

Tribal Wind Energy Assessment

Background

As part of the WHFS study, a Wind Demonstration Questionnaire was distributed to all Tribes in Western's Upper Great Plains Region (UGPR). The questionnaire requested information from tribes interested in participating in a potential WHFS demonstration project as part of the EPA 2005, Section 2606, study. Six tribes responded indicating plans for wind plant projects and the Intertribal Council on Utility Policy (ICOU) responded representing eight tribal projects, for a total of fourteen tribal responses. Tribes were asked to outline plans for wind plants for the near term (through 2010) and plans for projects beyond 2010, to gauge a total build-out projection. Responses from the fourteen tribal projects indicated a total of 748 MW projected nameplate capacity through 2010 and more than twice that, 1748 MW, projected build-out capacity.

There were eight tribes in the UGPR that did not respond to the WHFS questionnaire by the deadline; one provided a response after the deadline with a projected build-out of 500 MW. If wind potential for the tribes that did not meet the original deadline is included assuming an average of 50 MW for those sites without a completed questionnaire, the total build-out tribal nameplate wind projection for the UGPR would be almost 2600 MW.

For purposes of this study, the tribal wind assessment is limited to those tribes responding to the questionnaire, which signifies an interest in developing wind in the near future. Although the tribes not responding still have the potential to develop wind, the likelihood of near term development is unknown. Hence, only the tribal projects outlined in the questionnaire were utilized for the tribal wind energy assessment documented in this section.

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The projects represented in the fourteen tribal responses were included in this assessment; five tribes proposed multiple sites for a total of 22 tribal wind project sites. These sites were split into West, Omaha and East regions. The West region consists of sites in Montana, including the Blackfeet Community Wind Project and the three sites in the Fort Peck Assiniboine & Sioux Tribes Wind Project. These sites interconnect on the Western grid. The Omaha region includes Four Winds and ICOU Omaha; the Omaha region is not in the UGPR balancing area. The East region includes the other 16 sites: ICOU sites of Ft. Berthold, Spirit Lake, Lower Brule, Pine Ridge, Yankton, Flandreau (2 sites) and Rosebud, Rosebud Sioux Tribe-St. Francis sites (2 locations), Cheyenne Wind (3 locations), and Standing Rock Sioux (3 locations).

As part of the wind data requirement for the sub-hourly analysis, 3TIER was retained by Stanley Consultants to provide wind energy profiles for the wind injections planned within the UGPR balancing area for the period of the study. Data for the tribes was requested, based upon the locations indicated in the tribal questionnaire responses. Stanley Consultants provided location maps to the tribes for review prior to sending location information to 3TIER. No attempt was made to optimize site wind speed potential; it is assumed that the tribes will make this effort as part of their specific development efforts.

The 3TIER data consisted of hourly averaged wind speed and the resulting wind energy production based upon the nameplate projection for each site indicated in the questionnaire response, using the GE 1.5 SLE power curve. The hourly averaged wind speed is determined

from a numerical weather simulation at the 80 meter turbine height. This data was requested as part of an overall data request for a wind integration study. The data was not collected to be used in a production or performance application. It provides general wind energy potential and profiles for the UGPR balancing area. As indicated above, the data is not presented to represent a maximum wind energy potential; it provides a profile more representative of wind in the UGPR than a generic wind profile. The energy totals below simply provide a ball park estimate for tribal wind energy development in the near term.

Table 1A: 2010 Total Annual Wind Energy for all Tribes (Year 2000 UTC Data)

Region		East (MWh)	West (MWh)	Omaha (MWh)
East	Rosebud-St. Francis	110,062		
	ICOUP-Lower Brule	143,093		
	ICOUP-Ft. Berthold	153,442		
	ICOUP-Pine Ridge	156,297		
	ICOUP-Spirit Lake	160,153		
	ICOUP-Yankton	164,490		
	ICOUP-Flandreau	166,110		
	ICOUP-Rosebud	181,585		
	Cheyenne Wind	316,871		
	Standing Rock	381,392		
West	Ft. Peck		107,966	
	Blackfeet		117,942	
Omaha	Four Winds			34,200
	ICOUP-Omaha			170,060
Total		1,933,495	225,908	204,260