

Economic Analysis of Hancock Wind Contract Impact on BED Power Portfolio

Public Version



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2008 BED Customer Survey Results

- In a BED sponsored survey customers were asked to rank their preference for specific power resources from 1 (oppose) to 10 (support). Results by customer class were:

	Customer Class	
	<u>Residential</u>	<u>Commercial</u>
Coal	3.64	3.73
Nuclear	4.33	4.80
Natural Gas	6.38	6.28
Biomass	7.02	6.96
Res. Wind/Solar	8.69	8.12
Wind	8.76	8.59
Efficiency	9.04	8.50

Project Description

- ❑ 51 MW Wind Facility
 - Located adjacent to the existing 39 MW Bull Hill Project
- ❑ Located in Hancock County, Maine
- ❑ 17 turbines
 - in addition to the 19 turbines already installed at Bull Hill
 - Each new turbine is 3.0 MW in size
 - Each is 518 feet in overall height (308 feet at hub)
- ❑ Connected to Bangor Hydro's transmission system at 115 kV
- ❑ Maine Department of Environmental Protection permit application deemed complete Jan 2013
 - No public hearing required
 - Permit expected July 2013 with 45 day appeal window
 - Tax agreements with local municipalities are in place and all are supportive
- ❑ Anticipate construction during 2014
- ❑ Commercial Operation not later than December 31, 2015

BED Contract Key Components

- 13.5 MW entitlement (26.5% of the Project)
 - Anticipate a 27% capacity factor
 - 32,000 MWh per year (~9% of BED's energy need in 2012)

- 10-year initial Term

- BED can extend for an additional 15 years by giving notice of its intent to do so on or before 9/30/15
 - BED would have an additional 2-years to receive all state and local approvals (including a state §248 permit and a city-wide vote)
 - No permitting costs will be incurred until/unless BED exercises this option

- Includes all market products except capacity
 - Energy
 - Renewable Energy Certificate's (REC's)
 - Other ancillary revenues
 - Other environmental products that may be created

- Due to transmission constraints in Maine the contract may not provide market capacity initially, although BED is entitled to its share of capacity when the constraint is removed
 - The developer is working with ISO-NE and other area projects to alleviate issue

Contract Key Components (Continued)

- Either party can cancel the contract without recourse if Commercial operation is not reached by December 31, 2015
 - Allows the developer to cancel if it cannot get necessary permits
 - However developer can make a one time \$50,000 payment to BED to extend this deadline to December 31, 2017 and assign the contract to another equivalent project
 - Allows BED to move on if the project cannot be built and First Wind does not have any comparable projects in construction

- Provides for performance assurance if:
 - Either party has reasonable grounds to believe the creditworthiness of the other party has become unsatisfactory, or
 - Either party believes the other party has become unable to perform its obligations under the Agreement

- Disputes are subject to binding arbitration

- Pricing, minimum delivery, credit provisions, and damage calculation provisions are subject to Confidentiality

Benefits BED sees in Contract

- Stable and known \$/MWh price
 - Continues to reduce BED's exposure to natural gas prices
 - Enhances rate stability (although potentially at a premium to non-renewable alternatives)
 - **BED only pays if MWh are actually delivered**
- BED avoids the risk normally associated with moving power from Maine to Vermont
 - Under most contracts the developer would sell to BED at a price in Maine, and BED would then need to get the power to Vermont
 - In this contract the developer has agreed to take all of this risk as part of the \$/MWh payment
- Renewability
 - This source meshes well with BED's customer's desires and city climate change goals
 - It is considered "new renewable" under all of the New England Renewable Portfolio Standards
- Known minimum delivery
 - The contract includes provisions to guarantee BED will receive a certain amount of deliveries
 - Provides more stability in planning and financial decision making
 - Enhances ability to sell REC's forward to maximize price
- Set off development risk to a third party
 - Permitting costs can approach \$5 million for a project of this size with no guarantee of success
 - BED has no development exposure in this contract
- Continues to use the private/public partnership model to maximize tax incentives and reduce BED ratepayer costs

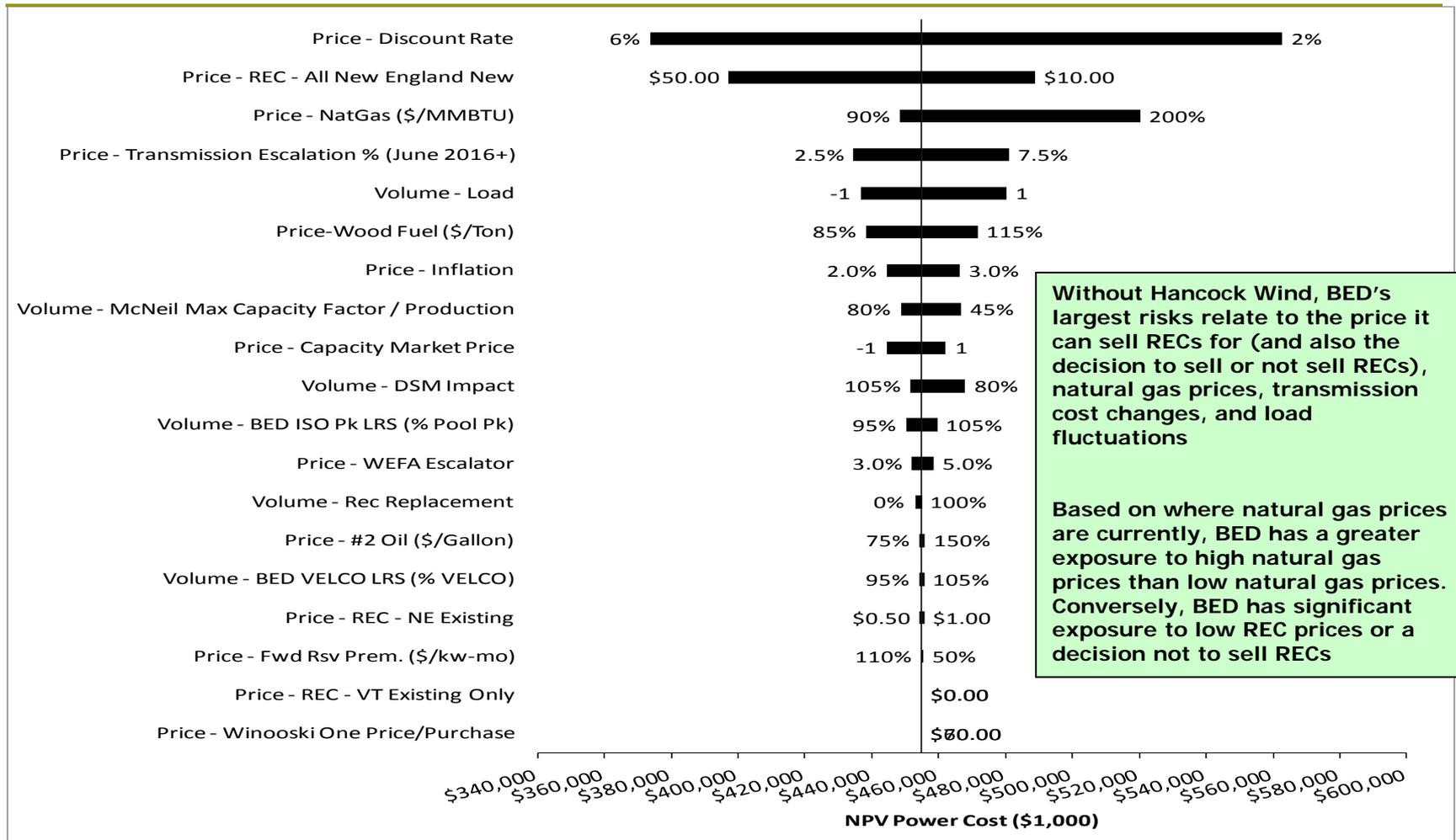
Risks Inherent in Contract

- REC pricing risk
 - The purchase is being made at a premium to market power due to its renewable nature (current wholesale costs for 2016-2017 are approximately \$48 / MWh)
 - REC prices would need to remain above about \$27-30/MWh to “buy down” the cost to the Base Case market level and BED would need to sell the RECs to minimize rate impacts
 - This contract would continue to deepen BED’s already significant exposure/involvement in the REC markets

- Counterparty Credit Risk
 - Hancock Wind is a newly created entity and is not “rated”
 - It is an LLC subsidiary of First Wind created specifically for this project
 - The developer will be providing a Letter of Credit to protect BED against some (but certainly not all) of the contract credit risk
 - Should Hancock Wind become financially distressed BED may need to call performance assurance or utilize legal action
 - For example, put a lien on the project
 - However, this is mostly risk to BED’s environmental goals. For a default to have financial impact market prices would have to rise significantly and for an extended period of time

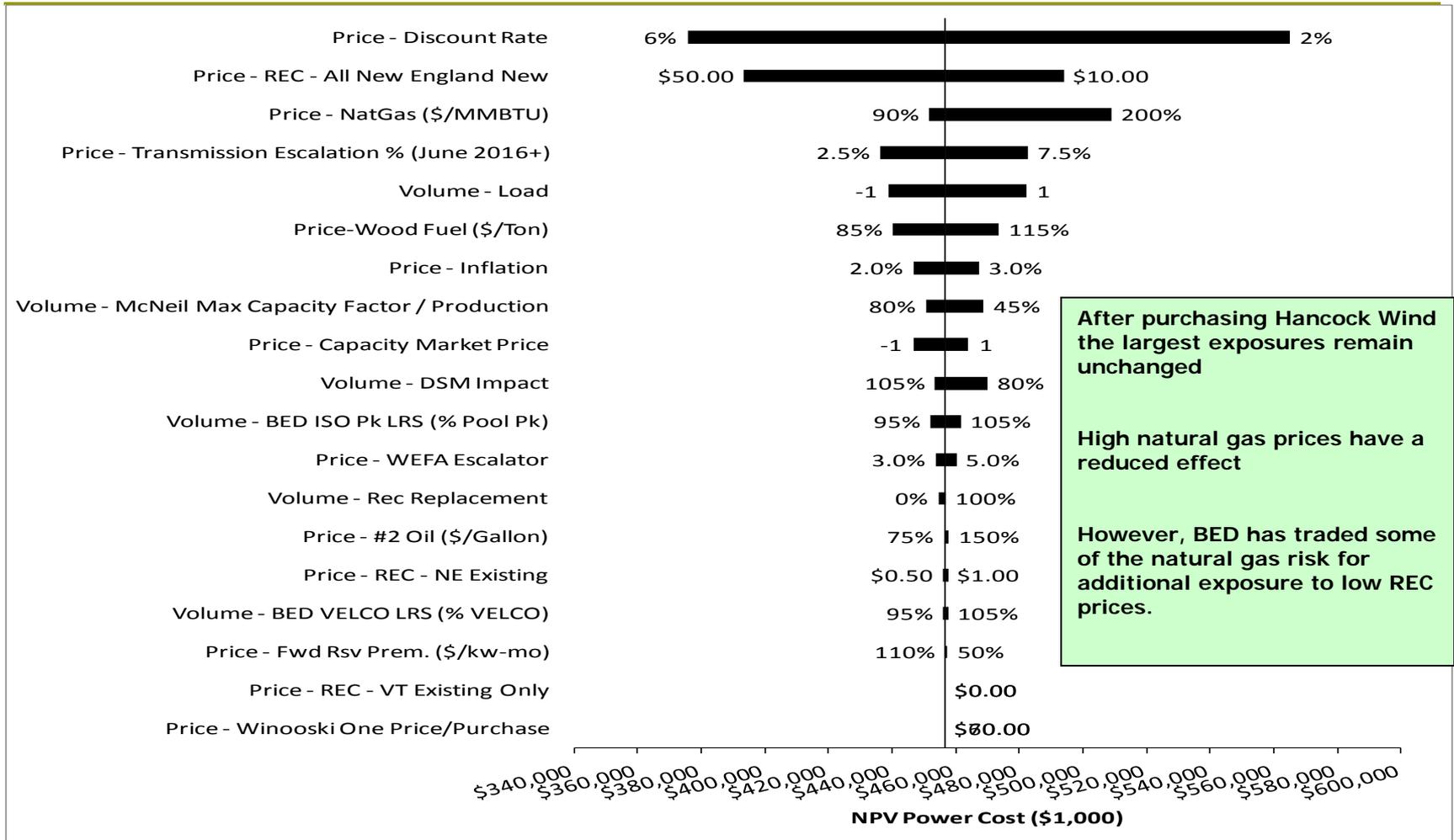
BED Risk Exposure without Hancock Wind

20 Year NPV Net Power Costs



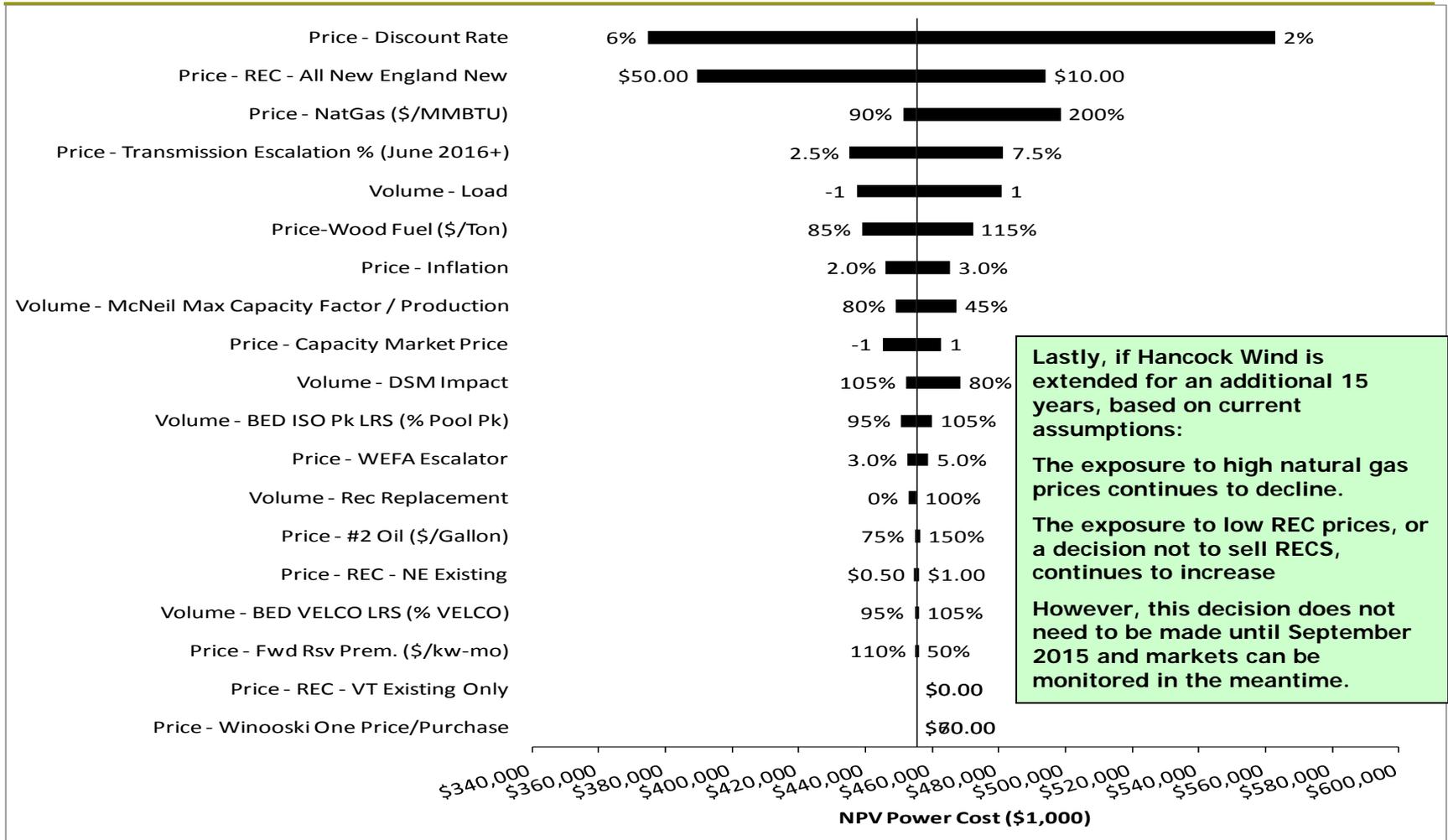
BED Risk Exposure with Hancock Wind for 10 year term

20 Year NPV Net Power Costs



BED Risk Exposure with Hancock Wind for 25 years

20 Year NPV Net Power Costs



Effect on volatility of key IRP variables

10 and 25 year Hancock Contracts

(maximum swing in case results)

	<u>No</u> <u>Hancock</u>	<u>10 Year</u> <u>Hancock</u>	<u>Incremental</u> <u>Change</u>	<u>Hancock plus</u> <u>extension</u>	<u>Cumulative</u> <u>Change</u>
Price - Discount Rate	\$188,874	\$189,192	\$318	\$188,160	(\$714)
Price - REC - All New England New	\$91,677	\$100,566	\$8,889	\$104,447	\$12,770
Price - NatGas (\$/MMBTU)	\$71,886	\$57,156	(\$14,730)	\$47,219	(\$24,667)
Price - Transmission Escalation % (June 2016+)	\$46,315	\$46,315	\$0	\$46,315	\$0
Volume - Load	\$43,350	\$43,350	\$0	\$43,350	\$0
Price-Wood Fuel (\$/Ton)	\$33,274	\$33,274	\$0	\$33,274	\$0
Price - Inflation	\$21,840	\$20,587	(\$1,253)	\$19,024	(\$2,816)
Volume - McNeil Max Capacity Factor / Production	\$18,031	\$18,031	\$0	\$18,031	\$0
Price - Capacity Market Price	\$17,388	\$17,388	\$0	\$17,388	\$0
Volume - DSM Impact	\$16,354	\$16,354	\$0	\$16,354	\$0
Volume - BED ISO Pk LRS (% Pool Pk)	\$9,282	\$9,282	(\$0)	\$9,282	\$0
Price - WEFA Escalator	\$6,383	\$6,383	\$0	\$6,383	\$0
Volume - Rec Replacement	\$2,049	\$2,216	\$167	\$2,288	\$239
Price - #2 Oil (\$/Gallon)	\$1,553	\$1,553	(\$0)	\$1,553	\$0
Volume - BED VELCO LRS (% VELCO)	\$1,358	\$1,358	\$0	\$1,358	\$0
Price - REC - NE Existing	\$1,326	\$1,437	\$111	\$1,486	\$160
Price - Fwd Rsv Prem. (\$/kw-mo)	\$633	\$633	\$0	\$633	\$0
Price - REC - VT Existing Only	\$0	\$0	\$0	\$0	\$0
Price - Winooski One Price/Purchase	\$0	\$0	\$0	\$0	\$0

Economic Conclusions

- The Hancock Wind contract's fixed pricing reduces BED's exposure to natural gas and fossil fuel price increases.
 - However, this decrease in exposure to fossil fuel prices comes with an increased exposure to the Renewable Energy Credit (REC) markets in roughly a \$1 increase in REC exposure for every \$2 decrease in fossil fuel exposure

- If BED were unable to sell the REC's from the plant, its costs would be approximately \$1.45 million higher annually than purchasing market power at today's prices (in the early years of the contract)
 - In a worst case scenario where ALL REC markets went to zero price this would equate to a 2.9% rate increase based on BED's Revenue Requirement of roughly \$50,400,000

- BED does not believe a zero REC value is realistic for Class I RECs
 - Wind REC's are easily portable between REC markets
 - Historic data shows that available REC market prices for wind resources have generally been above the levels needed to make Hancock equivalent to market energy purchases

Economic Conclusions - Continued

- Based on an analysis of the Hancock Wind contract using BED's Integrated Resource Plan financial model, adding the Project to BED's portfolio is nearly break-even under the base case.
 - It should be noted that this assumes REC prices at the long term average used in the IRP (\$27.90/REC) – not the actual REC prices that exist today (~\$50/REC)
 - The contract's main benefit is not in reducing projected costs (although it will do so at today's REC prices). Its main benefit is acting to shrink future volatility in BED's power costs.

IRP NPV	IRP Cost-of-Service (\$1,000)	
	NPV	Change (Cum)
No Hancock - Base	\$843,229	
Hancock - 10 Year	\$842,536	-0.08%
Hancock - with 15 Year Extension	\$839,337	-0.46%

Final Observations

- ❑ This contract represents the most attractive offer of wind power BED has received to date
- ❑ The resource type is heavily supported by Burlington residents and businesses
- ❑ It provides a further hedge against the potential impact of future high natural gas prices
 - As the tornado diagrams show, even though BED is trading natural gas exposure for REC exposure, overall power cost volatility is reduced.
- ❑ Under the absolute worst case scenario (REC prices go to \$0) BED ratepayers would see a 2.9% rate increase related to this contract in return for obtaining an additional 9% of their supply from wind power
- ❑ If Class I REC prices remain anywhere near where they are today the contract is actually cheaper than other non-renewable alternatives provided BED continues to sell the RECs
- ❑ This purchase will fill out the wind purchases BED envisioned in the 2012 IRP