

Memorandum

To: ISO Board of Governors

From: Laura Manz, Vice President of Market & Infrastructure Development

Date: May 8, 2009

Re: **Decision for Conditional Approval of the Highwind Location Constrained Resource Interconnection Facility (LCRIF) Project**

This memorandum requires Board action.

EXECUTIVE SUMMARY

This memorandum requests the ISO Board of Governors' (the Board) conditional approval of the Highwind - Windhub location constrained resource interconnection facility (LCRIF) project (Highwind), proposed by Southern California Edison Company (SCE). The tariff provides a unique interconnection financing arrangement for generation projects located in transmission-constrained remote areas far from load centers.

Although the cost of this project is estimated to be less than \$50 million, which would otherwise avoid the need for Board involvement, the tariff requires conditional approval by the Board because the *energy resource area* (a tariff-defined term that describes geographic regions of renewable development) where the wind generation connected to Highwind is located has not been certified yet by the California Energy Commission (CEC) and the California Public Utilities Commission (CPUC). The ISO's principal determinations and findings are:

- Highwind meets the applicable LCRI tariff criteria for conditional approval under Section 24.1.3.1 (a), except for the certification of the *energy resource area* in which the location-constrained generation is located;
- The project is the least cost transmission solution to connect location constrained resources, mostly wind generation, from a renewable resource area that is ranked high in the Phase 1B report of the California Renewable Energy Transmission Initiative (RETI);
- The Tehachapi renewable resource area should be certified as an *energy resource area*.

Highwind has a scheduled in-service date of December 31, 2010 and will connect an initial 759 MW, and ultimately 1,150 MW, of wind generation in the Tehachapi renewable resource area to the Tehachapi

Renewable Transmission Project (Tehachapi).¹ To date, about 1,942 MW of new wind generation projects in the Tehachapi resources area have received power purchase agreements from SCE and San Diego Gas & Electric Company (SDG&E). All these new wind generation projects are to be delivered to load centers via Tehachapi. Highwind is the first transmission facility that has been presented for approval pursuant to the ISO's location constrained resource interconnection (LCRI) tariff provisions. Management recommends that the Board certify the Tehachapi resource area as an *energy resource area*, approve the Highwind project on a conditional basis until the commercial interest test is met, and direct SCE to proceed with the necessary permitting and engineering of the project.²

MOTION

Whereas, the ISO Board of Governors finds that the renewable generation projects proposed for interconnection to Highwind are located in the Tehachapi wind resource area, which has been recognized as a highly ranked Competitive Renewable Energy Zone (CREZ) in the California Renewable Energy Transmission Initiative Phase 1B Report; and,

Whereas, the Board finds that the Tehachapi wind resource area should be certified as an energy resource area consistent with the requirements of the ISO tariff;

Moved, that the Board approves the Highwind location constrained resource interconnection facility on a conditional basis until commercial interest in the line and cost impact to the ISO transmission revenue requirement are demonstrated in accordance with tariff Section 24.1.3.2, as outlined in the memorandum dated May 8, 2009.

BACKGROUND ON THE LOCATION CONSTRAINED RESOURCE INTERCONNECTION TARIFF

The LCRI policy was developed in 2006 by the ISO and its stakeholders as a cost allocation methodology intended to address barriers to the development of transmission for multiple-owner generation sites in which the location of the fuel source is fixed and infeasible or impractical to relocate, such as wind or solar thermal resources, and is often in remote areas far from load pockets. The ISO recognized that significant barriers to new transmission existed because the scope of the required investment to successfully tap a location-constrained fuel source often greatly exceeds the size and scope of projects brought forth by individual developers.

¹ The Board of Governors, on January 24, 2007, approved Tehachapi, a network of bulk 500kV transmission, to connect 4,350 MW of renewable generating resources. Highwind was previously referred to in various regulatory filings as Tehachapi Segment 3B. This portion of Tehachapi, although approved by the Board as part of a bulk network backbone, is actually a radial generation interconnection facility that was determined by FERC to be ineligible for cost recovery through the Transmission Access Charge as a network facility.¹ *In the Matter of the Application of Southern California Edison Company (U 338-E) for a Certificate of Public Convenience and Necessity Concerning the Antelope-Vincent 500kV (Segment 2) and Antelope-Tehachapi 500kV and 220kV (Segment 3) Transmission Projects*, D ,07-03-045, March 15, 2007, citing 113 FERC ¶ 61,143 (2005).

² The project can receive final approval when it satisfies certain requirements for commercial interest. Final approval can be given by ISO Management in accordance with Tariff Section 24.1 because the cost of Highwind LCRIF is estimated to be less than \$50 million.

Accordingly, in October 2006, the Board of Governors approved the filing of a petition for declaratory order with the Federal Energy Regulatory Commission (FERC) seeking conceptual approval of a new financing mechanism that would allow the participating transmission owners to provide upfront financing to construct radial transmission “trunk” line facilities for connecting location-constrained resources. The connected generators will then reimburse the cost of the transmission radial facility based on their pro-rata share of the facility.

On April 19, 2007, FERC granted the ISO’s petition and accepted the proposed design concepts, paving the way for the ISO to file tariff language for implementing this initiative. In the fall of 2007, the Board approved the details of the LCRI policy setting in motion the new tariff provisions that were approved by FERC on December 27, 2007.

Highwind is the first project that has been presented to the ISO for consideration and conditional approval under the LCRI tariff sections. Specifically, as discussed below, ISO Management recommends that the Board certify the resource location in which the Highwind interconnection projects are located as an *energy resource area*, thus allowing the project to proceed to final approval once the tariff commercial interest test is met.

DESCRIPTION OF THE PROPOSED HIGHWIND PROJECT

Highwind consists of a new 230 kV collector substation named Highwind and approximately 9.6 miles of 230 kV transmission line between Highwind Substation and a new 500/230/66 kV substation named Windhub. Highwind is designed as a multi-generator high-voltage interconnection facility that interconnects more than one location constrained generator to the ISO controlled transmission system at Windhub Substation. A one-line diagram representation of Highwind is shown in Attachment 1.

Highwind does not include the Windhub Substation, which is a network facility that will be transferred to ISO control. The line of demarcation between Highwind and the Windhub network substation is the fence line of the Windhub substation. The shared interconnection facilities at Highwind substation include a 230 kV switchrack that initially will include three line positions to interconnect proposed generation being evaluated in accordance with the ISO large generation interconnection process.

CERTIFICATION OF THE ENERGY RESOURCE AREA

In its order granting the ISO’s petition for declaratory ruling, FERC agreed that the Tehachapi resource area was an example of an area where insufficient interconnection capacity appeared to be preventing the development of location constrained resources. FERC also agreed that with the ISO’s proposal that a state agency such as the CPUC or the CEC would be best suited to assess the development potential of renewable resource areas.³

Thus, tariff language developed by the ISO provides that *energy resource areas* will be designated by the CEC and the CPUC. However, in the interim period before the CEC and the CPUC make such certifications, and for resource areas located outside California, the ISO proposed that the Board make

³ *Declaratory Order*, 119 FERC ¶61,061 at P.67, 90.

such certifications. FERC supported the proposal to rely on the independent expertise of the Board to make such interim certifications, noting that designation criteria could be developed that would operate in concert with the ISO's transmission planning process.⁴

The ISO is working with the state agencies to complete the *energy resource area* certification for in-state areas based on the RETI findings. For the interim period, ISO Management recommends that the Board rely on the findings contained in the Renewable Energy Transmission Initiative (RETI) *Phase 1B Report* as criteria to evaluate the resource area proposed for interconnection to Highwind.⁵ That *Report* recognized the Tehachapi resources area as a competitive renewable energy zone (CREZ) ranked as the 7th best economic CREZ and the 4th best environmental CREZ among the 37 identified zones. The Tehachapi wind resources area was also identified as having the largest potential annual energy output of all evaluated zones on an annual basis, with an estimated 25,091 GWh per year. Additionally, in its order approving Tehachapi Segments 2 and 3, the CPUC identified the Tehachapi area as “the largest wind resource in California,” with about 4,500 MWs of installed capacity. The CPUC also stated that “[t]o capture this potential, the lines must go where the wind blows – there is no other choice.”⁶

For these reasons, Management recommends that the Board certify the Tehachapi resources area as an *energy resource area* for the purposes of evaluating LCRIF projects seeking to interconnect resources in that area.

SCE SUBMISSION OF HIGHWIND INTO THE ISO TRANSMISSION PLANNING PROCESS

The ISO transmission planning process requires LCRIF projects to be submitted through the request window for evaluation and recommendation in the transmission plan for that study cycle. Accordingly, SCE submitted Highwind during the 2008 request window along with the supporting information required by the tariff and the *Business Practice Manual (BPM) for Transmission Planning*. The 2009 *Transmission Plan* identified Highwind as one of two such projects eligible for Board approval in May 2009.⁷

TARIFF REQUIREMENTS FOR CONDITIONAL APPROVAL OF AN LCRIF PROJECT

Information that must be submitted with an LCRIF Project Proposal

Providing specific project information is the first step in obtaining conditional ISO approval of a project proposed for LCRI rate recovery treatment. Tariff section 24.1.3 sets forth the information that must be

⁴ *Order Conditionally Accepting Tariff Revisions*, 121 FERC ¶61,286 at P. 53-54.

⁵ The RETI Phase 1B Report can be located at <http://www.energy.ca.gov/reti/documents/index.html>

⁶ *In the Matter of the Application of Southern California Edison Company (U 338-E) for a Certificate of Public Convenience and Necessity Concerning the Antelope-Vincent 500kV (Segment 2) and Antelope-Tehachapi 500kV and 220kV (Segment 3) Transmission Projects*, D ,07-03-045, March 15, 2007, Finding of Fact No. 3.

⁷ See Table 1-2, page 15 of the ISO 2009 *Transmission Plan* (<http://www.caiso.com/2354/2354f34634870.pdf>). Board approval for the second LCRIF project, the Drycreek Wind project, has been deferred because of potential changes to the final project plan of service.

submitted with the proposal, which includes sufficient data to facilitate a “need” determination, facility description and cost information, studies demonstrating that the project meets applicable reliability criteria and a conceptual plan for connecting potential location constrained generators to the facility.

SCE provided this tariff-required information along with its request for ISO staff evaluation of Highwind. The SCE transmission studies were based both on the Board-approved Tehachapi study report and system impact studies for new generation projects in the area. With this data, ISO staff was able to conduct the required project evaluation and move to the next step in the process, which is a determination of whether the project is eligible for conditional approval.

CRITERIA FOR CONDITIONAL APPROVAL AND RESULTS OF THE STAFF ASSESSMENT

The five requirements for conditional approval of the project as a LCRIF are specified in tariff section 24.1.3.1(a):

- (1) ISO staff must determine that the facility is “needed”;
- (2) The primary purpose of the facility must be to connect two or more generators located in an *energy resource area*, and at least one generator must be owned by an entity that is not an affiliate of the owner of another generator in the same *energy resource area*;
- (3) The facility will be a high voltage facility;
- (4) At the time of the in-service date, the facility will not be a network facility and otherwise would not be eligible for inclusion in the transmission owner’s transmission revenue requirement; and
- (5) The facility meets the reliability requirements applicable to the ISO controlled grid as well as ISO planning standards.

RESULTS OF THE ISO STAFF ASSESSMENT

Evaluation of Project Need

ISO staff conducted the studies required by the tariff and determined that there was a need for Highwind based on the following information.

1. Description of generation seeking interconnection

Currently there are three generation projects in the ISO interconnection queue, located in the Tehachapi resources area, that would be connected to Highwind. Attachment 2 provides a summary of these projects, as well the pro-rata cost responsibility for each generator based on its respective generation capacity in comparison to the proposed project’s total transmission capacity. The owners of the three generation projects are not affiliated entities.

Each generation project qualifies as a location constrained resource interconnection generator because its primary fuel source (wind) is in a fixed location and cannot be transported from its location. This is

consistent with the tariff definition of the type of generation project that must be proposed for connection to an LCRIF project such as Highwind.

2. Costs of Highwind

The planning level cost estimate for Highwind is estimated to be \$46.1 million. This is a planning cost estimate with a variance of +/- 35% with respect to actual costs. The project scope includes the 230 kV Highwind Substation, which is used to connect new generating facilities, and 9.6-mile 230 kV transmission line between Highwind and Windhub Substations.

3. Project Alternative

The only other feasible transmission alternative to the Highwind would be individual generation-tie (gen-tie) facilities necessary to connect each generation project to Windhub Substation. Not only is this transmission alternative more expensive than the recommended alternative, it is also more challenging to obtain environmental permits to construct individual gen-tie lines. Other challenges include high upfront financing costs that would pose a barrier for the individual generation developer to connect. For this option, an environmental feasibility evaluation was not performed.

This alternative would have a total planning level cost estimate of \$101 million for connecting three generation projects with 759 MW total capacity. Since these would be gen-tie line facilities, the generation developers would be required to pay upfront financing cost for this alternative, and this cost would likely pose a barrier to the developers in proceeding with the construction of the renewable projects.

Evaluation of remaining four tariff requirements for conditional approval.

Management has determined that Highwind meets the remaining four tariff criteria for conditional approval per Section 24.1.3.1 (a), as summarized below:

1. The proposed project is a multi-generator facility that will connect three new generation projects. The generation projects are separately owned, operated and located in an identified CREZ highly-ranked in the RETI Phase 1b report. The generation projects are qualified as location constrained resource generators because wind is the primary fuel source.
2. The proposed project is a 230 kV transmission facility, meeting the criteria of high voltage transmission facility per ISO tariff (i.e., voltage at or greater than 200 kV).
3. The proposed project consists of a radial 230 kV transmission line (Highwind – Windhub) and a substation (Highwind substation). The proposed project does not qualify as a network transmission facility under current FERC policies and regulations.
4. The ISO evaluated the new generation interconnections to the ISO controlled grid via Highwind by conducting system impact studies. These studies included reliability evaluations based on ISO grid planning standards. The studies demonstrated that the

interconnection of new generation projects via Highwind meets required reliability standards and the ISO grid planning standards.

POSITIONS OF THE PARTIES

ISO staff presented this project to stakeholders as part of the 2009 transmission planning process. In Table 1-2, page 15 of the *Final ISO 2009 Transmission Plan Report*,⁸ posted on the ISO website, ISO staff indicated that it would bring the Highwind project to the Board for conditional approval. The only comments that ISO staff received regarding this project were those from the representative of the California Wind Energy Association (CalWEA). ISO staff provided responses to CalWEA comments and on April 30, 2009, CalWEA informed ISO staff that it would support the Highwind project.

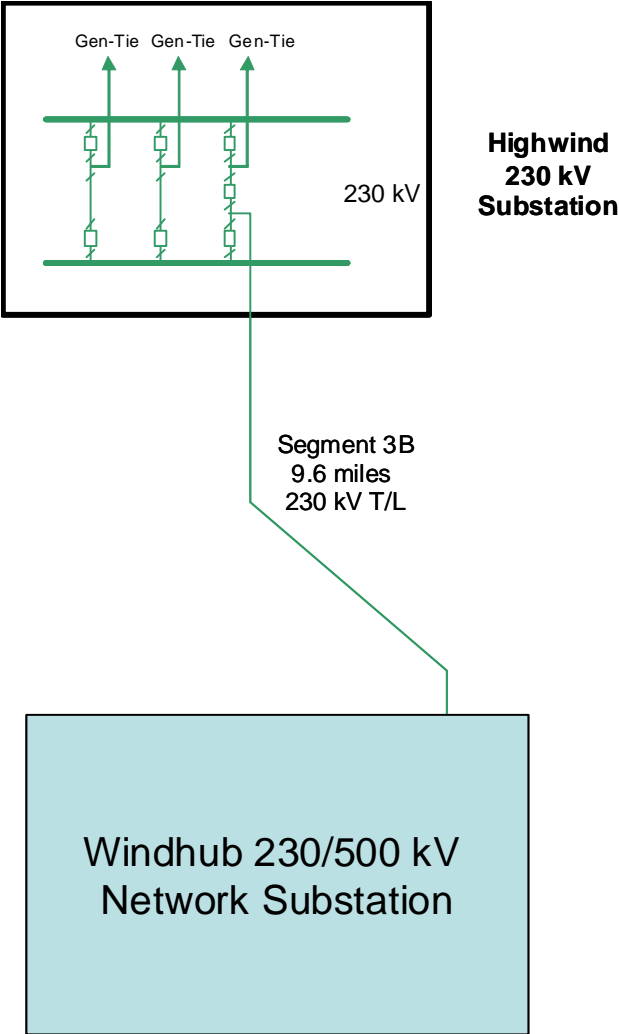
MANAGEMENT RECOMMENDATION

Based on the ISO staff findings that Highwind meets all of the tariff requirements for conditional approval as an LCRIF project, Management recommends that the Board certify the Tehachapi resources area as an *energy resource area* and conditionally approve the project. Additionally, SCE should be directed to proceed with necessary permitting and engineering of the project. When the tariff requirements for commercial interest in Highwind have been met, the project will be eligible for final approval by ISO Management, and SCE can proceed with construction. The information necessary for final approval of the project must be provided to ISO staff at least 90 days prior to commencement of construction.

⁸ The ISO Transmission Plan is posted at <http://www.aiso.com/2354/2354f34634870.pdf>

Attachment 1

One-Line Drawing of Proposed Highwind LCRIF



Attachment 2

Current Generation Projects Proposed to Connect Via the Highwind LCRIF

CAISO Queue #	Generation Capacity	Generation Type	Interconnection Point to CAISO Grid	Pro-rata Cost Responsibility
94	180 MW	Wind	Windhub Substation via Highwind-Windhub 230 kV Line	15.7%
132	374 MW ⁹	Wind	Windhub Substation via Highwind-Windhub 230 kV Line	32.5%
409	205 MW	Wind	Windhub Substation via Highwind-Windhub 230 kV Line	17.8%
<i>Subtotal</i>	<i>759 MW</i>			<i>66%</i>
Available portion of transmission project capacity for future generation projects	391 MW			34%
<i>Total Project Transfer Capability</i>	<i>1,150 MW</i>			<i>100%</i>

⁹ Per the interconnection customer's request, this generation project includes 297 MW of new generation and a transfer of 77 MW of existing wind generation.