



**Holland  
Board  
of Public  
Works**

625 Hastings Avenue  
Holland, MI 49423

www.hollandbpw.com

Telephone  
(616) 355-1520

Facsimile  
(616) 355-1550

April 16, 2010

VIA ELECTRONIC FILING

Mr. G. Vinson Hellwig  
Air Quality Chief  
Michigan Department of Natural Resources  
and Environment  
Constitution Hall, 3<sup>rd</sup> Floor North  
525 West Allegan Street  
P.O. Box 30260  
Lansing, MI 48909

Ms. Mary Jo Kunkle  
Executive Secretary  
Michigan Public Service Commission  
P.O. Box 30220  
6545 Mercantile Way  
Lansing, MI 48911

Re: City of Holland – Holland Board of Public Works Electric Resource Plan  
MDEQ Proposed Permit to Install 25-07, State Registration No. B2357  
MPSC Case U-16077

Dear Mr. Hellwig and Ms. Kunkle:

As indicated in my correspondence of April 1, 2010, Holland is submitting additional case runs based upon comments received during public sessions held to review the Electric Resource Plan in draft form.

A  
Community  
Owned  
Utility

Sincerely,

David G. Koster  
Operations Director

Electricity

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Water

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Waste  
Treatment

Attachment



Holland Board of Public Works  
Power Supply Study

B&V Project 165966  
April 16, 2010

David Koster  
Operations Director  
Holland Board of Public Works  
Holland, MI 49423

Subject: Supplemental Analysis

Mr. Koster

Gentlemen:

As requested during the meeting with the City Council, the Board of Directors of Holland Board of Public Works (HBPW), and HBPW customers in Holland, Michigan on February 22, 2010, we have run the following additional cases to address questions raised during the meeting. The analysis presented herein supplements the analysis included in the March 2010 Power Supply Study (March Report).

**Additional Plan 1** – Evaluate building and owning a 65 MW net natural gas fired combined cycle plant, a plant that would be comparable in size to the proposed 70 MW circulating fluidized bed (CFB) plant. In the March Report, a combined cycle alternative was evaluated, but it was a partial ownership of a much larger unit. This plan compares the system cost from owning a comparably sized combined cycle plant with that of the plan that includes owning the 70 MW CFB plant.

**Additional Plan 2** – Evaluate supplying most of the energy requirements from wind and other renewable resources and phasing out existing coal units by 2020. In this case most of the energy requirements are met from wind resources, while small blocks of combustion turbines were added to the system to maintain system reserve margin. Wind was given twenty percent capacity credit, which is consistent with the assumptions of the other cases presented in the March Report. In this case approximately 103 MW of existing coal capacity is retired over the 2012 to 2020 time frame. In addition, wind resources are gradually increased commencing with 50 MW in 2012 and increasing to 550 MW by 2022. Thereafter, wind resources remain at an installed capacity of 550 MW.

**Additional Plan 3** – Evaluate supplying most of the energy and capacity requirements from wind and other renewable resources and phasing out existing coal units by 2020. No new fossil fuel generating units are added in future years and all capacity requirements are fulfilled by new wind resource additions. Wind was given twenty percent capacity credit, which is consistent with the assumptions of the other cases presented in the March Report. Due to this assumption, around 1600 MW of nameplate capacity of wind resources (320 MW firm capacity) were added to the portfolio to maintain the reserve margin requirements of the system. Further, as 1600 MW of nameplate capacity of wind is added to the system, there would be a surplus of generation from wind in the system many hours during each year. This surplus generation was assumed to be available for HBPW to sell into the MISO energy market, at prevailing market rates. As a city owned utility, HBPW typically does not participate as a large wholesale power seller in the MISO energy market. As a result, the original assumption related to market sales used in the March Report had to be relaxed to accommodate the potential large system energy sales. The revenue earned from the sales has been credited to the system cost, which helped in lowering the system cost for this scenario. In addition, this large installation of wind capacity would likely require significant transmission system upgrades that have not been considered in this case as it is beyond the scope of this study.

The above additional plan cases included the CO<sub>2</sub> allowance price assumptions as discussed in the March Report as well as the system costs. Table 1 below shows the total system generation cost of these plans and compares them to the four plans presented in Table 7-10 of the March Report. The costs reported below include additional non-generating system expenses, the cumulative present worth cost (CPWC) of which is \$219.031 million. The total system cost for the Additional Plan 1 also includes a portion of the community benefit credits as discussed further in the March Report related to the existing snow melt system only. The CPWC of the benefits for this plan is \$3.263 million compared to \$34.264 million for the plan including the 70 MW CFB plant. There are no community benefit credits for the other two additional plans discussed above.

<b>Table 1 Ranking of Selected Expansion Plans and Addition Plans Based on Net System Cost after Adjusting for Benefit Credits and Including CO<sub>2</sub> Allowance Costs</b>				
<b>Plan Description</b>	<b>CPWC Value- 2010 Dollars (000s)</b>	<b>Levelized Cost (\$/MWh)</b>	<b>Rank</b>	<b>Percent Difference</b>
Buying 5 MW blocks of 70 MW net CFB unit using 30 percent biomass as fuel to be built by HBPW in 2016	1,687,716	71.24	1	0.0%
Unit 9 conversion to 2x1 GE 7EA combined cycle. Old CT9 unit retired in 2013. New combined cycle unit available in 2016.	1,703,869	71.93	2	0.9%
Buying 30 MW block of 800 MW SCPC unit at Weadock in 2016	1,719,662	72.59	3	1.9%
70 MW net CFB unit (whole plant) to be built by HBPW in 2016. JDY Unit 3 to be retired in 2013	1,776,476	74.98	4	5.3%
Additional Plan 1 - 65 MW net Combined cycle unit (whole plant) to be built by HBPW in 2016. JDY Unit 3 to be retired in 2013	1,782,290	75.24	5	5.6%
Additional Plan 2 - Providing most energy from wind resources and retiring all coal units by 2020	2,464,164	104.02	6	46.0%
Additional Plan 3 - Providing all future energy and capacity from wind and renewable energy resources and retiring all coal units by 2020.	3,318,277	140.07	7	96.6%

Holland Board of Public Works  
Power Supply Study

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April 16, 2010

As shown above, the Additional Plan 1 including the addition of a 65 MW combined cycle is more expensive than the four plans presented in March Report. This plan would appear to be feasible although more expensive, but could be considered as a viable plan. Additional Plans 2 and 3 are significantly more expensive than the four plans presented previously in the March Report. In addition to being significantly more expensive, these plans would likely bring other challenges including potentially significant transmission system upgrades and system integration costs (the analysis of which is beyond the scope of this study), and potentially much higher market risk as HBPW would be required to be a wholesale energy seller, and sell significant excess wind generation into the MISO market when wind energy is produced and not consumed by HBPW's customers. In summary, this supplemental report provides our findings related to these requested additional plans.

Very truly yours,

BLACK & VEATCH