



RECEIVED

2007 APR 23 AM 9:25

201 South Main, Suite 2300
Salt Lake City, Utah 84111

April 20, 2007

IDAHO PUBLIC
UTILITIES COMMISSION

VIA OVERNIGHT DELIVERY

Idaho Public Utilities Commission
472 West Washington
Boise, ID 83702-5983

Attention: Jean D. Jewell
Commission Secretary

Re: Case No. PAC-E-07-07
In the Matter of the Petition of Rocky Mountain Power for an Order Revising
Certain Obligations to Enter into Contracts to Purchase Energy Generated by
Wind-Powered Small Power Generation Qualifying Facilities

PacifiCorp (d.b.a. Rocky Mountain Power) hereby submits for filing an original and eight copies of its Petition of Rocky Mountain Power for an Order Revising Certain Obligations to Enter into Contracts to Purchase Energy Generated by Wind-Powered Small Power Generation Qualifying Facilities.

Service of pleadings, exhibits, orders and other documents relating to this proceeding should be served on the following:

Brian Dickman
Manager, Idaho Regulatory Affairs
PacifiCorp
One Utah Center, Suite 2300
201 South Main
Salt Lake City, UT 84111
brian.dickman@pacificorp.com

It is respectfully requested that all formal correspondence and Staff requests regarding this material be addressed to:

By e-mail (preferred): datarequest@pacificorp.com

By regular mail: Data Request Response Center
PacifiCorp
825 NE Multnomah, Suite 2000
Portland, Oregon, 97232

By fax: (503) 813-6060

Sincerely,

Jeffrey K. Larsen / p.a.

Jeffrey K. Larsen
Vice President, Regulation
Enclosures

cc: Service List

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 20th day of April 2007, I served true and correct copy of the foregoing PETITION upon the following named parties by the method indicated below, and addressed to the following:

Jean Jewell	_____	Hand Delivered
Idaho Public Utilities Commission	_____	U.S. Mail
472 West Washington Street(83702)	_____	Overnight Mail
P.O. Box 83720	<u>XX</u>	E-MAIL
Boise, ID 83702		
<u>Jean.jewell@puc.idaho.gov</u>	_____	

Barton Kline	_____	Hand Delivered
Monica Moen	_____	U.S. Mail
Lisa Nordstrom	_____	Overnight Mail
Idaho Power Company	<u>XX</u>	E-MAIL
PO Box 70		
Boise, ID 83707		
<u>bkline@idahopower.com</u>		
<u>mmoen@idahopower.com</u>		
<u>lnordstrom@idahopower.com</u>	_____	

Scott Woodbury	_____	Hand Delivered
Deputy Attorney General	_____	U.S. Mail
Idaho Public Utilities Commission	_____	Overnight Mail
472 West Washington Street(83702)	<u>XX</u>	E-MAIL
P.O. Box 83720		
Boise, ID 83702		
<u>Scott.woodbury@puc.idaho.gov</u>	_____	

Richard L. Storro	_____	Hand Delivered
Director, Power Supply	_____	U.S. Mail
Avista Corporation	_____	Overnight Mail
1411 E. Mission Avenue	<u>XX</u>	E-MAIL
P.O. Box 3727, MSC-7		
Spokane, WA 99220-3727		
<u>dick.storro@avistacorp.com</u>	_____	

R. Blair Strong	_____	Hand Delivered
Paine, Hamblen, Coffin, Brooke & Miller	_____	U.S. Mail
717 West Sprague Avenue, Suite 1200	_____	Overnight Mail
Spokane, WA 99201-3505	<u>XX</u>	E-MAIL
<u>r.blair.strong@painehamblen.com</u>	_____	

Peter J. Richardson
Richardson & O'Leary PLLC
515 N. 27th Street
PO Box 7218
Boise, ID 83702
peter@richardsonandoleary.com

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL

William J. Batt
John R. Hammond, Jr.
Batt & Fisher, LLP
101 S. Capitol Blvd., Suite 500
PO Box 1308
Boise, ID 83701
wjb@battfisher.com
jrh@battfisher.com

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL

Michael Heckler
Director of Marketing & Development
Windland Incorporated
7669 W. Riverside Dr., Suite 102
Boise, ID 83714
mheckler@windland.com

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL

Dean Miller
McDevitt & Miller LLP
420 W. Bannock
Boise, ID 83702
joe@mcdevitt-miller.com

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL

Armand Eckert
Magic Wind LLC
716-B East 4900 North
Buhl, ID 83316

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL

Glenn Ikemoto
Principal
Energy Vision LLC
672 Blair Ave.
Piedmont, CA 94611
glenni@pacbell.net

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL

David Hawk
Director, Energy Natural Resources
J.R. Simplot Company
999 Main St.
PO Box 27
Boise, ID 83707-0027
dhawk@simplot.com

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL

R. Scott Pasley
Assistant General Counsel
J.R. Simplot Company
999 Main St.
PO Box 27
Boise, ID 83707-0027
spasley@simplot.com

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL

William M. Eddie
Advocates for the West
1320 W. Franklin St.
PO Box 1612
Boise, ID 83701
billeddie@rmci.net

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL

Troy Gagliano
917 SW Oak St., Suite 303
Portland, OR 97205

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL

LeRoy Jarolimek
605 S. 600 W.
Burley, ID 83318
leroyjarolimek@hotmail.com

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL

Gerald Fleischman
11535 W. Hazledale Ct.
Boise, ID 83713
gfleisch986@hotmail.com

XX

Hand Delivered
U.S. Mail
Overnight Mail
E-MAIL



Peggy Ryan
Supervisor, Regulation Administration

Dean S. Brockbank
Sr. Counsel
Rocky Mountain Power
201 South Main, Suite 2300
Salt Lake City, Utah 84111
Telephone: 801-220-4568
Facsimile: 801-220-3299

Attorney for Rocky Mountain Power

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE PETITION OF)
ROCKY MOUNTAIN POWER FOR AN)
ORDER REVISING CERTAIN) No. PAC-E-07-07
OBLIGATIONS TO ENTER INTO)
CONTRACTS TO PURCHASE ENERGY) PETITION
GENERATED BY WIND-POWERED SMALL)
POWER GENERATION QUALIFYING)
FACILITIES)

Rocky Mountain Power, a division of PacifiCorp ("the Company"), pursuant to the Rule 31, IDAPA 31.01.01.031, hereby petitions the Idaho Public Utilities Commission ("Commission") to issue an Order:

Restoring the cap on entitlement to published avoided cost rates for wind-powered small power generation facilities that are qualifying facilities ("QFs") under Sections 201 and 210 of the Public Utility Regulatory Policies Act of 1978 ("PURPA") from the current level of 100 kW to 10 average MWs per month ("10 aMW"), subject to the following conditions:

1. Reducing the published avoided cost rates applicable to purchases by Rocky Mountain Power of electric power from wind-powered QFs by \$5.04 per MWh, which amount represents the inflation-adjusted integration costs of that wind power, to be applied against published avoided cost rates except in those circumstances where the QF

developer agrees in the power purchase agreement with Rocky Mountain Power to deliver QF output to Rocky Mountain Power on a firm hourly schedule;

2. Removing the requirement that the 90%/110% performance band be applied to purchases from wind-powered QFs;

3. Authorizing Rocky Mountain Power to purchase state-of-the-art wind forecasting services to provide Rocky Mountain Power with forecasted wind conditions in those geographic areas in which wind generation resources are located, provided that QFs will reimburse Rocky Mountain Power for their share of the on-going cost of the wind forecasting service, in proportion to their percentage share of the wind-generator capability being supplied to Rocky Mountain Power from that area;

4. Requiring QFs to deliver a "mechanical availability guarantee" to Rocky Mountain Power to demonstrate monthly, except for scheduled maintenance and events of force majeure or uncontrollable force, that the QF was physically capable and available to generate a full output during 85% of the hours in a month;

5. Clarifying the rules governing the entitlement to published rates to prevent all QFs, whether wind or non-wind, capable of delivering more than 10 aMW per month from structuring or restructuring into smaller projects for the purpose of qualifying for the published avoided cost rates; and

6. Clarifying that the cap on entitlement to published avoided cost rates shall be restored to 10 aMW only until PacifiCorp's renewable targets for each calendar year in the most recently acknowledged Integrated Resource Plan are met.

I.

BACKGROUND

Idaho Power Company filed a Petition with the Commission on June 17, 2005, in Case No. IPC-E-05-22 requesting that the Commission suspend its obligations under Sections 201 and 210 of PURPA to enter into new purchase and sales contracts for energy generated by wind-powered QFs. On July 15, 2006, Rocky Mountain Power filed a Petition to Intervene, Brief on Requested Temporary Suspension, and Direct Testimony in Case No. IPC-E-05-22 in which it recommended that the Commission temporarily suspend Rocky Mountain Power's PURPA purchase obligations in the same manner as requested by Idaho Power. In Order No. 29839, issued on August 4, 2005, the Commission reduced the published rate eligibility cap for QF wind projects from 10 aMW per month to 100 kW and required individual contract negotiations for QFs larger than 100 kW for Rocky Mountain Power, Idaho Power and Avista.

Rocky Mountain Power has actively participated in Case No. IPC-E-05-22 and in follow-up wind workshops in Idaho. In addition, Rocky Mountain Power has continued to study and analyze the impact of integrating wind generation into its multi-state electrical system, utilizing its existing integrated resource planning process.

Recently, Idaho Power Company has filed Petitions respecting PURPA purchase obligations in two different dockets, Case Nos. IPC-E-07-03 and IPC-E-07-04. Avista made a similar filing in Case No. AVU-E-07-02. This Petition reflects recommendations made by Idaho Power Company and Avista with respect to their respective service territories. Rocky Mountain Power concurs with those recommendations, and therefore recommends that similar policies be adopted with respect to Rocky Mountain Power's PURPA purchase obligations.

II.

INTEGRATION COSTS OF WIND POWER TO BE REFLECTED IN AN ADJUSTMENT TO PUBLISHED AVOIDED COST RATES

With respect to the costs of integrating wind generation into existing utility systems, the Commission found in Order No. 29839, Case No. IPC-E-05-22, that the supply characteristics of wind generation and related integration costs could provide a basis for adjustment of the published avoided cost rates, an adjustment that may be different for each utility. The Company's recommendation is that published avoided cost rates for purchases by Rocky Mountain Power be reduced by \$5.04 per MWh, which amount represents the integration costs of that wind power, to be applied against scheduled avoided cost rates in those circumstances, except where the QF developer agrees in the power purchase agreement with Rocky Mountain Power to deliver QF output to Rocky Mountain Power on a firm hourly schedule. The \$5.04 per MWh represents the wind integration cost included in the company's latest acknowledged IRP (the 2004 IRP) adjusted for inflation.

Rocky Mountain Power submits herein as Exhibit A to this Petition, an excerpt from the "PacifiCorp – 2004 IRP Appendix J – Renewable Generation Assumptions" in which PacifiCorp provides a description of the methodology used and the results derived from PacifiCorp's analysis of the wind integration cost issue as part of the 2004 IRP process. The 2004 IRP was originally filed on January 21, 2005 (Case No. PAC-E-05-02) and is the Company's latest acknowledged IRP. In an Acceptance of Filing dated August 26, 2005, the Commission acknowledged the 2004 IRP. Therefore, Rocky Mountain Power recommends that the published avoided cost rates applicable to purchases by Rocky Mountain Power of electric power from wind-powered QFs be reduced by \$5.04 per MWh to account for the cost to integrate wind.

Rocky Mountain Power recommends that the applicable reduction be applied to the published avoided cost rates to determine a purchase and sale price that will be established for the duration of the contract. Rocky Mountain Power recommends this approach in order to assure that QFs that deliver less than 10 aMW have a predictable rate.

III.

ELIMINATION OF THE 90%/110% PERFORMANCE BAND

Idaho Power Company and Avista recommend the elimination of the 90%/110% performance band, subject to several conditions. Rocky Mountain Power recommends that the same policies be applied to the purchase of wind power by Rocky Mountain Power from QFs. Rocky Mountain Power believes that its proposed discount captures, as best as can be determined presently, the cost of integrating wind generation into the Company's system and, therefore to some degree, takes into account the inherent difficulty of accurately forecasting the availability of wind. The establishment of the discount will in large measure account for the variability of wind, and thereby diminishes the need for a performance band for wind. Furthermore, Rocky Mountain Power believes there is benefit to a level of consistency in the structure of PURPA QF tariffs among utilities.

In lieu of a performance band structure, the Company supports the concept of establishing a mechanical availability guarantee by the QF. This guarantee would encourage wind developers to ensure that the maintenance is performed on the wind turbines and that they maintain the readiness of their equipment throughout the full duration of the long-term contract. Rocky Mountain Power has successfully implemented a mechanical availability guarantee in power purchase agreements with other wind-powered QFs and continues to support this method.

Rocky Mountain Power also supports the concept that QFs should participate in funding wind forecasting services, as a condition of not being bound by the performance band. Wind forecasting services are specific to any given wind farm and therefore may not be able to be shared with other wind farms within the same geographic area. To the extent that Rocky Mountain Power could use the same wind data, the Company would propose to share such expense on a pro rata basis with QFs that are selling their power to Rocky Mountain Power under long-term contracts, so that the QFs would pay a portion of the wind forecasting expenses proportional to their share of the wind-generator capability within the Rocky Mountain Power wind portfolio from that geographic region.

IV.

ADOPTION OF A RULE PREVENTING MULTIPLE PROJECTS OWNED BY THE SAME PERSON FROM RECEIVING THE PUBLISHED AVOIDED COST RATES, IF LOCATED IN THE SAME SITE

Idaho Power Company and Avista have recommended adoption of a rule nearly the same as that adopted by the Oregon Public Utility Commission. Rocky Mountain Power recommends that the approach recommended by Idaho Power and Avista be applied to Rocky Mountain Power's purchases as well.

Wind projects are uniquely able to reconfigure themselves into various legal ownerships solely for economic reasons, without disturbing or affecting in any way the project site or structural design. In some circumstances, other generating technologies may have similar capabilities. Such projects under common ownership that reconfigure themselves into multiple projects of a smaller capacity should not qualify for published avoided costs in Idaho. Rather, these projects should negotiate directly with the Company to determine the appropriate avoided

cost price to be paid for energy delivered to Rocky Mountain Power taking into account the specific attributes of the project.

Additionally, while fundamental economic differences in the avoided costs and wind integration costs exist for different utilities, a uniform approach among Idaho jurisdictional utilities is particularly useful to avoid unneeded incentives favoring one utility over another solely due to different QF rules that might apply to different utilities.

V.

**APPLICATION TO WIND GENERATION
UP TO COMPANY'S SYSTEM-WIDE IRP TARGETS**

Rocky Mountain Power recommends that the cap on entitlement to published avoided cost rates be restored to 10 aMW only until the Company's system-wide wind resource purchases meets the total wind targets, by calendar year, from the latest acknowledged IRP or until Rocky Mountain Power files for changes to its avoided cost schedules, or files a new wind integration cost study based on additional industry experience.

VI.

COMMUNICATIONS

Communications respecting this matter should be addressed to:

Dean S. Brockbank
Sr. Counsel
Rocky Mountain Power
201 South Main, Suite 2300
Salt Lake City, Utah 84111
Telephone: 801-220-4568
Fax: 801-220-3299
E-mail: dean.brockbank@pacificorp.com

Brian Dickman
Manager, Idaho Regulatory Affairs
Rocky Mountain Power
201 South Main Street, Suite 2300
Salt Lake City, UT 84111
Telephone: (801) 220-4975
Fax: (801) 220-2798
E-mail: brian.dickman@pacificorp.com

VII.

MODIFIED PROCEDURE

Rocky Mountain Power has sent a copy of this Petition via email to all the parties that participated in Case No. IPC-E-05-22. If no parties file comments on Rocky Mountain Power's proposal, or indicate substantial opposition to Rocky Mountain Power's Petition in written comments, Rocky Mountain Power requests that the Commission consider this Petition in accordance with Rule 201, *et seq.*, allowing for disposition by Modified Procedure. IDAPA 31.01.01.201 *et seq.* Rocky Mountain Power is receptive to further proceedings, if the Commission believes, based on comments received, that further proceedings would be advantageous.

WHEREFORE, Rocky Mountain Power respectfully petitions the Commission to issue an Order:

Restoring the cap on entitlement to published avoided cost rates for wind-powered small power generation facilities that are qualifying facilities under Sections 201 and 210 of the Public Utility Regulatory Policies Act of 1978 from the current level of 100 kW to 10 average MWs per month, subject to the following conditions:

1. Reducing the published avoided cost rates applicable to purchases by Rocky Mountain Power of electric power from wind-powered QFs by \$5.04 per MWh, which amount represents the integration costs of that wind power, to be applied against scheduled avoided cost rates in those circumstances, except where the QF developer agrees in the power purchase agreement with Rocky Mountain Power to deliver QF output to Rocky Mountain Power on a firm hourly schedule;

2. Removing the requirement that the 90%/110% performance band requirement be applied to purchases from wind-powered QFs;

3. Authorizing Rocky Mountain Power to purchase state-of-the-art wind forecasting services to provide Rocky Mountain Power with forecasted wind conditions in those geographic areas in which wind generation resources are located, provided that QFs will reimburse Rocky Mountain Power for their share of the on-going cost of the wind forecasting service, in proportion to their percentage share of the wind-generator capability being supplied to Rocky Mountain Power from that area;

4. Requiring QFs to deliver a "mechanical availability guarantee" to Rocky Mountain Power to demonstrate monthly, except for scheduled maintenance and events of force majeure or uncontrollable force, that the QF was physically capable and available to generate at full output during 85% of the hours in a month;

5. Clarifying the rules governing the entitlement to published rates to prevent all QFs, whether wind or non-wind, capable of delivering more than 10 aMW per month from structuring or restructuring into smaller projects for the purpose of qualifying for the published avoided cost rates; and

6. Clarifying that the cap on entitlement to published avoided cost rates shall be restored to 10 aMW only until PacifiCorp's total wind portfolio meets the Company's annual renewable targets in the action plan in the company's latest acknowledged IRP

RESPECTFULLY SUBMITTED this 20th day of April, 2007.

Rocky Mountain Power

By: Dean Brockbank (p.n.)
Dean Brockbank, Sr. Counsel
Rocky Mountain Power

EXHIBIT A

AN EXCERPT TAKEN FROM “PACIFICORP – 2004 IRP APPENDIX J RENEWABLE GENERATION ASSUMPTIONS”

EXHIBIT A

AN EXCERPT TAKEN FROM “PACIFICORP – 2004 IRP APPENDIX J – RENEWABLE GENERATION ASSUMPTIONS”

Wind Integration Costs

PacifiCorp developed a methodology for calculating the added cost of integrating wind resources into the system during the 2003 IRP. This section will provide a brief review of the methodology and update of the original assumptions.

Utilities maintain reliability by dynamically responding to imbalances in demand and supply. Resources are scheduled to ramp in generation when loads are increasing, and to reduce generation as loads subside for the day—other resources are made available to respond on a near instantaneous basis. Flexible resources that can change their output over periods of hours and seconds are key to responding to the rapid changes in loads and unexpected changes in resource output (outages and derates). It is expected that additions of wind resources will increase the need for flexible resources to meet reliability standards.

The amount of unloaded, relatively flexible resources available on any hour is called the *operating reserve*—resources available on short notice to provide additional power as needed. Calculating the quantity of reserves required to maintain system reliability has not been an exact science as practiced in the utility industry. Many years of experience with thermal and hydro resources has led to some industry standards. One such standard is to maintain contingency reserves³⁰ equal to the sum of 5% of load served by hydro resources and 7% of load served by non-hydro resources operating to meet load on any hour. In general, utilities are required to have sufficient operating reserve to meet the North American Electric Reliability Council (NERC) performance standards.

In addition to needing to assure sufficient flexible resources available to meet demand obligations, PacifiCorp needs to understand the extent to which the system incurs additional operating costs associated with the relatively volatile and less-predictable nature of wind generation. Those costs are termed *Imbalance Costs* for the purpose of this paper.³¹

Because of the implications for reliability and PacifiCorp’s role as control area service provider, PacifiCorp undertook to define methods of assessing both incremental reserve requirements, and additional dispatch costs due to integrating wind resources on its system. While it is clear that the methods employed will require future refinements, PacifiCorp feels that they represent a

³⁰ Contingency Reserve is a category of Operating Reserve that must be made available to quickly respond when some portion of the power system experiences a failure such as transmission line outages, generator failures, etc.

³¹ Note that the term Imbalance Cost as used in this paper is not directly related to the definition of imbalance charges found in FERC pro-forma transmission tariffs. As used in this paper, imbalance costs refer strictly to the additional operating expenses incurred as a result of adding wind generation to the system. Such costs may include the costs of additional market sales and purchases, more frequent unit startups, and the cost of dispatching reserve units.

reasonable approximation for estimating wind integration costs given the characteristics of PacifiCorp's control areas until further analysis can be undertaken.

Imbalance Costs

For the 2003 IRP, Henwood's MARKETSYS model was used to estimate the difference in system costs³² between firm contract delivery at constant rates over time, and an equivalent amount of energy from simulated wind resources. Wind generation fluctuated hourly based on available historical wind data.³³ The alternatives were tested for wind and contracts separately on the west and east sides of PacifiCorp's system. The model was run for three future years at five levels of added wind capacity and averaged to estimate imbalance costs.

The model showed relatively little difference between the east and west sides of the PacifiCorp system. At wind penetration levels of 1,000 MW MARKETSYS reports average imbalance costs of about \$3/MWh in year 2002 dollars.

Incremental Operating Reserve Requirements

Incremental reserve requirements were estimated by comparing the relative dynamic range of loads with and without wind. The standard deviation of hourly loads for a year was calculated. A new standard deviation was computed after subtracting out various levels of wind generation. The fractional difference in standard deviations was taken as an estimate of the increased need for operating reserves.

Assuming that the fractional increase in standard deviation of hourly loads with and without wind is proportional to the increased need for reserves, the incremental need for reserves can be estimated. Factoring in the cost of reserve results is an estimation of the cost of incremental operating reserves attributable to wind.

Operating reserves are typically held on hydro units when available, and higher variable cost thermal units to the extent they are needed. PacifiCorp holds an existing portfolio of resources that can be arranged from highest variable cost to lowest. Holding reserves on unloaded flexible hydro units, and above-market-cost thermal units incurs relatively little cost. For these reasons, some wind site locations supported by flexible generation within the system may be preferable over other locations. However, as the need for reserves increases, the likelihood of having to carry reserves on economic thermal units and loaded hydro units increases. This means that the cost of holding reserves increases with the level of reserves being held. Costs of holding reserve may increase or decrease over time due to changes in overall market prices.³⁴

Caveats

The foregoing analysis is thought to represent a reasonable approach to estimating costs associated with integrating wind resources into PacifiCorp's power system until further analysis

³² System costs = dispatch costs + market purchase costs – market sales revenues

³³ The hourly wind sites modeled in this study were based on simulated historical hourly generation data from a wind resource on PacifiCorp's west system and Foote Creek on the east system. The two data streams were modified by lagging by one hour and moving data ahead one hour to create four new data ranges for the model. The two west side streams were added together and then sized to the installed capacity level for the West side site. The two new Foote Creek sites were combined and prorated up to the various installed capacity levels for the East side site. A single year of hourly generation was repeated for each of the three years of the study.

³⁴ The cost of reserves also changes over hours and season. This calculation assumes an average cost over the year.

can be performed. Many assumptions have necessarily been made to do this analysis. Some of the main assumptions include:

- MARKETSYM's ability to accurately reflect imbalance costs
- Operating reserve requirements are proportional to hourly load volatility net wind generation
- Sufficient transmission to fully integrate wind resources with the system
- Intra-hour variability is not significant

Updates to Wind Integration Costs

At a penetration level of 1,000 MW, the cost of incremental operating reserves in the 2003 IRP for a wind site with a capacity factor of 30% was \$2.72/MWh. Combined with the \$3.00 /MWh estimate for imbalance, the total integration cost for 1,000 MW was approximately \$5.50/MWh. Since this analysis was first completed, the assumption for imbalance costs have remained unchanged at \$3.00 / MWh in 2002 dollars but the cost of incremental reserves has been updated for new market prices. The same methodology was used in the update, only the cost of reserves was adjusted. Currently for 1,000 MW of wind capacity split equally in the system, the 20 year levelized cost of integration in 2004 dollars is estimated to be \$4.64 / MWh.