

City of Grand Island

Tuesday, May 1, 2012 Study Session

Item -2

Presentation of Renewable Portfolio Goal

Staff Contact: Tim Luchsinger

Council Agenda Memo

From:	Timothy Luchsinger, Utilities Director
Meeting:	May 1, 2012
Subject:	Renewable Portfolio Goal
Item #'s:	2
Presenter(s):	Tim Luchsinger, Utilities Director

Background

The Utilities Department has made efforts to be involved in developing technologies regarding renewable energy. Presently, the most cost effective form of renewable energy in this area is wind energy. Since 1998, the City's Utilities Department has participated with other of the state's utilities in Wind Turbine projects.

Springview Project:

Grand Island first became involved with wind energy in 1998 with the development of the "Nebraska Distributed Wind Generation Project" or NDWG, often referred to as the "Springview Project" because of its proximity to that community in north central Nebraska. The project included two 750 kilowatt wind turbines installed near Springview, Nebraska. Half of the cost of the project was funded by a grant from the Electric Power Research Institute/Department of Energy-Turbine Verification Program. NDWG was a joint project among Nebraska utilities that included Auburn Utilities, Grand Island Utilities, KBR Power District, Lincoln Electric System, the Municipal Energy Agency of Nebraska and Nebraska Public Power District (NPPD). Grand Island received an average of six megawatt hours of energy per month from NDWG. This is enough energy to supply approximately six houses for one month. Due to rising maintenance costs, increasing equipment failures and unit downtime, this facility was decommissioned in August, 2007. Including the salvage value of the turbines, the final production cost was approximately \$23/megawatt hour. Recently, two new wind turbines were installed at the Springview site. More information regarding this installation is given in the Discussion portion of this memo.

Ainsworth Project:

Grand Island is a participant in the Ainsworth Wind Energy Farm (AWEF) near Ainsworth, NE. This facility was constructed in 2005 and consists of thirty-six 1.65 megawatt turbines for a total project output of 59.4 megawatts. Grand Island has a one

megawatt participation level in AWEF. AWEF is another joint project that is operated by Nebraska Public Power District, and includes participation by Omaha Public Power District, the Municipal Energy Agency of Nebraska, Grand Island Utilities, and JEA of Jacksonville, Florida. Since the start of AWEF, Grand Island has received an average of 274 megawatt hours of energy per month. This is enough energy to supply approximately 228 houses for one month. Currently, the total production cost of power received from AWEF is approximately \$47 per megawatt hour.

Elkhorn Ridge:

Elkhorn Ridge Wind, LLC (Elkhorn) is an 80 MW wind farm located near the town of Bloomfield in northeast Nebraska. It consists of twenty-seven 3 megawatt turbines. It began commercial operation January 1, 2009. Unlike AWEF, Elkhorn is a privately owned facility. NPPD entered into a Power Purchase Agreement with Elkhorn to purchase all power produced by the facility. Grand Island then signed a Power Sales Agreement with NPPD to purchase a 1 MW share of the power produced at Elkhorn. Including transmission, the total production cost of power received from Elkhorn is approximately \$60 per megawatt hour.

Laredo Ridge:

Laredo Ridge Wind, LLC (LRW) is an 80 MW wind farm located near the town of Petersburg in northeast Nebraska. It consists of fifty-four 1.5 megawatt turbines. It began commercial operation February 1, 2011. Similarly to Elkhorn, LRW is a privately owned facility. NPPD entered into a Power Purchase Agreement with LRW to purchase all power produced by the facility. Grand Island then signed a Power Sales Agreement with NPPD to purchase a 1 MW share of the power produced at LRW. Including transmission, the total production cost of power received from LRW is approximately \$56 per megawatt hour.

Laredo Ridge:

Broken Bow Wind, LLC (BBW) is an 80 MW wind farm currently under construction near the town of Broken Bow, Nebraska. It is anticipated to enter into commercial operation toward the end of 2012. Similar to LRW, BBW is a privately owned facility. NPPD has entered into a Power Purchase Agreement with BBW to purchase all power produced by the facility. Grand Island entered into a Power Sales Agreement with NPPD to purchase a 1 MW share of the power produced at BBW. Participants of the BBW facility automatically become participants of the new Springview II facility. Springview II is a replacement installation to the original Springview facility described above. It consists of two 1.5 MW V direct drive turbines. The vast majority of wind turbines in use in the United States today utilize a gearbox. The gearbox requires a significant amount of maintenance and can be costly to replace and direct drive turbines eliminate this component. Further testing and development is required before the technology is accepted on a large scale in the United States.

Discussion

The majority of the United States have Renewable Portfolio Standards, which require their electric utilities to provide minimum levels of energy that need to come from renewable sources such as wind and solar. Several other states have non-binding renewable energy goals. Nebraska does not have either; however, the State's two largest electric utilities, Omaha Public Power District and Nebraska Public Power District, have internal goals to obtain at least ten percent of their energy from renewable energy sources by 2020.

Conclusion

This item is presented to the City Council in a Study Session to allow for any questions to be answered and to create a greater understanding of the issue at hand.

Utilities staff will provide information regarding some of Grand Island's experience with wind energy and its effect on electric rates, with the intent of City Administration to obtain feedback from Council regarding Grand Island's future participation in wind energy and establishment of a renewable energy policy.

Renewable Energy Portfolio Goal

City Council Study Session May 1, 2012



Nebraska Renewable Energy

No existing State Renewable Energy standard

- OPPD, NPPD have internal goals of 10% renewable energy by 2020
- LES has goals to reduce demand and CO2 emissions
- Primarily wind generation, some biofuels, solar



Nebraska Renewable Energy Issues

- Wind is higher cost
- Tax credits not applicable to public power

http://www.omaha.com/article/20120422/MONEY/704229940

Transmission vs. wind location





UTILITIES

Wind Energy Generation Facilities in Nebraska



Grand Island Wind Participation

- Ainsworth 1 megawatt (MW)
- ⇐ Elkhorn Ridge 1 MW
- ⇐ Laredo Ridge 1 MW
- ⇐ Broken Bow 1 MW (planned for late 2012)
- Springview 2 minimal output access to data

Typical Wind Generator Performance













Wind / Electric Cost Summary

- ➡ Wind accounted for 1.4% of total energy in 2011
- Average power cost = \$34 / megawatt-hour
- Average wind cost = \$58 / megawatt-hour
- Average household used 0.9 megawatt / month
- Power Cost Adjustment is 3.24% higher due to wind
- \Rightarrow Average monthly household cost for wind = \$0.55



Grand Island Renewable Energy Goal

10 Percent Wind Energy would:

Raise current PCA by 18%

Raise current monthly residential bill by 4% (\$3)



Grand Island Renewable Energy Goal

 \Rightarrow Set Goal for renewable energy – 10% by 2020?

⇐ Limit effect of PCA – 20% or \$0.002/kwh?

Discussion / Questions

