Final Technical Report
20% Wind by 2030: Overcoming the Challenges

DE-EE0000504

Project Period (12/09 – 05/12)

Jennifer Knighten

509-585-3677

jlknights@energy-northwest.com

Energy Northwest

POB 968 MD 1030

Richland, WA 99352

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Disclaimer: “Any findings, opinions, and conclusions or recommendations expressed in this report are those of the author(s) and do not necessarily reflect the views of the Department of Energy”

LIST OF ACRONYMS

American Public Power Association.....	APPA
American Wind Energy Association	AWEA
Bonneville Power Administration.....	BPA
Department of Energy	DOE
Environmental Protection Agency	EPA
Northwest Public Power Association.....	NWPPA
State of Oregon Department of Energy.....	ODOE

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Executive Summary

Energy Northwest's objective in working with the Department of Energy's "20% Wind Energy by 2030: Increasing Wind Energy's Contribution U.S. Electricity Supply" is to increase market acceptance of wind energy through our own experiences and relationships with our member utilities and power affiliates.

Energy Northwest has positive working relationships with the Utility Wind Integration Group (UWIG), American Wind Energy Association (AWEA), and local county governances through our efforts of wind development which thereby position us as strong influencers to impact the market from Federal all the way through to local efforts.

Energy Northwest understands critical market barriers in wind development such as the high cost of renewables, high costs to interconnect to transmission systems, and costs to integrate the wind assets.

Energy Northwest is in a prime position to highly impact and influence wind energy market acceptance. Through our ongoing projects, we have multiple efforts focused on wind development and offer these projects to public and private power.

Energy Northwest conducted market analysis by researching resources such as Bonneville Power Administration (BPA), Northwest Public Power Association (NPPA), American Public Power Association (APPA), American Wind Energy Association (AWEA), and the Utility Wind Integration Group (UWIG). Other resources included U.S. Department of Energy's (DOE) Windpowering America, Greenworld Partners, WindWorks Northwest, Wind Utility Consulting, Washington State Department of Commerce, and Oregon State Department of Energy (ODOE).

Energy Northwest contracted with market research consultant Rhyno Stynchfield of Greenworld Partners to develop a report which would outline and address the challenges that a public wind developer/operator may encounter while developing a publicly owned wind project.

This report will be used as a “working draft” to assist prospective utilities, municipalities and wind developers wishing to operate primarily in the Pacific Northwest.

Energy Northwest intended to identify more reliable subsidies to allow a level playing field with private power companies. Consultant Rhyno Stinchfield included scenarios in the working draft report which will assist private and public entities in developing a successful model for financing a publicly owned project.

The entire report is approximately seventy pages in length. Because the landscape of wind energy in the Pacific Northwest is at a constantly changing pace, this report is only of value if it is updated on a regular basis. What is true today may not be true tomorrow, and as such this report will need to be referred to but constantly challenged and researched before releasing information.

This report has several subjects referenced. Each of these subjects may stand alone, or the report can be presented in its entirety if requested by any of Energy Northwest’s members or interested parties.

Introduction

The purpose of this project was to promote acceptance among Pacific Northwest utilities and municipalities which would consider integrating wind into their energy portfolio. Challenges are identified and addressed to assist.

The development process is outlined, including locating sites and identifying landowners, wind data collection and analysis, feasibility studies for transmission and interconnections, environmental impact studies, electrical and structural project design, arranging project financing, permitting, construction, legal contracts, and selecting operations and maintenance providers.

Community impacts are addressed as well. Potential community impacts include job creation, landowner benefits, and economic development. Negative community impacts are

addressed as well, such as community acceptance, possible noise increases, and view-shed concerns.

Renewable Portfolio Standards (RPS) are defined, specifically in the states of Washington and Oregon (as this report focuses mainly on impacts to the Pacific Northwest). Both Washington's Department of Commerce and Oregon's ODOE are referenced in depth in this report.

The Northwest Wind Integration Plan is discussed as well. Developed in March 2007, the objective was to integrate an additional 6000 MW of wind to the transmission grid. Because of this, the report also addresses transmission challenges. Challenges addressed include BPA's Environmental Redispatch, Limit to Schedule, and Oversupply Management Protocol directives.

Background

Since the production of electricity by wind generators does not create any carbon or other waste it is considered a clean energy source. As concerns continue to raise about air and water pollution and greenhouse gases around the world many people believe wind – along with solar, biomass and geothermal – is a viable alternative to the burning of coal and gas. Also, the new construction of large scale hydroelectric dams is considered a thing of the past since the disruption of free flowing rivers in the United States would be unpopular. And in several states coal fired plants are being decommissioned as they become outdated or because they have become unpopular.

The Environmental Protection Agency's (EPA) Clean Energy Programs are working with state policy makers, electric and gas utilities, energy customers, and other key stakeholders. By identifying, designing and implementing clean energy policy and technology solutions, they are delivering important environmental and economic benefits.

Results and Discussion

This project was applied for in December, 2009, but was not awarded until April, 2010. The first step was to acquire a qualified consultant to work with Energy Northwest to research and document the planned outline. A consultant was obtained in August of 2009, and the planned scope of work was to be completed in March, 2011. The consultant contracted was a well esteemed individual in the wind industry, and quite capable of providing the information necessary in the research.

Unfortunately, due to circumstances unforeseen to either the consultant or to Energy Northwest, this consultant was unable to complete any part of the project. The consultant asked to be removed from the project in July, 2011. A replacement consultant was contracted in August, 2011, and began work quickly. All research conducted by the primary investigator was supplied to the consultant at that time. In October, 2011, the consultant provided Energy Northwest with a draft of the “final” report.

When the report was received, it was determined at that time that the report would need to undergo a substantial editing process. Edits were necessary to correctly cite references. It was also determined that many of the articles referenced had circumstances which were no longer true. For instance, certain economic benefits were praised because of planned production facilities in communities which were struggling economically. Upon further research, it was determined that these facilities were never opened. A particular benefit that was referenced was in fact not a benefit, and could not be included in the final report.

After several re-writes of the final report, it was determined that the report should be considered a working draft and not finalized at all. It would be impossible to conclude that all scenarios, laws, policies, and statistics would remain the same, even over a short period of time.

Accomplishments

The research conducted in order to write and edit this report has assisted Energy Northwest in providing a better service not only to participating utilities, but to the public as well. Energy Northwest owns and operates Nine Canyon Wind Project, a 95.9 MW wind generating facility located in Kennewick, Washington. One service that Energy Northwest provides to the public is public tours. In the past, the focus of the tour has been Nine Canyon Wind Project, its development, and its operations. Research conducted in preparing this report has enabled Nine Canyon Wind Project Personnel to be much more knowledgeable regarding the wind industry in general. Questions asked are answered more thoroughly and the public is then educated as well. Resources are also given to the public during the tours, such as how to access the websites of the American Wind Energy Association and Department of Energy's Windpowering America website. Tours of Nine Canyon are not the only public service that Energy Northwest provides, however. Presentations have been developed and delivered to area schools, from elementary to high school and college age students.

While the report and complications in obtaining and retaining a consultant were obviously frustrating, the research was thorough and the report will be a good tool to use in the future, and can be shared with member utilities through Energy Northwest's Keeping Current articles, and at participant meetings and board meetings.

Conclusions

Lessons learned during this project period only serve to enhance the information included in the report as it is shared with each prospective entity. Many of the circumstances that made it difficult to finish the project are the same circumstances that make it challenging to develop and maintain a wind project. Some of these circumstances include challenges to maintaining grid reliability, staff retention, and the ever-changing landscape of wind development not only in the Pacific Northwest but the United States in general.

While the report is only a draft in nature, there are many excellent points included in this report which all can be utilized not only by Energy Northwest but by any prospective developer, whether publicly or privately funded.

Recommendations

The recommendation is that Energy Northwest continues to research and monitor the wind industry both locally and nationally, and continually update this draft report and share with prospective wind developers, utilities, and municipalities as requested. The original scope of work included disseminating analytical and reference tools on wind technology transfer activities. Consistently updating this document, referring to it, and disseminating such will ensure that this project is a valuable tool, not only to Energy Northwest member utilities, but to any prospective municipality or utility, and to the public as well.

As market acceptance is generally governed by public acceptance, it is recommended that Energy Northwest maintain and enhance public involvement in regards to the wind industry. Exposure in community events such as energy fairs and school science fairs, as well as continued public tours and presentations to schools is recommended. Farmer's markets, county fairs, and town festivals can all prove advantageous for involvement with the general public.

Consultant Rhyno Stinchfield also suggested that a higher level of involvement in AWEA would be necessary for Energy Northwest, whether as a utility or on the corporate level, so that

more information is available to the company in order to route through to the participating utilities. Membership in AWEA also affords members opportunities to participate in working groups, attend networking receptions and briefings, and more involvement with AWEA's national conference, "Windpower".

Stinchfield also suggested that Energy Northwest utilize such resources as the Tri-City Development Council, Tri-City Visitor and Convention Bureau, and county and city websites. He suggested that Energy Northwest consider submitting Nine Canyon Wind Project into the Tri-City Visitor Guide. Another suggestion was to use Facebook and LinkedIn, two social networking sites which already have a presence by Energy Northwest, more substantially in promoting the successes of Nine Canyon Wind Project in order to further public awareness of the project.

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Wind Utility Consulting Services, 1639 320th St., Jamaica, IA 50128.