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Clean Energy for Jamestown

Clean Energy for Jamestown is a coalition of environmental organizations opposed to the construction of a new 50 MW coal-fired power plant in Jamestown, New York. The coalition believes that Jamestown ratepayer electric needs can be met through a combination of Jamestown's existing New York Power Authority hydropower allocation, energy efficiency, renewable energy, and occasional purchases off the regional electric grid as needed.

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Sierra Club Beyond Coal Campaign

The Sierra Club's Beyond Coal Campaign is committed to (1) stopping the construction of dirty, new coal plants by educating investors and decision makers about the economic and environmental risks of investing in new coal, (2) retiring old plants that are the worst contributors to health-harming soot and smog pollution and replace them with clean energy solutions, and (3) working with communities to protect our mountains, lands and waters by keeping our vast coal reserves in the ground.

Contact: Beyond Coal Campaign, Sierra Club National Headquarters, 85 Second Street, San Francisco, CA 94105; 415-977-5500; www.sierraclub.org/coal/.

Lake Effect Energy

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COST OF POWER

For Jamestown Board of Public Utilities

Electricity Supply Options

Proposed Coal-Fired Power Plant Is Most Expensive Option Even with Federal Subsidies

Executive Summary

This report examines electricity supply options available to the Jamestown Board of Public Utilities (JBPU) for meeting its ratepayers'¹ electric needs as it takes steps to close down its existing, aged coal-fired Samuel J. Carlson plant. Our analysis demonstrates that energy efficiency, wind energy, and buying off the regional electric grid are much less expensive options than constructing a new \$400 - 500 million 50 megawatt (MW) coal-fired power plant with carbon capture and storage (CCS) capability to meet the small increment of power required by JBPU ratepayers over and above what is already being provided by the New York Power Authority (NYPA). The cost of power to JBPU ratepayers for electricity from the proposed coal plant with CCS could be as high as \$0.250 per kilowatt-hour (kWh) – more than 10 times as costly as NYPA hydropower, 5 times more costly than meeting JBPU ratepayer electric needs with efficiency, 4 times more costly than purchasing electricity off the regional grid, and 3 times more costly than generating the needed power with wind turbines. (See Table A on page 12.)

The proposed power plant represents the most expensive supply option available and could result in losses to the JBPU of over \$20 million a year and an increase in ratepayer electric rates of 4 cents per kilowatt hour over electric rates that would result from use of the lower cost electricity supply options assessed in this report. If the proposed coal-fired power plant is built, JBPU ratepayers will experience an average annual electricity cost increase of \$1000.

The proposed new coal-fired power plant is not a prudent investment for ratepayers or an economically viable option. Contrary to claims made by proponents of this plant, it will not be an engine of economic revitalization and job creation for the area. This study demonstrates that the reverse is much more likely. The coal plant's construction, even if CCS is fully subsidized, could bankrupt the JBPU and devastate the already depressed local economy.

¹ This report contrasts JBPU ratepayers with all of the JBPU's customers which include JBPU ratepayers (who are customers located within the JBPU service territory) and non-ratepayers (who are customers located outside of or external to the JBPU service territory). While the JBPU provides electricity to ratepayers and non-ratepayers alike, its sole statutory grant of authority is to supply power to its ratepayers. NYS General Municipal Law, Section 360(2).

Background & Overview

The JBPU, a municipal utility, supplies the City of Jamestown and some surrounding communities with electricity and other municipal services. In 2008, the JBPU served 16,515 residential, 2,336 commercial, and 127 industrial electrical customers within its 23 square mile district as the local electrical transmission monopoly and as the generator of a small increment of its ratepayer electric load.

As a result of the 1957 Niagara Redevelopment Act, the JBPU is entitled to receive low cost hydroelectric power (i.e. \$0.022/kWh delivered) from the New York Power Authority (NYPA). The amount of low cost hydropower the JBPU can purchase from NYPA is based on this formula: $72.28 \text{ KW} \times \text{load factor}$.² In 2008, the JBPU received an annual average of 55.2 MW (or 55,200 KW) from NYPA.³ This represented over 90.5 % of the electricity consumed by JBPU ratepayers that year. The remaining electricity required by JBPU ratepayers, an annual average of 5.8 MW (or 5,800 KW), was supplied by self-generation at the JBPU's Samuel J. Carlson Plant and occasional purchases off of the regional power grid. Because so much of the power sold by the JBPU to its ratepayers is NYPA low cost hydro-power as opposed to the much more costly JBPU self-generated power, JBPU ratepayers have enjoyed relatively low electric rates. For example, in 2008, average residential electric rates were \$0.0684/kWh which is much less than most New York residential customers were charged for electricity.

The JBPU presently operates an old coal-burning facility with four boilers and a relatively new gas turbine, all of which are housed within the Carlson Power Plant complex. This plant generates power that is sold to ratepayers and non-ratepayers. Coal is the Carlson Plant's mainstay. Due to increases in natural gas prices (peaking in the summer of 2008), the electricity generated by the gas turbine is very expensive compared to regional electric market pricing, and the gas turbine is rarely used – despite its \$35 million initial cost in 2001-2002 and the on-going need for the JBPU to pay its debt service.⁴

In 2008, the JBPU sold an annual average of 10.1 MW of self-generated power from the Carlson plant to non-ratepayers. JBPU's cost to generate that power in 2008 by burning coal was \$0.085/kWh. In 2008, the average New York Independent System Operator (NYISO) West Zone price was \$0.059/kWh, which is a full \$0.025/kWh less than the JBPU's coal-fired power generation cost. There is no public information from which anyone can ascertain the timing of JBPU electric sales to the NYISO and thus compare NYISO hourly pricing to JBPU hourly generation costs. The large price differential

² "Load factor" is defined as average electrical demand divided by peak electrical demand.

³ The average 55.2 MW of NYPA power received by the JBPU in 2008 includes electricity from the JBPU's 72.28 MW allotment of NYPA power plus NYPA expansion power delivered by the JBPU to certain businesses within the JBPU territory. NYPA expansion power is industrial power from the Niagara Power Project that is reserved for Western New York businesses under New York State law.

⁴ In 2008, the JBPU gas turbine's average output was less than 700 KW or less than 2% of its rated capacity of 43 MW (43,000 KW).

– 0.150/kWh⁹) – presumably because of the plant’s small size and inability to take advantages of economies of scale. The proposed plant’s capacity cost of ~\$4 million/MW is exceedingly high.¹⁰

As previously explained, JBPU ratepayers require a small amount of power over and above their NYPA power allotment, i.e. an annual average of 5.8 MW. So even though the proposed coal-fired power plant was relatively small with a net output of 42.47 MW, it had over 7 times the capacity required to meet JBPU ratepayers’ needs – assuming that efficiency measures were not employed to lower that already small non-NYPA-provided ratepayer electric load.

While the JBPU often speaks about anticipated load growth as a rationale for a new power plant, over the past five years electricity consumption by JBPU residential and commercial ratepayers has been relatively constant while that of industrial customers has declined dramatically, leading critics of the proposed new power plant to conclude that the proposed power plant was either grossly oversized or not needed at all, and that its main purpose appeared to be to sell power to non-ratepayers. Project critics also have argued that building a new power plant primarily to serve non-ratepayers was not in the interest of JBPU ratepayers and would be illegal under New York State General Municipal Law.

⁹ The URS Report used proprietary EPRI software to calculate the cost of power from the new plant. URS concluded that if the plant operated at a 90% capacity factor, it could produce electricity for \$0.1399/kWh and \$0.1456/kWh for the \$159 million and \$177 million plant designs, respectively.

¹⁰ In a 2007 analysis the U.S. Department of Energy’s National Energy Technology Lab estimated the average capital cost of proposed new coal-fired power plants in the United States to be \$1.56 million/MW; see: <http://cmnow.org/NETL%20New%20Coal%205.2007.pdf>

Proposed Power Plant Becomes CCS Demonstration Project

In August of 2007, the JBPU announced that its new 43 – 50 MW coal-fired power plant would demonstrate carbon capture and storage (CCS) technology. This announcement followed criticism by local citizens and numerous regional, statewide, and national environmental organizations that the JBPU was ignoring the proposed coal-fired power plant’s impact on climate change.¹¹ The JBPU aligned itself with several CCS proponents and organized the Oxy-Coal Alliance. That Alliance – which apparently has recently been reorganized¹² -- consisted of the Jamestown Board of Public Utilities, Praxair, Inc., the Dresser-Rand Group, Inc., Ecology and Environment, Inc., AES Corporation, Foster Wheeler North America Corp., Battelle, and the State University of New York at Buffalo. All supported “oxy-coal” technology¹³ which, according to Praxair, “involves the introduction of pure oxygen instead of air into the utility boiler, creating a highly concentrated stream of carbon dioxide which is more economical to capture than emissions from existing systems.”¹⁴

Proponents claim that oxy-coal technology can capture more than 90% of the carbon dioxide generated by a coal-fired power plant as well as facilitate reduced emissions of sulfur dioxide, nitrogen oxides, and mercury. However, carbon dioxide capture comes at a price. Oxy-coal adds significant design and construction costs and is expensive to operate because of the energy requirements associated with producing oxygen gas for coal combustion. In the proposed Praxair process, oxygen production consumes electricity as well as substantial amounts of natural gas.

The energy consumed by a power plant for its own operations is called its “parasitic load.” With CCS, the parasitic load increases dramatically. In addition to the energy requirements of producing oxygen gas for combustion, CCS also involves compressing and liquefying captured CO₂, pumping it to burial sites, and injecting it into underground

¹¹ As of August 2009, the following organizations have gone on record against the proposed Jamestown coal-fired power plant: Alliance for Clean Energy New York; American Lung Association in New York; Campus Climate Challenge, SUNY Fredonia; Catholic Care for Creation Committee of Buffalo; Citizens Campaign for the Environment; Clean Air Coalition of Western New York; Earthjustice; Environmental Advocates of New York; Global Warming Action Network, Syracuse; Great Lakes United; Jamestown Area Concerned Citizens; Natural Resources Defense Council (NRDC); New York Interfaith Power & Light; New York Public Interest Research Group (NYPIRG); Northeast Sustainable Energy Association; Pace Energy and Climate Center; Physicians for Social Responsibility (PSR), Washington, D.C.; Sierra Club, Atlantic Chapter; WNY Climate Action Coalition; WNY Sustainable Energy Association.

¹² On August 10, 2009, Praxair, Inc. – the Jamestown BPU’s primary partner and Oxy Coal Alliance organizer -- announced to the Board of Public Utilities in Holland, Michigan, that it had re-prioritized its oxy-coal project commitments and that conducting a CCS demonstration project at the Holland, MI, site was now its number one priority instead of the proposed project in Jamestown. See: “BPU is Alternative Site,” Jamestown Post Journal, August 13, 2009 and “Shift in Jamestown ‘Clean Coal’ Plans Decried, Lauded – Jamestown Proposal Loses Top Priority,” Buffalo News, August 14, 2009..

¹³ Sometimes called “oxy-fuel” technology -- though oxy-fuel refers to a range of technologies associated with burning combustible fuels in pure oxygen.

¹⁴ There are three general strategies for capturing carbon dioxide generated by coal-fired power plants. In addition to oxy-coal, there are pre-combustion and post-combustion carbon capture technologies. The former typically use gasification technology to gasify the coal and remove CO₂ before combustion while the latter typically use solvent technology to chemically remove CO₂ from the plant’s exhaust stream.

geologic repositories, which may be over one mile deep. All of these functions consume energy¹⁵ and add cost, as does the monitoring of the CO₂ from source to underground disposal site (the latter in perpetuity). Managing risk and covering the liability associated with this process also represent costs to the operator of a CCS facility.

On June 10, 2008, New York Governor David Paterson announced his support for the project and offered to provide the JBPU Oxy-Coal Alliance with \$6 million for two stages of “Front End Engineering Design” through the Empire State Development Corporation (ESDC). This funding was tied to various stipulations memorialized in a memorandum of understanding (MOU) signed on June 9, 2008, by Praxair and ESDC. The MOU stated that funding was based on the agreement that CCS would be permanent and that the JBPU plant would minimally capture and sequester ~55% of overall carbon dioxide emissions.¹⁶ This performance standard, based on the carbon dioxide emissions of a combined cycle natural gas-fired power plant, is consistent with regulations being developed by the New York State Department of Environmental Conservation but is much more lenient than the 90% CCS performance standard that the U.S. Department of Energy (U.S. DOE) initially required for federally funded Clean Coal Power Initiative projects.¹⁷

In January 2009, the JBPU Oxy-Coal Alliance announced it had submitted an application for Clean Coal Power Initiative – Round 3 funding. The exact amount of this request is not known because the application -- submitted by Praxair -- was not made public, but the amount is believed to be in the range of \$100-300 million. This application was apparently rejected in July by the U.S. DOE for reasons pertaining to the disappointing geological testing conducted by the JBPU and the questionable economics of the Jamestown project, causing Praxair to announce in August that it was reducing its role in the Jamestown project and prioritizing its commitment to a similar project in Holland, Michigan.¹⁸ The JBPU then met an extended application deadline of August 24th, reapplying for Clean Coal Power Initiative – Round 3 funding apparently with a new, undisclosed primary partner.¹⁹

¹⁵ The electric parasitic load of the JBPU’s proposed oxy-coal CCS plant would be approximately 40%. This number is derived by dividing the anticipated electrical output of the proposed new plant with CCS, i.e. 30 MW, from its gross output, i.e. 50 MW. If oxy-coal’s natural gas consumption is also factored in, the plant’s parasitic load climbs even higher. In contrast, the parasitic load of the JBPU’s original proposal (without CCS) was 15% based on the anticipated 42.27 MW net output of that design.

¹⁶ The June 9, 2008, MOU established other terms which would have to be met as a condition of receiving ESDC funding. For example, the second segment of Front End Engineering Design or “FEED 2” money would be provided only if the Oxy-Coal Alliance developed a plan to hold JBPU ratepayers harmless against the additional costs associated with CCS and that the JBPU create an effective energy efficiency program for its ratepayers. On February 27, 2009, ESDC and Praxair signed a contract based on the MOU for \$3.5 million in FEED 1 funding. FEED 2 funding is pending.

¹⁷ The U.S. Department of Energy recently modified the CCS performance requirements of Clean Coal Power Initiative projects as per the American Recovery and Reinvestment Act of 2009. Eligible projects now must operate at 50 percent carbon capture efficiency and make progress toward a target CO₂ capture efficiency of 90 percent.

¹⁸ See references provided in footnote 12.

¹⁹ See “A Calculated Long Shot,” Jamestown Post Journal, August 22, 2009 and “Council Backs project – City promises \$145 Million for OxyCoal Plant,” Jamestown Post Journal, August 25, 2009.

\$3/MBtu to \$13/MBtu.³¹ The delivered cost of natural gas is a function of the commodity price plus a delivery charge of approximately \$1.30 per MBtu. Natural gas prices are now low with the economy in recession but were very high before the recession occurred. At a delivered cost of \$10/MBtu, natural gas electrical production cost is approximately \$0.092/kWh. Stable and potentially lower natural gas prices are possible through the purchase of long term natural gas futures or long-term purchase agreements with natural gas suppliers.

JBPU Coal-Fired Power Plant I (Base Plant)

The cost of power for the Base Plant (i.e. the CFB coal plant without CCS) consists of the cost of building and financing the project plus fixed and variable operating and maintenance (O&M) costs – including the labor, coal, limestone, ash removal, and other materials and services the plant needs to produce power. It does not, however, include any costs associated with carbon capture and storage, i.e. designing and constructing the CCS systems or operating them. These additional CCS costs are included in the next supply option discussed.

The cost of power for the Base Plant shown in Table A is based on estimates provided in the previously cited September 9, 2008 URS Washington Division report. The URS Report projected a \$0.139/kWh and \$0.146/kWh cost of power depending on where the plant was built. This analysis increases the range of electricity production costs for the Base Plant to \$0.190/kWh in order to allow for the possibility of more expensive coal. The URS Report estimates are based on an assumed coal cost of \$49.75/ton yet in 2008 U.S. coal prices rose to over \$150/ton. For every \$50 increase in the price of a ton of coal, the cost to generate a kilowatt-hour of electricity rises by 2 cents. The upper range \$0.190/kWh cost figure is based on a price of \$150/ton for coal.³²

The URS Report also assumes that the proposed coal-fired power plant will operate at an average of 90% of full capacity year round. While this assumption is the norm for thermal generating plant economic analyses, it presents a challenge to the JBPU's coal plant proposal. Our analysis suggests that the proposed power plant is oversized and can only be operated at 90% capacity if most of the plant's output is sold to non-ratepayers. Given the high cost of generating this power, these "off system" sales to non-ratepayers would probably have to be heavily subsidized by JBPU ratepayers in order to make the power cost-competitive on the grid. These subsidies would have the effect of driving ratepayer costs per kilowatt-hour even higher. Alternately, if the plant were run at a low capacity factor in order to match actual ratepayer load (i.e. at an average output much lower than 90%), the plant's debt service and fixed costs would be distributed over far fewer kilowatt-hours – again driving the cost per kilowatt-hour higher for JBPU ratepayers. Thus, the \$0.140 – 0.190/kWh range shown on the chart may significantly under-estimate the ultimate cost of power to ratepayers from the Base Plant. This

³¹ For natural gas commodity pricing, see: <http://tonto.eia.doe.gov/oog/info/ngw/ngupdate.asp>

³² For the price of coal from different domestic sources, see: <http://www.eia.doe.gov/cneaf/coal/page/coalnews/coalmar.html>

financial risk is further discussed and quantified in the “Additional Analysis” section below.

JBPU Coal-Fired Power Plant II (Base Plant + CCS)

This supply option includes the full coal-fired power plant with CCS as proposed. Carbon capture and storage involves additional design and construction costs over and above those associated with the Base Plant and additional operating costs – specifically in the form of extra electricity and natural gas consumption. That the amount of electricity consumed in oxygen production and carbon dioxide compression and transportation is significant can be seen by the anticipated de-rating of the net output of the proposed power plant with CCS – from 42.47 MW to approximately 30 MW.³³ All other things being equal, this 12.27 MW or 29% loss of net output compared to the Base Plant plus the cost of natural gas used in oxygen production could raise the cost of power from the plant by 40% or more.³⁴ Thus, our estimate of the cost of power with CCS is \$0.080/kWh higher than power from just the Base Plant. This figure is conservative because it does not include additional costs associated with natural gas consumption by the oxygen generation process or the significant additional costs of compressing and liquefying captured CO₂, pumping it to burial sites and injecting it into these sites. We have found no published data estimating how high these costs might be, but note that they must be significant.

³³ 30 MW figure is quoted in “Energy to Burn,” Business First of Buffalo, June 12-18, 2009.

³⁴ $42.27 \text{ MW} / 30 \text{ MW} = 1.409$, not counting additional costs for natural gas consumed by the oxygen generation process. We estimate natural gas consumption to be 110 MBtu/hr when the plant is operating at full capacity. Depending on the price of natural gas, this additional parasitic load could add additional millions of dollars in annual ratepayer costs.

Additional Analysis and Concluding Remarks

This analysis demonstrates there are a variety of ways to meet the JBPU's relatively small average 5.8 MW non-NYPA-provided ratepayer electric load, and that unfortunately and paradoxically the JBPU has selected an option which will produce much more expensive electricity for its ratepayers. This is the case even if federal grants and subsidies are received to cover the additional costs associated with modifying or upgrading the Base Plant to accommodate and operate CCS.

The JBPU's commitment to this highly expensive option raises issues of ratepayer cost and fairness. It also poses financial risks because the project assumes, without any supportive evidence, that the majority of the proposed coal plant's output can be sold on the open market without incurring losses. This assumption seems highly dubious. More likely, attempts to sell the plant's very expensive power will result in large losses to the JBPU. These losses will have to be covered by ratepayers, the City of Jamestown, or state taxpayers in the form of large annual bailouts.

Ironically, all of this expense and risk would buy a dirty supply option. Assuming the new coal plant operated with 55% CCS, as envisioned by Governor Paterson and pending DEC greenhouse gas emissions regulations, it would still spew 190,000 tons of carbon dioxide into the atmosphere each year—equal to the emissions of 35,000 cars and trucks. All the other options evaluated in this report are much cleaner, with efficiency and wind power having zero emissions.

The cost of power differential between the new coal plant and the cheaper, cleaner options outlined in this report is striking. If we optimistically assume that federal grants and subsidies are secured for all CCS costs including annual operating costs, then JBPU ratepayers will still face enormously burdensome costs based on the cost of power from the Base Plant only: the ratepayers' own cost of power from the Base Plant and the subsidy necessary to make the majority of this Base Plant power cost-competitive for sale to non-ratepayers. The annual amount of each of these costs can be reliably estimated using currently available data. The following calculation compares that cost of power to ratepayers with the cost of relying on a mixture of efficiency, wind, and grid purchases to meet their electric power needs:

- Cost of coal-fired electricity from the Base Plant = \$0.140 – 0.190/kWh
- Cost of efficiency, wind, and buying off the grid = \$0.030, \$0.090 and \$0.060/kWh, respectively, or an average \$0.060/kWh
- Cost difference between Base Plant power and meeting JBPU ratepayer electric needs via equal parts efficiency, wind and buying off the grid is \$0.080/kWh
- The additional, non-NYPA power required by JBPU ratepayers is 5.8 MW or 5,800KW

- $5,800 \text{ KW} \times 8760 \text{ hrs/yr}^{35} \times \$0.080/\text{kWh} = \$4.1 \text{ million/year}$

Thus, the difference in the cost of power between the Base Plant and a mixture of efficiency, wind, and grid purchases would impose a \$4.1 million a year additional cost on ratepayers. But, these are not the only additional costs ratepayers will bear. As noted above, ratepayers will also bear the additional costs associated with the anticipated losses the JBPU will suffer when selling excess generation from the proposed power plant on the open market to non-ratepayers through the NYISO. The next calculation estimates those losses:

- The output of the 50 MW plant with CCS will be 30 MW
- At a 90% capacity factor, the average output of the plant would be 27 MW
- Given that ratepayers only require, at most, 5.8 MW (or 5,800 KW), then 21.2 MW (or 21,800 KW) will have to be sold on the open market (or the plant would have to operate even less economically at below 90% capacity)
- Assume that the price difference between the cost of power from the proposed coal plant (not counting CCS costs) and NYISO Western Zone grid power is the existing differential of \$0.100/kWh
- $21,200 \text{ KW} \times 8760 \times \$0.100/\text{kWh} = \$18.6 \text{ million/year}$

Thus, extra costs to ratepayers associated with meeting the 5.8 MW non-NYPA-supplied ratepayer load with the new coal plant (Base Plant only) compared to meeting that load with a mixture of energy efficiency, wind energy, and grid purchases is estimated to be \$22.7 million/year (\$4.1 million + \$18.6 million). This amounts to over \$1,000/year in extra costs *per JBPU ratepayer*.

Another way of measuring these \$22.7 million/year costs is to calculate how much they would increase the cost of all kilowatt-hours purchased by JBPU ratepayers compared to meeting that 5.6 MW load with a mixture of efficiency, wind, and grid purchases. The next calculation estimates that rate increase.

- As per the JBPU 2008 annual report, JBPU ratepayers consume 535,000,000 kilowatt-hours annually (this consists of 91% from the New York Power Authority and 9% from self-generation or grid purchases)
- $\$22.7 \text{ million}/535,000,000 \text{ kWh} = \$0.042/\text{kWh}$

In other words, as a result of incurring the extra costs associated with building this unneeded power plant, *every kilowatt hour of electricity purchased by JBPU ratepayers* would be over \$0.040 more expensive than it would be if the 5.8 MW non-NYPA-supplied ratepayer load was met by a mixture of efficiency, wind, and grid purchases. Also, note that all of the above calculations assume that *all costs of carbon capture and storage* – including life-of-the-plant CCS operating costs, CCS design and construction costs, and CCS risk and liability management costs – are paid for by the federal or state

³⁵ Technically, there were 8,784 hours in 2008 because it was a leap year. Our calculations will use the more standard 8,760 hrs/yr.

government or the private industry partners in the venture. This latter assumption is generous in the extreme and probably unrealistic – so the ratepayer burden most certainly will be significantly greater than estimated here.

* * * * *

This analysis shows that the JBPU's proposed new coal plant is not a prudent investment for ratepayers or an economically viable option. Not only is it the most expensive and environmentally dirty option, it also poses the most economic risk to the JBPU, its ratepayers, the City of Jamestown, the local economy, and even New York State taxpayers who could be called upon to financially rescue Jamestown from this ill-conceived project.

Buffalo News Editorial

End this Bad Idea

Jamestown power plan lacks support, board should drop the project

January 05, 2010

It is time for the Jamestown Board of Public Utilities to learn what “no” means.

First an analysis by some independent energy consultants reported that plans to graft some experimental “clean coal” technology onto an oversized and unnecessary power plant the board is determined to build stood to create some of the most expensive kilowatt hours to be found in these parts. Then Praxair, the corporation with the know-how behind the idea to remove the climate-changing carbon dioxide from that plant and store it in underground hollows, shifted its focus to another project in Michigan, where, the engineers said, the hollows are better.

Finally, early last month, the U. S. Department of Energy decided not to include the Jamestown project—or Praxair’s Michigan alternative—among those that are to receive billions in federal dollars intended to test various carbon-capture schemes.

Officials of the Jamestown board reportedly are poring over their documentation and awaiting a formal rejection letter from the DOE before deciding what to do next.

The answer should be simple: Drop the project.

From the beginning, it has been clear that the small city of Jamestown has no business going deeper into the expensive and potentially filthy power generation business. Most of its juice already comes from the pollution-free hydropower of the New York Power Authority, and the rest of its needs can clearly be met through a combination of purchases off the grid, conservation and, as the community grows, adoption of other renewable sources such as wind power.

The dream of turning its otherwise unnecessary coal-fired power plant into a shining example of a new way to burn America’s abundant coal without wrecking the world’s weather certainly sounds attractive. But, as the many critics of the plan have convincingly argued, it is less attractive than trying it out on a power plant that is already belching out tons of climate-changing gases.

If the carbon-capture technology doesn’t work, or if making it work is so expensive that nobody can afford to operate it, running the test on an existing power plant leaves us no worse off than we were before. If Jamestown builds a new plant only to find out that the carbon can’t be economically captured, then the city is left with a new coal-burning plant that it either has to operate in order to make back its investment, or shelve as a way of stanching the flow of money and the release of soon-to-be banned or heavily taxed carbon.

Two of the three carbon-capture experiments that the feds have agreed to fund are at existing power plants. None of them uses the same kind of technology that Praxair and Jamestown were eyeing for their project.

The mere fact that Jamestown didn't win any money in the last round of grants is not, in itself, any great shame. There were, as is often the case, more ideas than there was money. But the fact that nobody except the empire builders on the Jamestown board seems to think their "clean coal" project stands to turn out to be anything of the kind should, by now, have sunk in.

Drop the idea, before it costs the people of Jamestown any more money than it already has.

Q&A

A Hard Look at the Oxycoal Project It's Time to Call it Quits and Move On

Dear Community Leader, please consider this alternative perspective on the new coal-fired power plant being proposed by the Jamestown Board of Public Utilities (BPU). Included in this packet of information is this **question and answer statement** plus a **press release** and **green plan for Jamestown** recently released by Clean Energy for Jamestown, a coalition of 20 regional, state, and national environmental groups which are opposed to this project, and a **DVD presentation** which was prepared before the December 4, 2009, U.S. Department of Energy (DOE) announcement denying funds to the project. While the green plan lays out a sensible least-cost low risk approach for the BPU to move forward meeting ratepayer's electric needs while boosting the local economy, the DVD presents our environmental and economic analysis of the coal plant project and makes clear that the recent DOE announcement was a good thing because it has stopped the BPU from making a huge mistake building a costly unneeded power plant which could financially undermine the BPU and the City, damaging Jamestown and its economy for years to come. Please have an open mind as you read and view these materials. And, if you agree, please privately or publicly speak out in order to encourage City and BPU leaders to move on. A great deal of ratepayer and state resources have already been spent on this project. There is no point in continuing that spending when it is now clear that this project is not the best for Jamestown and is not going to be built. Fortunately, as our green plan makes clear, there are alternatives and they are good ones.

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Did the U.S. Department of Energy (DOE) make the right decision when it recently denied hundreds of millions of dollars in funding for the Jamestown coal plant and carbon capture and storage (CCS) project?

Yes it did. The DOE decision was the right decision and was good news for the Jamestown community because it prevents the BPU from making a huge mistake, i.e. incurring minimally a \$145 million ratepayer debt¹ to construct an unneeded new \$500 million power plant with all the financial risks associated with that endeavor.

¹ The BPU has publicly stated that ratepayers would pay no more than the original estimate for the proposed coal plant, i.e. \$145 million. This estimate is a few years old and is based on building a conventional coal plant with no controls on carbon dioxide emissions which are known to cause global warming and climate change. Current estimates for the overall cost of the plant with carbon capture and storage apparently have risen to as much as \$500 million. Presumably the difference between these two numbers would be paid by the federal government and other non-ratepayer entities if this project were to move forward. The recent DOE decision denies the BPU the sought after federal portion of funding. While the BPU is still saying that federal funding could be forthcoming, it should be clear by now – after two denials of funding by the DOE – that the federal agency is not impressed with the project.

What did the project have going against it?

Judging from the three projects the DOE did select, at 50 MWs the Jamestown project may have been too small and may have been using technology, i.e. oxycoal, that the DOE did not think was as attractive or as ready as other CCS technology. Significantly, the DOE decided to fund two retrofit projects where CCS technology would be adapted to existing coal plants – an approach favored by many in the environmental community because it allows CCS testing to proceed while avoiding the construction of new unneeded coal plants.

Also, the DOE must have noticed that the BPU's primary corporate partner, Praxair, Inc., and only academic partner, the University at Buffalo, quit the project -- presumably because of its perceived weaknesses. These defections occurred after the DOE denied funding for the project the first time this past summer.

Additionally, DOE must have been aware that the BPU and its supporters were unable to get the state legislature to pass a law allowing CCS in New York and that even the unsuccessful proposed law offered by Governor Paterson did not address liability issues. Moreover, DOE knew that BPU test drilling, which was conducted covertly and apparently without legal authority, was unsuccessful in finding suitable underground carbon dioxide reservoirs.

Furthermore, the Jamestown project is opposed by twenty environmental organizations – including well respected national organizations like the Natural Resources Defense Council, Sierra Club, Earthjustice, and Physicians for Social Responsibility -- which have pointed out that the proposed coal plant is not needed to meet ratepayer electric needs, will significantly increase electric rates and run the risk of incurring large losses (even if all CCS costs are covered by the federal government), and would not be able to pass a fairly administered NYS Public Service Commission (PSC) prudent investment test because much cheaper alternatives are available to the BPU for meeting ratepayer electric needs -- though these alternatives have been steadfastly ignored by the BPU from the beginning when the project was defined as a conventional coal plant 4 or more years ago.

Thus, when the DOE evaluated the BPU application, they probably saw this long list of problems:

- The proposed plant is not needed by Jamestown ratepayers
- The proposed plant, while oversized compared to ratepayer needs, is too small for an effective CCS test
- Oxycoal is not the best technology to fund at this time
- The project has severe economic problems even if federal funding covered all CCS costs
 - The plant will produce very expensive electricity, significantly raising electric rates -- thus harming ratepayers
 - Cleaner alternatives are available and are much cheaper, making the project unlikely to pass a NYS PSC prudency (thus blocking construction)
 - Selling the excess power from the new coal plant on the open market would produce huge losses for the BPU and put the city at financial risk

- Proponents have failed to secure enabling statewide legislation which would make CCS legal in NYS
- Test drilling has failed to find geological reservoirs in which to bury CO₂
- Over twenty top environmental organizations have been and continue to be vigorously opposed the project

Bottom line: The DOE would have to be crazy to fund a project with these fatal flaws, especially when attractive, viable CCS demonstration projects exist elsewhere.

Then, is the proposed new coal plant dead?

The DOE decision should make it clear to all that there is no point in further pursuing this costly, risky, unnecessary, and now doomed project. Yet, contrary to the interests of ratepayers, Mayor Sam Teresi, the BPU, and apparently the City Council continue to support this project and are willing to continue spending ratepayer money developing and promoting it.

But isn't the new coal plant needed as a way of keeping electric rates low?

Mayor Teresi and BPU General Manager David Leathers keep saying this but neither has ever produced an analysis which demonstrates this claim. In our study on the cost of power from various supply options available to the BPU², we estimated -- based on a BPU study which the BPU spent over \$200,000 on but now claims was inaccurate -- that even if all CCS costs are paid for by the federal government, it will cost the BPU at least 14 cents per kilowatt hour to generate power from the new plant. This compares very unfavorably to meeting ratepayer electric demand with energy efficiency (national average \$0.3/kWh; NYS average \$0.01/kWh), buying off the grid (less than \$0.06 in 2007 and 2008; \$0.03/kWh in 2009) and wind energy (\$0.09/kWh). Note: Even if the BPU study we based our analysis on is off by a few cents per kilowatt hour, that would not change the fact that the BPU's proposed plant would produce power at a higher cost than the alternatives we recommend.

The proposed new coal plant is the most expensive option available to Jamestown in terms of initial cost, operating costs, cost of generation, impact on rates, and financial risk. As planned, even at just 50 MW (with an expected output after CCS of only 30 MW), the proposed new plant is also oversized by a factor of five compared to actual existing ratepayer electric demand. That means that 80% of its output will have to be sold on the open market where power will probably be much cheaper, setting the BPU up for huge losses that will further increase electric rates for ratepayers and possibly cause the BPU to go into bankruptcy. This is precisely what happened to private investor-owned utilities in the 1980s when they built over-sized power plants based on anticipated electric loads which never materialized. Across the country, utility after utility went under as they raised rates to cover their losses; higher rates caused demand to shrink even more which further increased losses and provided an impetus for further rate increases -- thus fueling a spiral of rate increases, demand contractions, and losses which drove company after company

² See "Cost of Power for Jamestown Board of Public Utilities Electricity Supply Options - Proposed Coal-Fired Power Plant Is Most Expensive Option Even with Federal Subsidies," Clean Energy for Jamestown, September 17, 2009. For a copy, contact us or see http://www.cleanenergyforjamestown.com/Cost_of_Power_Study.html

into bankruptcy. It was called an “economic death spiral” by many analysts, and Jamestown is likely to follow the same path if it goes forward with a new costly unneeded power plant.

Let’s tell the truth. What has kept electric rates low in Jamestown has nothing to do with Jamestown generating its own power. Rates are low because 90% of the BPU ratepayer electric load is supplied by the New York Power Authority in the form of hydroelectricity which costs the BPU only 2 cents per kilowatt hour delivered to Jamestown.

Moreover, once you appreciate the fact that 90% of BPU ratepayer electricity is already supplied by NYPA at an extraordinarily low price it is easy to see the folly of building an expensive new power plant for the small remaining increment of ratepayer load. It just does not make sense to spend \$500 million – or even the \$145 million that supposedly ratepayers would pay -- to build a new power plant to supply only 10% of ratepayer electric needs in a small, financially strapped city like Jamestown -- especially when much cheaper, easier, cleaner, less risky options exist.

How much has the BPU spent promoting and developing the new power plant project?

The Mayor and BPU have never released this figure (and clearly an audit of the BPU should be conducted to find it out) but we estimate that approximately \$6 million in ratepayer money have been spent to date on this project to cover staff time, consultant fees, legal counsel, lobbying, and public relations (plus a similar amount of state money). Needless to say, \$6 million of ratepayer money is a large sum to spend on this project given BPU’s small rate base; the BPU has approximately 20,000 residential, commercial, and industrial ratepayers, so on average each has paid through their electric bills around \$300 for this project so far. How many ratepayers would voluntarily agree to pay that amount? Probably very few yet nonetheless their money was spent on this project by those directing and managing the BPU.

How much is the BPU continuing to spend right now?

A recent article in the Jamestown *Post Journal* stated that the BPU’s 2010 budget contains \$500,000 for the oxycoal project. Plus, a few months ago the BPU hired a new deputy general manager for the oxycoal project whose salary is probably in the \$100,000+/year range. This on-going \$600,000 expenditure raises questions about BPU leadership and management. It seems obvious that this is a case of throwing good money after bad. How much more ratepayer money will the BPU spend on this project before it admits that the project has failed and that the very small energy problem created by closing the existing Carlson coal plant can be solved easily and cheaply with a different strategy?

What alternative exists to building a new coal plant? How else could the BPU meet its ratepayer’s electricity needs while shutting down the 50 year old Carlson plant?

This question is easy to answer once you remember that 90% of the electricity BPU ratepayers consume is already being provided very cheaply at 2 cents per kilowatt hour from NYPA. Instead of building an expensive new power plant to meet just 10% of its ratepayer electric load, here is what the BPU should do – and could do at a fraction of the cost of building a new plant while keeping electric rates much lower:

1. Supplement low cost NYPA hydro-power with approximately 5.8 MW³ of some combination of :
 - Energy efficiency
 - Wind energy (only a few turbines would be required)
 - Solar energy
 - Occasional purchases off the regional grid if necessary
2. Meet the thermal requirements of Jamestown's district heating loop by:
 - Reducing load through an aggressive energy efficiency program for downtown building owners
 - Providing heat to the loop through alternative means, e.g. the existing natural gas turbine operated with single or combined cycle heat recovery, one or more natural gas package boilers, or a small biomass boiler or cogenerator with the cleanest available technology

Thus, technically speaking, there is an easy solution to Jamestown's perceived energy problem. This alternative solution is environmentally attractive, more affordable, less risky, and brings with it economic benefits as explained in our enclosed "A Proposal to Meet Jamestown's Electricity Needs at a Lower Cost while Creating a Local Green Economy."

But we were told that the new power plant would bring significant economic development and new jobs to Jamestown. Why sacrifice that?

Supporters of the new coal plant may sincerely believe that it would bring prosperity to Jamestown but they ignore evidence to the contrary -- the most obvious being the recent DOE refusal to fund the project. Thus the hoped for infusion of big federal dollars is null and void. But even before DOE announced its decision to deny Jamestown funding, the project did not make sense as an engine of economic development because at best it would fuel a boom and bust economic scenario. Yes there would be an influx of cash and jobs during construction but that would be followed by an economic downturn lasting many years as a result of needlessly higher electric rates and mega-dollar losses associated with selling excess power from the plant on the open market at prices below its generation cost. It's important to remember that the new coal plant would cost ratepayers a minimum of \$145 million even with full federal funding for the CCS portion of the project. This is way too much to spend on a power plant that is not needed in the first place. That debt plus the higher electric rates it would produce and the losses associated with off-system sales to non-ratepayers would hurt the BPU, the City, local economy, and prospects for job creation or retention over the long run.

But isn't the BPU's electric load increasing? Shouldn't we think long-term? Doesn't Jamestown need a new power plant to meet future electric need?

³ In 2008, the BPU's ratepayer electric load was an annual average of 61 MW. Of that amount, 55.2 MW was provided by the New York Power Authority and 5.8 MW was either generated by the BPU's Samuel Carlson coal plant or purchased of the grid.

The BPU's ratepayer electric load has decreased for the last five years. There is no evidence demonstrating that it will substantially increase in the coming years, justifying a new oversized, extremely expensive 50 MW coal-fired power plant. In fact, since the power plant will increase electric rates – we estimate by as much a 2 to 4 cents per kilowatt hour compared to lower cost supply options – it would more likely chase away business and thus further reduce ratepayer electric demand.

How would the alternative solution – efficiency and renewables with modest “as needed” buying off the grid -- affect the local economy? Could it bring money into the community? Could it foster job growth and economic sustainability?

In contrast to building a new power plant, pursuing the simple, inexpensive, and “least cost” solution outlined here will minimize risks and keep electric rates low while bolstering the local economy. This alternative solution could be funded by New York State Energy Research and Development Authority (NYSERDA), the New York Power Authority, the clean energy and green economy programs established by the American Recovery and Reinvestment Act of 2009, and the BPU's own Energy Efficiency Program Charge. These options are explained in more detail in the enclosed “Proposal to Meet Jamestown's Electricity Needs at a Lower Cost while Creating a Local Green Economy.” Additionally, New York State has just passed an innovative green jobs law to ramp up statewide home weatherization. Jamestown could seek to become a “target community” under this law to maximize energy and jobs benefits. Implementing this alternative approach will bring money into the Jamestown community, producing jobs inside and outside the BPU to implement greater energy efficiency and reliance on wind, solar, and possibly biomass energy.

If the new power plant project is potentially economically disastrous and an alternative approach would be economically better, why haven't local manufacturers spoken out?

This is anyone's guess though some manufacturers – like many others in the BPU service territory -- may have taken the BPU's word on the project instead of carefully examining it themselves. Some manufacturers may harbor doubts but may have received special custom electric rates from the BPU in tacit exchange for their silence. The manufacturers association has not represented local business well by supporting a project which would needlessly and substantially increase electric rates.

Why haven't we heard this point of view in the Post Journal?

While the Post Journal occasionally permits alternative views on this project to grace its pages, it has generally functioned as a project booster, reporting the BPU perspective.

But, in the end, isn't it important that the BPU stay in the electric generation business?

Maybe in the past it made sense for Jamestown to generate its own electricity but no longer. The Carlson plant has been off line much of the year and who noticed? Aside from providing heat to the district heating loop (which can be accomplished by other means), the Carlson plant is not

needed any more than a new plant would be needed -- because, as previously explained, 90% of BPU ratepayer electric needs are met by very cheap power from the New York Power Authority and the rest of BPU's ratepayer load can easily be met through the alternative and cost-effective strategies of energy efficiency, renewables like wind energy, and occasional, modest purchases off the grid at much lower costs than generating power from the Carlson plant or a new plant.

There is a justifiable concern about the fate of BPU staff who now work in the Carlson plant but maintaining those jobs by building an expensive new unneeded power plant is not in the interest of ratepayers who should be the BPU's first concern. Hopefully, the staffing issue could be humanely addressed through attrition and reassignment.

Finally, what about the 2.5% rate increase the BPU just filed with the Public Service Commission? Is that justified?

Not at all – especially when you consider the vast sums of ratepayer money the BPU has poured down the drain and is apparently committed to continuing to waste on an unneeded power plant that if built would damage the long term prospects for prosperity in Jamestown, has just been denied funding by the U.S. Department of Energy, is adamantly opposed for many valid reasons by perhaps the strongest environmental coalition in New York State, could never pass a PSC prudency test, and is never going to be built. The BPU has demonstrated a willingness to waste an unprecedented amount of ratepayer money on this project and for that reason alone does NOT deserve a rate increase. Instead it should be cutting unnecessary costs and committing itself to least-cost energy strategies so that rates move in the other direction – toward the \$0.02/kWh that it pays to NYPA for 90% of the power consumed by its ratepayers.

What's needed now?

1. Mayor Teresi and BPU should announce that they have made a decision to stop spending money on a project which will never be built.
2. The BPU should finally commit to examining and pursuing a least-cost energy solution to what is really a very small problem, i.e. finding an alternative way of meeting just 10% of BPU ratepayer electric load as it shuts the Carlson plant down as soon as possible. The outline of a cost-effective alternative strategy is presented above and is contained in the enclosed "A Proposal to Meet Jamestown's Electricity Needs at a Lower Cost while Creating a Local Green Economy."

Because of the resistance of BPU and City leaders to admit the weaknesses of this project and accept the reality of the DOE decision, neither of the above outcomes is likely to occur unless residents and ratepayers speak out and demand it. Voicing your opinion can be done publicly or through private conversations with the decision-makers who keep spending your money and pushing this project when it doesn't make sense and is not going anywhere.

It's time to move on.

(January 5, 2010)