

INDEPENDENT EVALUATOR REPORT

Prepared for:

Black Hills Colorado Electric Utility Company, LP

March 23, 2011



I. INTRODUCTION

Concentric Energy Advisors, Inc. ("Concentric") was retained by Black Hills Colorado Electric Utility Company, LP ("Black Hills" or the "Company") to perform an independent evaluation of whether the Company's Busch Ranch Wind Project (the "Project") can be constructed at a reasonable cost compared to the cost of similar eligible energy resources available in the market. This evaluation is pursuant to Colorado Public Utilities Commission Rule 3660(h)(V) (the "Rule"):

If the QRU intends to develop and own new eligible energy resources as provided for under subparagraphs 3660(h)(I) or (h)(II), it shall propose for Commission approval, in advance of filing its application under this rule, the name of the independent evaluator whom the utility intends to hire to conduct an assessment of whether the proposed new eligible energy resources can be constructed at a reasonable cost compared to the cost of similar eligible energy resources available in the market. The independent evaluator will develop a report to the Commission on its assessment of whether the proposed new eligible energy resources can be constructed at a reasonable cost compared to the cost of similar eligible energy resources available in the market...The evaluator's report shall contain the evaluator's views on whether the proposed new eligible energy project can be constructed at a reasonable cost compared to the cost of similar eligible energy project can be constructed at a reasonable cost compared to the cost of similar eligible energy resources available in the market.

This report to the Colorado Public Utilities Commission presents Concentric's findings regarding the reasonableness of the Project's estimated construction costs as compared to the cost of similar resources.

II. DESCRIPTION OF THE BUSCH RANCH WIND PROJECT

The Project is a wind farm which will be located in Huerfano County east of Walsenburg, Colorado. The Project will have a total nameplate capacity of 29 megawatts.

Black Hills proposes to develop and own fifty percent of the wind farm. The other fifty percent will be owned by a third-party developer. Black Hills and the developer will each own, as their respective sole and separate property and not jointly, one-half of the wind turbines and associated equipment constituting the Project. Black Hills will purchase 100 percent of the developer's entitlement to energy and the associated renewable energy credits from the Project pursuant to a long-term renewable energy purchase agreement ("REPA").

III. ASSESSMENT METHODOLOGY AND DATA

Methodology

Concentric is charged with assessing whether the Project "can be constructed at a reasonable cost compared to the cost of similar eligible energy resources available in the market." It is important to note, that the Project is the first to be proposed under the Rule. As a result, there is no more specific guidance from the Commission regarding the parameters by which reasonableness should



be assessed. Accordingly, Concentric relied upon a methodology commonly used in assessing a company's decision to acquire or sell an asset.

In many cases, when a company decides to acquire or sell an asset which is either material or significant to its overall financial profile, or involves an affiliate, a third-party assessment of the fairness or reasonableness of that decision/action is sought. The rendering of this "fairness opinion" requires, among other things, that the third-party expert perform an assessment of the reasonableness of that decision/action from a financial, or shareholder, point of view. Most commonly, this involves assessing whether the cost or value of the decision/action is comparable or reasonable relative to other similar projects in the market (often referred to as "comparable transactions"). This is the approach Concentric took in assessing the Project.

For purposes of this assessment, Concentric defined "reasonable" in a manner similar to what would be used in a "fairness opinion". In particular, Concentric considered:

- The fact that the Project is proposed rather than under construction or constructed and as a result the cost to construct the Project will, by necessity, be an estimate;
- Both the Rule and customary approaches rely on a market comparison to assess reasonableness; and
- Reasonableness is not a static determination; rather it is the consideration of a range of costs based upon publicly-available information.

The identification of "similar eligible energy resources available in the market" requires the definition of both "similar" and "market". Again, consistent with the methodology that would be used in a "fairness opinion", Concentric defined "similar" and "market" to consider:

- Technology and Status given the technology (wind) and development status (active contract negotiations and regulatory approvals) of the Project, only other wind resources that are either under construction, in active development¹, or having entered commercial operation in the last two years were considered;
- Size facilities with a nameplate capacity of less than or equal to 2.0 megawatts were excluded from the analysis due to their small size. As discussed in more detail later in this report, Concentric did not include any maximum size parameters. While certain projects were significantly larger than the Project, they were not specifically excluded from the comparison group, however Concentric did, as described later, consider smaller (100 megawatt or less) projects separately; and
- Location -- because construction costs can fluctuate regionally, only projects in electric power market regions contiguous to Colorado were considered. These include:
 - Three Regional Transmission Organizations ("RTO"):
 - 1. Midwest Independent Transmission System Operator ("MISO");²
 - 2. Southwest Power Pool ("SPP");³
 - 3. Electric Reliability Council of Texas ("ERCOT"); and

As classified by SNL Financial ("SNL")

² Excluding Kentucky, Ohio and Pennsylvania (only a small portion of these states is included in MISO)

Excluding Arkansas and Louisiana (only a small portion of these states is included in SPP)



O North American Electric Reliability Corporation's ("NERC") Western Electricity Coordinating Council ("WECC") 4

Given these four regions, Concentric reviewed current and pending wind facilities in the following states:

Arizona (AZ) Nevada (NV) Colorado (CO) New Mexico (NM) Idaho (ID) North Dakota (ND) Illinois (IL) Oklahoma (OK) Indiana (IN) Oregon (OR) Iowa (IA) South Dakota (SD) Kansas (KS) Texas (TX) Michigan (MI) Utah (UT) Minnesota (MN) Washington (WA) Missouri (MO) Wisconsin (WI) Montana (MT) Wyoming (WY) Nebraska (NE)

Table 1: States Reviewed by Concentric

It should be noted that some of the states reviewed by Concentric are covered by more than one RTO or NERC region. For this reason, certain projects in Illinois, Indiana, Missouri, North Dakota, and South Dakota are not located within the four specific regions listed above but are still within a reasonable proximity to the Project and as such were considered.

Finally, in order to ensure that its assessment was as robust as possible, Concentric also considered (1) generic wind resources, i.e., information regarding the cost of wind resources generally, and (2) power purchase agreements ('PPAs") for wind energy executed on or after January 1, 2009. The sources and use of this data is discussed in more detail later in this report.

Data

As noted above, Concentric relied upon publicly-available data for "similar eligible energy resources". The sources of Concentric's data include:

- Publications by industry groups (e.g. American Wind Energy Association ("AWEA") and Electric Power Research Institute ("EPRI"));
- Publications by the federal government (e.g. Department of Energy ("DOE"), Energy Information Administration ("EIA"), and National Renewable Energy Laboratory ("NREL"));
- SNL, a sector-based news and data service available on the internet by subscription only;
- Utility-sponsored and regional integrated resource plans;
- Federal Energy Regulatory Commission ("FERC") Form 1;

⁴ Excluding California



- Press releases;
- Local media outlets; and
- Trade press.

IV. SIMILAR ELIGIBLE ENERGY RESOURCES AVAILABLE IN THE MARKET

Introduction

As described earlier in this report, Concentric defined "similar eligible energy resources available in the market" to include:

- Specific wind projects that are either under construction, in active development⁵, or having entered commercial operation in the last two years, and are located in power market regions or in states contiguous to Colorado;
- Studies or publications regarding generic wind projects; and
- PPAs for wind energy executed in the last two years.

Pursuant to the methodology described above, Concentric identified 182 resources which it considered in its assessment of the Project.

Specific Projects

Concentric identified 182 existing and pending wind projects located in areas in reasonable proximity to Colorado. The list of similar projects was compiled from AWEA's U.S. Projects Database⁶ and SNL. AWEA's database includes wind power projects that are either currently in operation or are under construction. The information is primarily provided by AWEA's member companies and is updated on a quarterly basis. At the time of writing this report, the database is current as of September 30, 2010. SNL's database of power plants and projects is constantly updated and contains all wind energy resources that are either announced, in advanced development, under construction, operating, postponed or terminated. As noted earlier in this report, for this analysis, Concentric solely focused on projects that are classified as in advanced development, under construction, or operating.

Cost information was publicly available for 91 of these projects. Facilities with a nameplate capacity of less than or equal to 2.0 megawatts were excluded from the analysis due to their small size. Overall, the projects reviewed range in size from 9.0 megawatts to 2,000 megawatts with an average of 163 megawatts.

As classified by SNL

⁶ Available: http://archive.awea.org/projects/



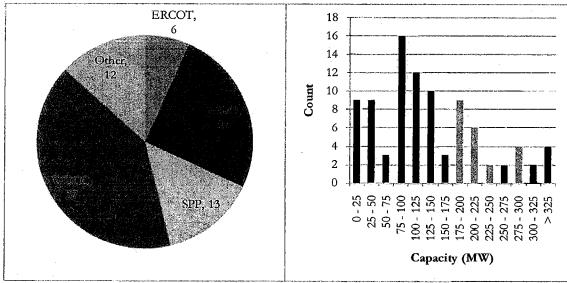


Chart 1: Number of Resources by Region and Histogram of Capacity (MW)

A detailed listing of these projects may be found in Attachment A.

It is important to note that no project reviewed by Concentric is identical to the Busch Ranch Wind Project, and therefore, the results, while quantitative, must be interpreted with care and judgment.

Generic Projects

Concentric identified thirteen [13] reports, studies or publications regarding the cost of generic wind projects which were published in 2007 or later. This time frame is broader than that used by Concentric for specific projects. This is appropriate as it allowed for a more robust data set for generic projects and to capture information prepared by various government agencies as well as information presented to the Commission in Public Service Company of Colorado's 2007 Resource Plan. A detailed summary of these generic projects may be found in Attachment B.

PPAs

Finally, based upon a review of news articles published on or after January 1, 2009 that make reference to wind based PPAs, Concentric identified 84 PPAs for wind energy. In addition, Concentric reviewed the applications of Public Service Company of Colorado for approval of renewable energy purchase agreements with Northern Colorado Wind Energy, LLC. A list of the PPAs may be found in Attachment C.

V. ASSESSMENT

Introduction

Once the "similar energy projects available in the market" were identified and cost data on such projects was assembled, Concentric began its assessment of the estimated cost to construct the Project relative to the cost of theses other projects.



For purposes of comparing costs, Concentric once again relied upon industry standards of converting total costs into cost per kilowatt. Unitizing costs in this manner allows one to compare project-to-project, estimate-to-estimate, without consideration of differences in size/capacity. To ensure that no insight was lost, though, Concentric also segmented the data and reviewed the cost of smaller projects separately.

Busch Ranch Wind Project Cost Estimates

The Company obtained a Black & Veatch engineering, procurement, and construction ("EPC") estimate as a starting point for estimating the costs to construct the Project. The Company also obtained an R.W. Beck review. Based upon the Company's review of the Black & Veatch estimate, the R.W. Beck review, and information received by the Company in connection with its on-going competitive solicitation process for the turbines and balance of plant, the Company requested that Concentric use \$53,000,000 in its assessment of whether this Project can be constructed at a reasonable cost compared to the cost of similar eligible energy resources available in the market. The Black & Veatch estimate, the R.W. Beck review, and the \$53 million that Concentric was requested to evaluate include all direct and indirect capital costs and owner's costs for taxes, insurance, permitting, allowance for funds used during construction ("AFUDC"), and other costs.

The Company provided Concentric with a copy of the construction cost estimate from Black & Veatch of \$57,896,105 with a composite accuracy range of -7 percent and +9 percent. Black & Veatch's low estimate is \$54,131,508 while its high estimate is \$63,517,776. The cost parameters of the Black & Veatch proposal are summarized in Table 2, below.

	Low	Base	High
Total EPC Cost	\$49,394,554	\$52,632,823	\$57,728,166
Owner's Costs	\$4,736,954	\$5,263,282	\$5,789,611
Total Project Cost	\$54,131,508	\$57,896,105	\$63,517,776
Total Project Cost per kW ⁷	\$1,880	\$2,01 0	\$2,205
Composite Accuracy Range	-7%	n/a	9%

Table 2: Black & Veatch Capital Cost Estimate

To assist in its internal assessment of the Project, the Company retained R.W. Beck to perform a third-party review of an owner self build construction cost estimate for a 30 megawatt wind generation project including direct and indirect costs and owner's costs. The Company provided Concentric with a copy of this review which is summarized in Table 3, below.

Assumes 28.8 megawatts (16 turbines @ 1.8 megawatts each)



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	Low	Base	High
Direct and Indirect Costs	\$44,625,000	\$52,500,000	\$65,625,000
Accuracy Range	-15%	n/a	25%
Owner's Costs	\$2,975,000	\$3,500,000	\$4,725,000
Accuracy Range	-15%	n/a	35%
Total Project Cost	\$47,600,000	\$56,000,000	\$70,350,000
Total Project Cost per kW ⁸	\$1, 587	\$1,867	\$2,345

Table 3: R.W. Beck Capital Cost Estimate Review

R.W. Beck concluded that the total construction cost estimate of \$52.5 million, with an accuracy range of -15 percent and +25 percent, for an owner self-build project for a 30 megawatt wind energy facility was developed in a manner which is consistent with normal and sound industry practices. R.W. Beck also reviewed the owner's costs which include permitting and environmental, easements and right of ways, consultants, construction management, start-up, sales tax, contingency, and other miscellaneous costs not contained in the construction contract. Similarly, R.W. Beck concluded that the estimate of the owner's costs of \$3.5 million, with an accuracy range of -15 percent and +35 percent, was developed in a manner which is consistent with normal and sound industry practices.

Finally, the Company requested that Concentric use \$53 million in Concentric's assessment of whether this Project can be constructed at a reasonable cost compared to the cost of similar eligible energy resources available in the market. The Company based this number on its review of the Black & Veatch estimate, the R.W Beck owner self build estimate and the information received by Black Hills in connection with its on-going competitive solicitation process for the turbines and balance of plant. Based upon the expected nameplate capacity of 29 megawatts, the \$53 million construction cost estimate equates to \$1,828 per kilowatt. It is important to note that Concentric did not perform an independent assessment of the Project or the cost data provided by the Company.

Costs of Similar Energy Projects Available in the Market

Specific Projects

For project-specific construction cost estimates, Concentric reviewed over 180 existing and pending facilities and found publicly-available cost estimates for 91 or approximately 50 percent of them. Facilities with a nameplate capacity of less than or equal to 2.0 megawatts were excluded from the analysis due to their small size. Overall, the projects reviewed range in size from 9.0 megawatts to 2,000 megawatts with an average of 163 megawatts. When considering all 91 data points, the minimum construction cost estimate is \$1,196 per kilowatt while the maximum is \$2,885 per kilowatt. The average is \$2,151 per kilowatt and the median, which mitigates the effect of outliers, is \$2,143 per kilowatt. Please see Attachment A.

⁸ Assumes 30 megawatts



Next, Concentric considered several segmentations of the data. Given the Busch Ranch Wind Project's relatively small size (29 megawatts) compared to the groups' average (163 megawatts) and median (111 megawatts), it is worthwhile to examine a subset of projects whose nameplate capacities are more closely clustered around 29 megawatts. Concentric selected the 37 projects that range from 2.0 megawatts to 100.0 megawatts and their average construction cost is \$2,117 per kilowatt and their median is \$2,030 per kilowatt.

Table 4: Construction Cost Estimates

(2.0 - 100.0 megawatt projects)

	\$/kW
Minimum	\$1,458
Average	\$2,117
Median	\$2,030
Maximum	\$2,778
Count	37

In addition to project size, Concentric considered a regional segmentation of the data. The table below presents the minimum, average, median, and maximum construction cost estimates for all wind projects reviewed within the four power market regions.

Table 5: Regional Construction Cost Estimates

	Minimum (\$/kW)	Average (\$/kW)	Median (\$/kW)	Maximum (\$/kW)	Count
ERCOT	\$1,499	\$1,979	\$1,992	\$2,472	6
MISO	\$1,458	\$2,165	\$2,265	\$2,667	23
SPP	\$1,643	\$2,040	\$2,000	\$2,668	13
WECC	\$1,196	\$2,227	\$2,235	\$2,885	37
Other ⁹	\$1,909	\$2,097	\$2,044	\$2,396	12
All	\$1,196	\$2,151	\$2,143	\$2,885	91

Generic Wind Projects

For generic wind resource construction cost estimates, Concentric identified the base year used in each analysis and then inflation-adjusted each estimate¹⁰ to 2010 dollars in order to establish a consistent baseline. The resulting generic cost estimates range from \$1,454 per kilowatt to \$3,054

Includes Pennsylvania, New Jersey and Maryland Power Pool ("PJM"), Midwest Reliability Organization ("MRO"), and Southeastern Electric Reliability Council ("SERC")

Implicit Price Deflators for Gross Domestic Product provided by the U.S. Department of Commerce's Bureau of Economic Analysis were used to inflation-adjust all generic construction cost estimates (available: http://www.bea.gov)



per kilowatt with an average of \$2,150 per kilowatt and a median of \$2,019 per kilowatt. Please see Attachment B.

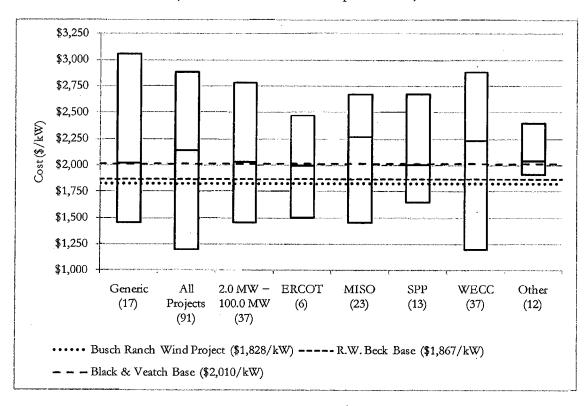
Wind PPAs

Concentric's review of news articles revealed that the pricing data contained in PPAs is often proprietary and confidential and it is therefore difficult to construct a sample size that is large enough to reveal central tendencies. In addition, PPAs are structured to recover the owner's initial construction costs as well as operations and maintenance expenses and capital expenditures incurred over the life of the agreement. For this reason, numerous assumptions have to be made in order to infer the up-front construction costs included in the PPA pricing. As a result, Concentric believes that PPAs do not provide a meaningful data point for this report.

VI. RESULTS AND CONCLUSIONS

The results of Concentric's assessment are summarized in Chart 2, below. This chart presents the minimum, median, and maximum construction cost estimates for all data points and subsequent subsets reviewed by Concentric. Superimposed on top of this data is Black Hills' current estimate of the cost to construct the Busch Ranch Wind Project.

Chart 2: Overall and Segmented Construction Cost Estimates (number of observations in parentheses)





As demonstrated in this chart and Table 6 below, the Project compares favorably with similar energy projects available in the market. The base cost of the Project, \$1,828 per kilowatt, is below the R.W. Beck Base as well as both the average and the median costs of the overall comparison group and the smaller-sized projects group.

Table 6: Summary of Results

	Average (\$/kW)	Median (\$/kW)	Count
Busch Ranch Wind Project	\$1,828	\$1,828	1
All Projects	\$2,151	\$2,143	91
2.0 MW - 100.0 MW	\$2,117	\$2,030	37

The Project's high cost estimate compares consistently with those similar projects at the high end of the range of project costs.

Table 7: High Construction Cost Estimates

	\$/kW
Busch Ranch Wind Project	
Black & Veatch	\$2,205
R.W. Beck	\$2,345
All Projects (75 th percentile)	\$2,348
2.0 MW 100.0 MW (75 th percentile)	\$2,323

Finally, the Project's low cost estimate also compares consistently with the cost of the majority of similar projects.

Table 8: Low Construction Cost Estimates

	\$/kW
Busch Ranch Wind Project	
Black & Veatch	\$1,880
R.W. Beck	\$1,587
All Projects (25 th percentile)	\$1,990
2.0 MW - 100.0 MW (25 th percentile)	\$1,900

Based upon this data and analysis, Concentric believes that Black Hills' proposed new eligible energy project can be constructed at a reasonable cost compared to the cost of similar eligible energy resources available in the market.

				Capetal					
State	Region	Plant		Cost	Capacity			In Service	
CO	region	Busch Ranch Wind Project	Owner	(1 millions)	(AUC)	\$/kW	Status	Date	Source
60		Dusch Rasich wind Project	Black Hills Colorado Electric Utility Co. (50%)	553	29	\$1,828	Development	2012	
SD	MRO	Jerauld Wind Project	South Dakon Wind Partners	\$23	11	\$2,190	Under const.	2011	Associated Press, 7/23/2010; SNL Pinencial
TX	ERCOT'	Cedro Hill Wind Parm	Edison Mission Geoup	\$300	150	\$2,000	Operating	Dec-10	Edison Mission Group news release, 12/23/2010; SNL Financial
TX:	ERCOT	Texas Gulf Wind Papp	Riverstone Holdings LLC	\$700	283	\$2,472	Operating	Apr-09	Corpus Christi Caller-Times, 1/5/2009: SNL Pinancipl
TΧ	ERCOT	Longford Wind Parin	NRG Energy Inc.	\$260	150	\$1,753	Operating		Power-Gen Worldwide, 12/15/2009; SNL Francial
TX	ERCOT'	Papalote Creek II Wind Fann	FLON Climate & Renewables	\$300	200	\$1,499	Operating	Nov-10	B.ON Climate & Renewables news release, 4/21/2010, SNL Financial
TX	ERCOT'	Perfescal I Wind Farm	Iberdrola Renewables	\$400	202	\$1,984	Operating	Apr-09	Corpus Christi Caller-Times, 1/5/2009; SNL Financial
TX	ERCOT	Perfescal II Wand Farm	Theretrola Renewables	\$440	302	\$2,183	Operating	Feb-10	San Antonio Express News, 9/1/2009; SNI. Financial
TX	SPP	Sunray Wind Form	Valero Energy Corp.	\$100	50	\$2,020	Operating	Aug-09	Signal Energy LLC news release, 8/14/2009; SNL Funancial
UT.	WECC	Milford II Wind Corridor	First Wind Holdings (80%) / MTW Resources (20%)	\$240	102	\$2,353	Under const.		Power Pinance & Risk, 10/22/2010; SNL Pinancial
W/A	WECC	Descrit Claim Ward Power Project	taXco Inc.	\$330	190	\$1,737	Development	n/a	Daily Record, 2/3/2010; SNL Financial
₩.Y	WECC	Harvest Wind Pirm	Multiple	\$220	99	\$2,224	Operating	Dec-09	Eugene Water & Electric Board news release, 12/23/2009; SNL Energy
WA	WECC;	Kittims Valley Wind Power Project	Horizon Wind Energy LLC	\$275	101	52,728	Operating	Jan-11	The Searche Times, 5/4/2010, cost is between \$250 and \$300 million; SNL Pinancial
WA	WECC	Vantage Wind Energy Project	Invenergy LLC	\$250	90	\$2,77B	Operating	Aug-10	Daily Record, 1/28/2009, cost is between \$200 and \$300 million; SNL Financial
A/W	WECC	Wild Horse II Ward Facility	Puger Sound Energy Inc.	\$100	44	\$2,273	Operating		Puget Sound Energy news release, 11/10/2008; SNL Financial
WA	WECC	Windy Point / Windy Flats (I & II)	Cannon Power Group	\$1,000	400	\$2,500	Operating	2009	Cannon Power Group news release, 11/3/2009, SNL Financial
WI	Vu2O	Glocier Hills Wind Park	Wisconsin Electric Power Co.	\$367	162	\$2,265	Under const.	Dec-11	Milwaukee Wisconsin Journal Sentinet, 5/14/2010; SNL Financial
MAJ.	WECC	Allemy Wind Farm	Veglia Environment S.A.	\$800	400	\$2,000	Development	2011	Special Use Lette Application, 4/9/2009; SNL Financial
MA.	WECC	Converse Wind Project	United Technologies Corp.	\$4,000	2,000	\$2,000	Development	2014	Special Use Leave Application, 4/9/2009; SNL Pinancial
Mł.	WECC	Durlap I Wind Project	PacifiCorp	\$260	111	\$2,342	Operating	Oct-10	Brighter Energy. org. 10/15/2010; SNL Pinancial
ΔΩ.	WECC	Glenrock III Wind Project	PacifiCorp	\$87	39	\$2,235	Operating	Inn-09	PacifiCorp 2009 FERC Form 1, pg. 410; SNL Farancial
WY.	WECC	High Plains Wind Project	Paci SCorp	\$219	99	\$2,215	Operating		PacifiCorp 2009 FERC Form 1, pg. 410, SNL Financial
IL.I.	WECC	McPndden Ridge I Wind Project	PorifiCorp	\$57	29	\$1.992	Operating		PacifiCorp 2009 PERC Form 1, pg. 410, SNL Financial
16.7,	WECC	Mountain Wind 1 & 11 Expansion	T&T Energy Holdings LLC	\$600	280	\$2,143	Development	2015	Special Use Lesse Application, 4/9/2009; SNL Financial
₩J.	WECC	Rolling Hills Wind Project	PacifiCorp	\$201	99	\$2,030	Operating		PacifiCorp 2009 PERC Form 1, pg. 410; SNL Pinancial
									t Los and an analysis and an a
MINIMUM				\$23	9	\$1,196			
AVERAGE				\$349	163	\$2,131			
MEDIAN MAXIMUM				\$260	nı	\$2,143			
MUMINATION	<u> </u>			\$4,000	2,000	\$2,883			

^[1] Includes Pilgrim Stage Station (10.5 MW), Value Creek (20.0 MW), Thousand Springs (12.0 MW), Tusing Gulch (10.5 MW), Oregon Tend (13.5 MW), Payne's Perry (21.0 MW), Camp Reed (22.5 MW), Salmon Falls (21.0 MW), Golden Valley (12.0 MW), Milner Dam (19.5 MW), Burley Butte (19.5 MW)

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Source	Published (\$/kW)	Base Year	Inflation Adjusted (\$2010)
American Wind Energy Association			
10 Steps to Developing a Wind Farm [1]	\$2, 000	2009	\$2,019
Black & Veatch			
Arizona Renewable Energy Assessment [2]			
Low	\$1,60 0	2007	\$1,666
High	\$1,900	2007	\$ 1,978
California Energy Commission			
Comparative Costs of California Central Station Electricity Generation [3]	•		
Low Case	\$1,440	2009	\$1,454
Average Case	\$1,990	2009	\$2,009
High Case	\$3,025	2009	\$3,054
Department of Energy			
2009 Wind Technologies Market Report [4]	\$2,120	2009	\$2,140
20% Wind Energy by 2030 [5]	\$ 1,650	2006	\$1,768
Electric Power Research Institute			
Integrated Generation Technology Options [6]	\$2,350	2008	\$2,394
Energy Information Administration			
Assumptions to the Annual Energy Outlook 2010 [7]	\$1, 966	2008	\$2,002
Updated Capital Cost Estimates for Electricity Generation Plants [8]	\$2,438	2010	\$2,438
Lazard			
Levelized Cost of Energy Analysis - Version 2.0 [9]			
Low	\$1,900	2008	\$1,936
High	\$2,500	2008	\$2,547
National Renewable Energy Laboratory			
Regional Energy Deployment System (ReEDS) Base Case Data [10]	\$1,775	2007	\$1,848
Northwest Power and Conservation Council			
Sixth Northwest Conservation and Electric Power Plan [11]	\$2,100	2008	\$2,139
Public Service Company of Colorado			
2007 Colorado Resource Plan (CPUC Docket No. 07A-447E) [12]	\$2,512	2007	\$2,615
The Brattle Group, Inc.			-
Integrated Resource Plan for Connecticut [13]	\$2,540	2010	\$ 2,540
MINIMUM:			\$1,454
AVERAGE:			\$2,150
MEDIAN			\$2,019
MAXIMUM:			\$3,054

03/23/11 IE Report

Notes:

[1] Updated March 2009

Available: http://www.awea.org/documents/factsheets/Ten_Steps.pdf

[2] September 2007, pg. 4-57

Available: http://www.bv.com/Downloads/Resources/Brochures/rsrc_ENR_AZ_RenewableEnergyAssessment.pdf

[3] January 2010, pgs. 54-56

Available: http://www.energy.ca.gov/2009publications/CEC-200-2009-017/CEC-200-2009-017-SF.PDF

[4] August 2010, pg. vi

Available: http://www1.cerc.encrgy.gov/windandhydro/pdfs/2009_wind_technologies_market_report.pdf

[5] July 2008, pg. 181

Available: http://www.eere.energy.gov/windandhydro/pdfs/42864.pdf

[6] November 2009, pg. 7-5

Available: http://my.epri.com/portal/server.pt?Abstract_id=000000000001019539

[7] April 2010, pg. 91

Available: http://www.eia.gov/oiaf/aeo/assumption/pdf/0554(2010).pdf

[8] November 2010, pg. 7

Available: http://www.eia.doe.gov/oiaf/beck_plantcosts/pdf/updatedplantcosts.pdf

[9] June 2008, pg. 7

Available: http://www.narucmeetings.org/Presentations/2008 EMP Levelized Cost of Energy - Master June 2008 (2).pdf

[10] August 2009, pg. 20

Available: http://www.nrel.gov/analysis/reeds/pdfs/reeds_full_report.pdf

[11] February 2010, pg. I-52

Available: http://www.nwcouncil.org/energy/powerplan/6/final/SixthPowerPlan_Appendix_I.pdf

[12] December 1, 2008, Table 1.7-1

Available: http://www.xcclenergy.com/SiteCollectionDocuments/docs/CRPGenericCostTables.pdf

[13] January 1, 2010, pg. 3-47

Available: http://www.brattle.com/_documents/UploadLibrary/Upload830.pdf

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					Aug A	Retimated	44.1 *		
Year	Wind Feton	State	Owner	Power Purchaser	Avg. Annual Cost (SMRA)	Lifetime Cort (1MM)	Unit Price (3/MWh)	Annual Escalate	e br
2009 3009	n/s Alta Wind Energy Center	A7.	Western Ward Energy Corp.	Unitation Energy Services	n/s	n/a	13/1024017	11/o	t Noice
2009	Hatcher Ridge Wind Project	CA	Trans-Gen Power LLC	Southern Culifornia Edison	0/1	n/a	n/a	n/o	
3009	Sentinel Mage Wast Project	CA	Pattern Energy Group I.P Competitive Pawer Ventures, LLC	I'GAZ	11/2	n/a	n/a	n/o	
2009	Shiloh II	CA.	compensate rawer ventures, CLC	Southern Casilamia Echson	tv/a	n/a	st/s	p/o	
2209	Windstop I	CA.	Western Wind Energy Cusp.	1'G&E	n/a	n/a	n/a	n/n	
2009	Kit Carson Wind Project	60	Duke Energy Corp.	Southern Celifornia Politon	6/3	ri/a	n/s	n/e	
2009	Penser Prace Wind Farm - Plane II	IA	Horizon Wind Energy	Tri-State Generation & Transmission Association Union Riverte Co.	n/=	n's	n/a	n/o	
2009	Goshen North	110	Ridgelow Energy LLC/BP Wind Energy	Southern Cokifornia Edison	n/s	11/0	n/a	n/e	
007	Grand Ridge Wind Foun Expansion	II.	Invenergy Ward LLC	Appalacian Power Co.	•	n/o	rs/a	n/s	
2009	n/s	n.	Grand Ridge Energy LLC	Kennicky Unlines Co./Louwville Gas & Electric	10/3	n/a	ts/a	n/a	
2009	Powler Ridge Ward Farm - Place II	IN.	BP Alternative Fawigy NA/Dominion Resources Inc.	Indiana Gos Co., Inc.	6/s	11/4	n/s	11/4	
009	Powler Ridge Wind Form - Phase II	1N	RP Alternative Energy NA/Dominion Resources Inc.	Southern Indiana Gas & Electric Co.	n/a	n/a n/a	st/n	n/a	
1007	Powler Radge Wind Foun - Phase II	IN	BP Alternative Energy NA/Dominion Resources Inc	Indiana Michigan Power Co.	n/s	n/a n/a	77/2 17/4	n/a n/a	
1009	House: Wird Project	IN	milico Inc	Indonașdii Ponec & Light	11/4	n/a	n/e	11/0	
2009	Criterion Wind Energy Project Rolling Ward Project	. MD	Constellation Rocigy (Parchased from Clapper Windpower Inc.)	Old Dominion Electric Cooperative	5/a	5/K	0/4	n/s	
009 009		Wii	First Wand Holdings	Central Maine Power Co./Bangor Hydro-Electric	n/s	11/4	11/4	11/4	
יישנג מממי	Deviction Wind Penns Dekalb Ward Energy Center	MN	Juli Werd	Keel Haragy	n/a	n/n	n/a	0/0	
007	Lost Creek Ridge Ward Project	MO MO	NextSca Energy	Florin Manicipal Electric Agency	\$14.4	n/a	n/a	5/8	
1009	Rim Rock Wind From	MT TM	Wand Capital Gacup	American Electric Cooperative, Inc.	n/a	u/=	n/•	n/•	
nna	TA	0/s	NaturEner USA LLC	\$DG&E	n/4	n/a	n/s	n/a	
907	Astrobala Ward Center	ND	Heritage Stoney Corners Wind Farm I LLC Manukota Power Cooperative	Francisc City Light & Power	574	n/2	n/s	n/s	
009	Elkhon Ridge	NE	Ministry Pour Cooperative Mid-West Wind Energy LLC/Edison Masson Group Inc	New Em Everyy Resources, LLC/Ottes Tail Power Co.	r/a	n/a	n/a	n/n	
007	Blue Canyon Y	OK	Horizon Wind Estergy	Nebroiks Public Power Darrier	n/a	n/a	n/u	n/a	
009	Red Hills Wind Pacify	OK	Arousia Energy NA	Public Service Co. of Oklahoma	T/4	n/a	n/s	n/n	
069	Star Point Wino Pacifity	OR	Theodrata Renovables Inc.	Western Fanners Electric Cooperative, LLC Modesto lerigation District	·/•	11/2	n/a	n/a	
009	North Allegheny Wind Project	PA	Duke Energy Corp. (punchased fasen Genrasa Energy USA)	Stocketo rengation District FindEnergy Corp.	11/a	o/n	n/s	m/u	
909	Pepalote Carele Ward Facility	TX	EON Climar & Recerables NA	Lower Coloredo River Anthonity	0/ a	n/a	n/a	n/a	
2009	Milford Wand Corridor Place I	UT	First Wind Holdings	Southern California Public Power Authority (SCI/PA)	s/#	s:/=	n/s	n/e	
				Los Angries Dept. of Water & Power (LADWP)	\$30.2	r./=	n/o	11/0	Armsming First Wind does not sell the plant. The 2007 PPA was emended 2/3/2009.
W 9	Big Hain 2	W.A.	Thereirola Renewables Inc.	AISR Public Power Agency	n/a	n/e	n/a	n/a	The state of the party of the same distributed 5/5/ 4007.
009	Hopkin Ridge & Weld House Wind Famus	WA	Proget Energy Inc.	Scralie in California Edinon	n/a	n/a n/a	n/a n/a		
009	Crystal Lake II	4.2	NextBes Energy Resources, LLC	Wiscomin Power & Light	0/2	D/A	n/a	13/a 15/a	St. 111 St 111 St 111
209	Shaley Wind Project	wi	CH Energy Guoup	Wiscomm Public Service Curp.	n/a	n/a	11/4	n/a	Price was considerated, but NextErs soid it was below \$70/ AEWIL
109 109	Silver Sage Wind Power Project Ten of the World Wind Project	MJ.	Duke Energy Cosp.	Clayeone Light Fuel and Power Co./ Platte River Power Authority	0/1	n/s	s/a	ti/a	· ·
oto	Dry Lake Wood Project	M.F.	Duke Energy Corp.	PrecinCorp	TI/A	n/+	n/a	n/a	
910	Perrin Ranch Wind Energy Center	AZ. AZ	Iboninola Renewables Inc.	Salt River Project	n/a	n/a	n/a	n/a	
010	Steel Park Wind and Solar Project		NextEra Energy Resources, LLC	Arizona Public Service Co.	11/4	D/a	n/a	n/a	
1010	Mountain View IV	AZ CA	Vente Resources AES Wind Generation, Inc.	Uniscarce Energy Services	n/a	n/a	n/o	n/a	
9010	0/2	CA.	Alea Mesa, LLC	Southern California Edison	n/s	n/a	11/2	n/e	·
1010	Shilob III	CA.	enikeo lue.	SDG&E PG&E	n/a	n/a	n/#	n/a	
2010	Certar Cerek Wind II	- Co	BP Wind Energy/Semons Generation		n/a	1/3	n/o	n/u	
2010	Cedac Point Ward Fare	00	Enhange Inc. (bought from Renewable Brengy Systems American Inc.)	Keel Energy Public Service Co. of Colorado	. n/a	n/n	n/a	n/a	
2010	Confeya Wind Pages	20	E.ON Climate & Remarable, NA	Public Service Cit. of Columbia	n/s	n/n	n/a	n/e	
2010	Kelaiki Ward Power Project	н	First Ward Holdings, Inc.	Hawaiian Electric	n/n	4:/=	n/n	n/n	In IPA talks with Turbiate Generation & Transmission Association Inc. and Next Energy Inc.
1010	Barton Wind Fatth/Batton Windpower II	1A	Thereticals Renewables Inc	We Energies	11/2	11/2	n/a	n/a	
010	Pieneer Punte Wind Form	IA	Horizon Wend Energy	Tennessee Valley Authority (TVA)	1/3	B/A B/a	n/a	n/e	
2010	n/a	ΙD	n/a	Idaho Power Co.	\$35.26	n/a n/a	n/s	n/e	**
010	Strestor Captigo Ridge Wind Farm	11.	Iberdeola Renovables Inc.	Tennesere Valley Authority (TVA)	333.25 n/a	n/a	n/s	n/a	During normal lead limites. Series of six projects each <10 MW. Unit price escalates to \$117.77 in 2021.
010	Coney River Wind Farm	KS	TradeWind Energy LLC	Tennessee Valley Authority (TVA)	n/a	n/a	n/a	n/a	
DIO	Granot County Wind Ment	ΜŒ	Inversegy Wind LLC	Detroit Edmon Co.	n/a	n/a	n/a	n/a	
010	Community Wind North	777	Edison Mirrion Energy	Northern States Power - MN	n/a	n/a	0/2	n/s	
)10)16	Earlianness West Wind Project	701	Mouse Energy	n/a	n/a	n/s	7/4	n/o	
716 110	Goodhue Wurd Project Lakefield Wurd Park	MN	AWA Goodhan, LLC	Neel Esergy	n/a	0/2	n/a	11/4	
)10)10	Nobles Ward Project	WN	enXco Inc.	Indimopolis Power & Light	n/a	11/a	n/a	n/a	
010	Woodstock Managinal Ward Page	7DA VUV	enkes Inc. July Ward	Northern States Power - ADS	n/a	11/2	u/a	n/a	
	Lee Dekalb Ward Energy Center	200	Juli Ward NextEin Energy, Inc.	Northern States Proper - MEN	n/a	u√s	n/a	n/a	
10	ALI DERING AND THEIR CHIEF	1/a b/a	AllP Energy Permen	Komucky Prover	\$1+.3 - \$14,5	n/=	n/u	n/a	
10	n/a	n/=	Harizon Word Energy	Southwostern University (via the City of Georgetown, TX)	n/=	11/2	n/a	n/s	
210	n/a	7/0	Rockland	Idaha Power Co.	n/a	n/=	n/s		A 97 MW wind farm. No name or buyer provided,
10	Baldwin Wind Energy Center	ND	NextEm Energy Resources, LLC	Bain Electric pours Cooperative	n/a	n/s	\$71.29	n/a	
110	Broken Bow Word Farm		Mid-West Wind Energy LLC/Edster Mission Group Ltc.	Nebraska Public Power Duract	n/n	^/•	0/0	n/a	
50	Flat Water Wind Farm	NE	Gertump Wind North America	Omela Public Power District	u/a u/1	n/a n/a	n/a	n/a	
10	Lando Ridge Wind Energy Project	NB	Mid-West Wind Energy LLC/Edwar Mission Group Ira-	Nebraska Public Power District		n's II/a	n/a	n/o	
10	n/s	NB	TPW Petersburg, LLC	Osnalia Public Power District	17/# 17/#	n/a	n/a . n/a	11/5	•
10	n/s	NII.	Flarerater Holdings, LLC	Ornalia Public Puwer Dratect	n/a	n/3 n/a	n/s	11/s	
10	Macho Springs World Pants	NM	Element Power Ltd.	Tucson Electric Power Co.	8/1	0/4	n/s	0/4	· ·
10	Spring Velley Ward Project		Prizzan Energy Group Lit	NV Energy	n/a	n/a	594.00	1,00%	
10	Buse Count Wind Farm	OH	Liberatrola Removables Inc.	FuntEnergy Solutions Corp.	0/2	n/a	2/2	6/9	
	Turbes Road II Wast Farm	OH	Horizon Wind Energy	AEP Olio	n/s	n/u	n/e	ก/ส	
10 16	Kreiten U		CVV Renewable Energy Co.	Oklahoma Gos de Electric	11/2	n/a	D/2	n/a	
	Keenan II	OΚ	General Electric/ITOCHU Corp.	Oklahotna Gos & Electric	n/a	n/a	n/e	11/0	
10 10	Rocky Ridge Wind Project		TradeWard Bream LLC	Western Fanners Electric Cooperative, LLC	11/2	ıv'a	11/2	n/s	
	Cumbine IEIs II Pa'lls Wand Ferra		Burus Energy America Corp.	Clark Public Utskies	n/a	n/a	n/a	n/o	
	PaTu Wand Patra Codru Hill Wand Fann		Otegon Tmil Wend Farm, LLC	n/a	n/a	n/a	n/u	n/a	
		12	Rdison Mission Energy	CPS Energy	0/1	n/a	n/a	n/a	
	South Treat	TX	NRG Energy Inc. (bought from Babecck & Brown)	AEP Energy Partners	. n/s	n/a	n/a	n/s	
	Milford Ward Corridor Project Expansion Vantage Wind Project	UT	Fior Ward Holdings, Inc./MTW Resources	Los Angeles Dept of Water & Power (LADWP)	n/a	n/s	n/a		LADWP will pro-pay 9 ocean/kWh for gurranteed power.
	Vanzago Ward Project Wordy Flore Ward Project		Centage Card Excella	PG&B	n/a	n/a	n/u		Costs are confidencial for three yes is from date energy deliverees begin.
	Beech Ridge Ward Farm	WA	Country Priver Group	Southern California Public Power Authority (SCPPA)	n/a	\$547.0	n/a	n/a	SCPPA par-paying for 20-yr haick of your at discounted me.
	was a ranke to man tenta	wv	Invenergy Wind LLC	Appalachum Perver Co.	n/a	n/a	#/a	n/s	· · · · · · · · · · · · · · · · · · ·
)	Weston Ward Pancet	WY	Ward lineng: America lov.	n/a	0/4				