summary**

At line 22, insert the following text as #1 in the Executive Summary:

#### 1. Foundational Projects

The Foundational Projects were developed early in the planning cycle as an input assumption in the analysis of the 2020 transmission network, providing the baseline of existing and certain-to-be-built transmission lines on which to model the need for further transmission expansion. The Foundational Projects encompass 44 projects and more than 5,500 line miles - a substantial addition to the Western Interconnection. Modeling results and study analysis show that we do not need to build any additional lines beyond the Foundational Projects to maintain a reliable power system.

### **TEXT INSERT 1**

#### **Page 9 under Section 2 Introduction**

At line 9, after “. . . environmentally sound.” Insert the following:

In particular, to guide such decisions, the Plan should

- ensure that our power system is reliable over a wide range of plausible futures;
- identify significant and demonstrable economic efficiency benefits that can be captured through transmission line expansion; and
- identify transmission additions that if foregone or delayed will result in significantly diminished opportunities to develop infrastructure that would be desirable over a likely range of futures.

### **TEXT INSERT 2**

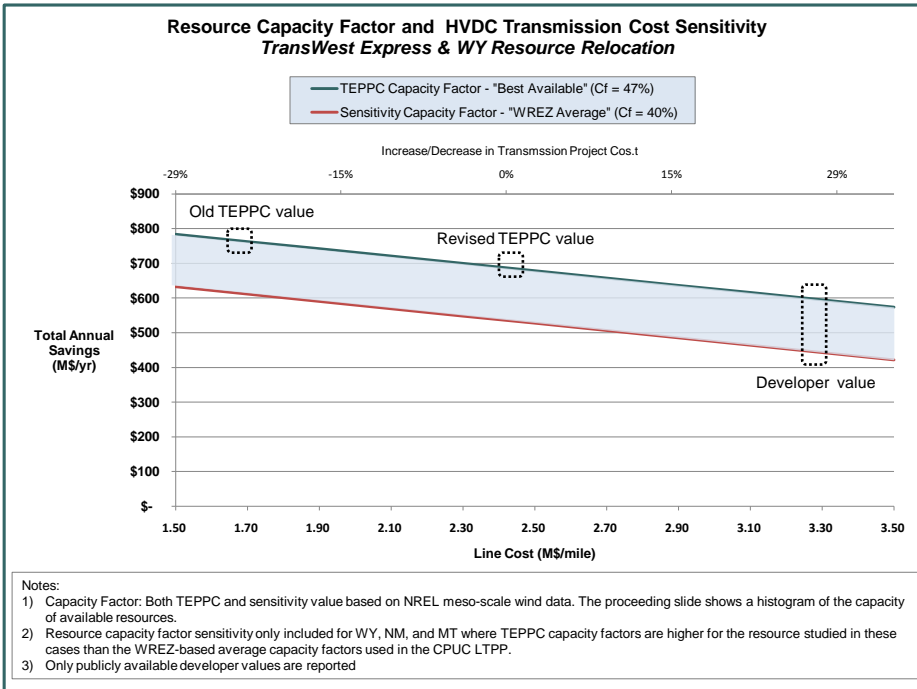
#### **Pages 10-11 in Section 2.3 Limitations**

At page 11 of Section 2.3, remove the last paragraph of the original Section 2.3 and replace with the text provided here.

Cost comparisons of different renewable resources and potential transmission additions provide an important part of the Plan analyses and results. These comparisons are strongly driven by capital cost assumptions for different renewable resources and the typically large transmission projects that would support resources in remote locations. However, while they have been benchmarked to some extent, these capital cost assumptions basically reflect generic

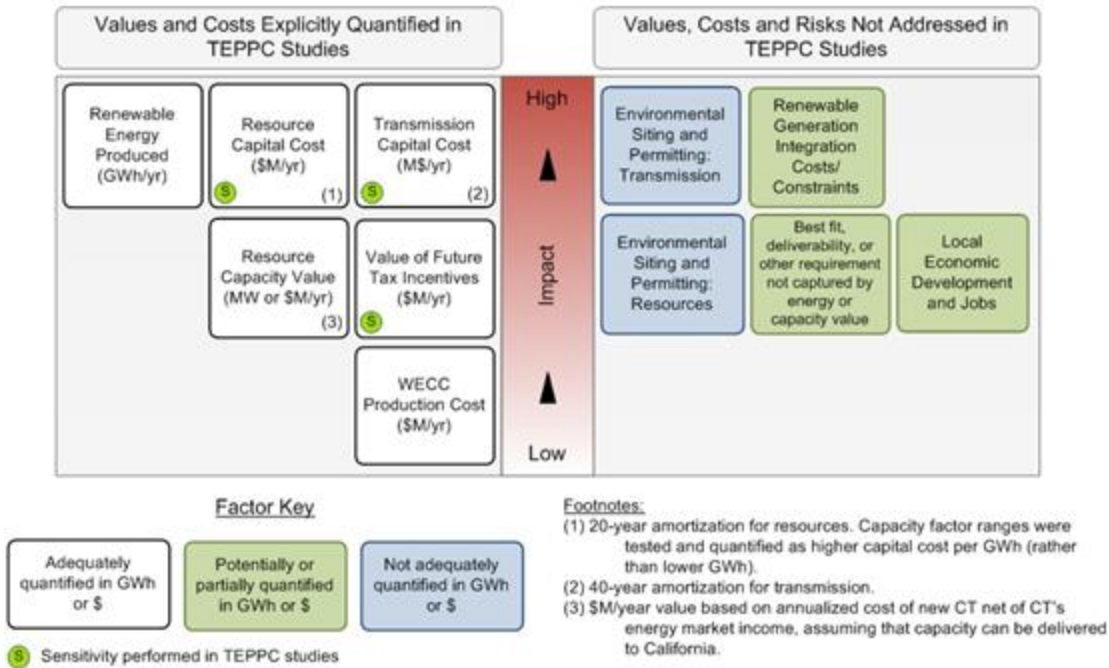
characterizations of costs for renewable technologies deployed under a wide range of conditions, and for large prospective transmission projects that would have to undergo extensive siting and permitting processes.

Thus, while alternative resource and transmission comparisons presented in this Plan generally reflect point (median) estimates of resource and transmission costs, actual future costs must be viewed as covering a significant range of uncertainty, and this cost risk will factor prominently into investment decisions. One way to show the range of potential outcomes is with sensitivity analysis as illustrated in Figure XX below.



Equally important, resource-plus-transmission comparisons informing the Plan are based on certain factors of which capital cost estimates are the most important, but do not include other factors that will be critical to actual renewable resource procurement decisions, including those identified in Figure YY below. These additional factors may be partly factored into future Plan cycles.

## Factors Driving Comparison of Renewable Resource Options



Thus, this Plan’s high level comparison of resource-plus-transmission options should be viewed as indicative of potential alternative resource options which would need to be assessed at the state/provincial and LSE decision making level taking into account additional critical factors such as depicted in Figure YY, the substantial cost uncertainties such as illustrated in Figure XX, and the substantial development of renewable resources and transmission already under way in some areas, particularly California.

**TEXT INSERT 3**

**Page 50, Section 4.3 Accessing Additional Renewable Resources.**

At line 14, after the beginning of the first sentence, “Accessing additional renewable resources beyond. . .”, delete the existing text in the section and insert the following:

Attempting to determine what additional renewable energy sources would or should be accessed to meet post-2020 RPS requirements is an open-ended and complex question. While it deserves consideration for the upcoming 20-Year Plan studies, the present 10-Year Plan study cycle has not addressed, let alone resolved the issue.

#### **TEXT INSERT 4**

##### **Page 53 under Section 4.6 Planning Cooperation**

Starting at line 14, delete the existing text in Section 4.6 Planning cooperation and replace with the following text:

Utilities, as the buyers of power, and state/provincial policymakers and regulators are ultimately the parties with the greatest influence over the execution of any interconnection-wide plan. Utility resource acquisition decisions drive the need for new transmission. State and provincial policy makers establish the public policy parameters within which utilities and transmission and generation developers operate. Regulators review utility resource plans, including recovery of the costs of investments in transmission and generation for jurisdictional utilities. State, provincial and local government agencies and federal land management agencies permit transmission projects. There is a need to recognize that the role of state/provincial regulatory agencies in considering transmission additions individually or through joint actions among multiple commissions is governed by statute.

A successful transmission plan needs to generate information to enable states and provinces to expand their collaborative efforts.<sup>2</sup> States and provinces are looking to WECC transmission plans to provide information that can be useful in policy and regulatory decision-making.

The following actions are needed to improve coordination of transmission planning efforts with utility resource planning, government policy making and regulatory decisions.

1. The WECC planning process needs to better engage decision-makers to define the questions they need addressed. To better inform resource planners, policy makers and regulators, the transmission planning process needs to identify the specific conditions under which it is appropriate to build new transmission. Congestion analysis alone is insufficient.

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<sup>2</sup> There is a long record of collaboration among Western states and provinces on regional resource and transmission issues. Western Governors initiated the first interconnection-wide transmission planning effort during the midst of the Western Electricity Crisis of 2000-2001. The Governors asked the industry to institutionalize interconnection-wide transmission planning which was done within the Seams Steering Group-Western Interconnection. In 2005-2006, Western Governors led the Clean and Diversified Energy Initiative (CDEI), a regional stakeholder-driven evaluation of the potential for development of 30,000 megawatts of clean and diversified energy generation by 2015, increasing energy efficiency by 20 percent by 2020, and ensuring the development of adequate transmission capacity over the next 25 years. In 2008, Western Governors launched the Western Renewable Energy Zones (WREZ) initiative, with the goal of developing a framework for consensus among the states and provinces throughout the Western Interconnection on how to best develop and deliver energy from renewable resource areas to load centers, in a cost-effective and environmentally sensitive manner. Beginning in 2008, the states/provinces were the first parties to utilize the WECC transmission planning open season study request process to evaluate potential factors (e.g., carbon reduction) that could affect the need for transmission across boundaries and throughout the interconnection. Western states/provinces are presently in the process of determining if utilities have a common interest in specific renewable energy zones, whether in or out-of-state, as part of Phase 3 of the WREZ project. Western Governors are leading the development of data related to wildlife sensitivities and water availability to incorporate in the regional transmission planning process.

2. Through discussions with utilities, policy makers, utility regulators, permitting agencies and key stakeholders, TEPPC should develop a list of questions that are likely to be asked of a sponsor of a proposed transmission project. For the next 10-year Plan and the first 20-year Plan, a formal process needs to be established to generate the list of questions, perhaps through a forum sponsored by the SPSC and WECC.
3. The transmission study work should focus on generating information that can be used to answer those questions. Specifically, the 10-year Plan analysis should include the following:
  - a. Provide information to enable decision-makers to compare the costs and benefits of transmission expansion with other alternatives. For example, TEPPC studies should examine alternative generation locations for all states/provinces (not just California).
  - b. Expand efforts to make transmission modeling better reflect real world conditions (e.g., long-term power purchase contracts; limits on the flows on transmission paths due to existing contracts and operational practices; environmental limits on hydro options; challenges to continued operation of existing power plants).
  - c. Test transmission solutions against a range of possible futures.
  - d. Revise and present the criteria for defining “foundational” transmission projects.
  - e. Present more information on foundation projects (construction status, permit status, purpose of the project).
  - f. Identify and evaluate the challenges of integrating the variable generation assumed in the Plan. WECC analyses should identify the options to address the challenges (e.g., fast regional markets such as a Western Energy Imbalance Market, better wind and solar forecasting, dynamic scheduling, fast electronic bulletin boards for bi-lateral sales of generation and transmission, intra-hour scheduling). The analyses should quantify the degree to which the options mitigate the integration challenges.
4. A goal for transmission planning should be to make the analysis in transmission planning as robust and transparent as that done in support of utility IRPs. TEPPC should expand efforts to test the sensitivity of transmission plan results to changes in generation and transmission cost assumptions. The sensitivity analysis process should: conduct and communicate the results of sensitivity screening analyses to identify the changes in assumptions which would most affect the study findings; and seek review of the sensitivity analyses, particularly from the buyers of power, regulators and policy makers. TEPPC should build upon its experience with challenges to solar and transmission cost assumptions in the first 10-year plan by institutionalizing a transparent process to vet disagreements on critical assumptions.
5. Utilities and PUCs should evaluate transmission solutions developed in the 10-year plan in IRP processes. Where the benefits of a transmission solution identified in the 10-year plan extend beyond one state or province, regulators and policy makers should work in collaboration to evaluate the solution in the context of the IRP processes for multiple utilities. This can be done through joint hearings, coordinated dockets and other mechanisms.

Utilities and their regulators should share information on the criteria and analyses that are used to judge resource and transmission options. These criteria and analytic standpoints should be incorporated into the TEPPC transmission planning analyses.

6. TEPPC and subregional transmission planning needs to be better coordinated. Data sets used in the different planning processes should be reconciled. Next steps in expanding coordination between WECC and subregional transmission planning need to be identified regarding (1) reliability assessments of the Plan, (2) operational challenges in integrating the assumed amount of variable generation in the Plan, and (3) selection and documentation of Foundational Projects. Results of the 10-year plan need to be incorporated into subregional planning studies.

### **TEXT INSERT 5**

#### **Page 55 under Section 4.9 Gaps in Regional Transmission Planning Processes**

Starting at line 29, insert the following additional enhancements to the existing list of bullets:

- Any finding of transmission congestion needs to be coupled with analyses of: (a) whether relieving such congestion could yield reliability benefits; and/or (b) whether transmission expansion on the congested path could generate significant economic benefits.
- WECC’s economic analysis of its resource relocation cases and transmission expansion is a critical step towards a regional analysis. We recommend that this type of analysis be expanded interconnection-wide for future plans.
- Modeling improvements are needed to: (a) better simulate DC line performance; and (b) assess the operational impacts of integrating large amounts of variable generation.
- In response to a SPSC 2011 study request covering all analyses of variable resources, WECC should develop a screening tool to evaluate the technical feasibility and cost of integrating large amounts of variable generation.
- Future studies need to draw conclusions that are relevant to public policy makers. The Long Term Planning Tool and 20-year plan should become the resource to test the outcomes of a broad array of possible futures or “what ifs”, to inform states and provinces on the likely consequence of major policy options.
- A group of planning experts should be brought together to identify a critical grouping of transmission expansion solutions to be tested against a range of plausible futures with major public policy implications.
- WECC should evaluate non-wire alternatives to the extent possible.
- WECC should expand its work on evaluating generation and transmission options that lower the cost and risk for consumers throughout the West.

- WECC should expand efforts to test the sensitivity of transmission plan results to changes in generation and transmission cost assumptions.
- Western Governors are leading the development of data related to wildlife sensitivities and water availability to incorporate in the regional transmission planning process. WECC should proactively work with WGA and the SPSG Environmental Data Task Force (EDTF) to ensure that the data bases being developed are effectively incorporated in the regional transmission planning process.