

GRAND HAVEN BOARD OF LIGHT & POWER

Sims Power Plant Closure

BLP Board Approved Response
to City of Grand Haven's Sims Closure Questions



April 24, 2018

1. What are the reasons for considering decommissioning the Sims III Power Plant (“Sims”)?

The Sims Power Plant Closure Report lists seven primary considerations/facts the BLP has used as a basis for the recommended schedule for closure.

2. Is it Possible to keep operating the Sims Generating Station?

With the completion of all necessary repairs and life extension investments, it is possible to continue operating the Sims power plant past June 1, 2020, but these operations come with substantial risks (as outlined in the Closure Report).

A. If so what costs will be incurred and how will those costs affect rates?

Continued operation of Sims will have a negative effect on BLP rates due to the significant investments required for life extensions and the annual costs of operation. This will result in a series of required additional rate increases over the next several years (the Sims Power Plant Closure Report suggests an initial 16.4% general rate increase will produce \$6 million dollars per year for the next three years). The following illustrates these impacts and the amount of revenue that will be necessary to fund the required expenses to ensure safe and reliable operations of the Sims power plant.

- a. Large Expenditures: The Condition Assessment performed by the power plant staff has identified a minimum of **\$15.6 million** of known large expenditures. Staff stopped the analysis and brought the Condition Assessment to the governing body when the costs far exceeded any potential beneficial use of extending the life of the facility. This assessment would need to be taken further to determine the full magnitude of costs for life extensions to ensure safe and reliable operation of Sims past 2020. However, any additional costs added to the power plant staff's assessment would only serve to further drive the decision to cease operation of the facility. The Assessment conducted by staff did not include any significant repairs or replacement costs to the wet flue gas desulphurization system. Due to concerns raised during the Condition Assessment, a licensed structural engineering firm will be brought in to evaluate the strength and integrity of the scrubber vessels. Their initial review indicated areas of buckling and bowing at various elevations of the scrubber modules. Thickness testing at locations that are accessible will be conducted in the first part of May and the data will be inputted in a structural integrity and evaluation model to determine if the vessels are safe for continued operation. These vessels have been known to fail at other coal fired power plants that were not as old as Sims (T.E.S. Filer City Station, MI and Gainesville Regional Utilities, FL).
- b. Fixed and Variable Operating and Maintenance Expenses: Fixed and Variable Operating and Maintenance Expenses are made up of two categories. One is labor related expenses and the other is non-labor related expenses (repairs and maintenance).

- i. Labor: The labor costs associated with operating the coal fired power plant was \$4.37 million in Fiscal Year 2017. Understandably, that cost will rise as wages rise. In comparison, a smaller generating facility (or operating no generating facility at all) will require approximately 10-15 operating personnel, less than half the workforce of 39 employees required for operating Sims prior to July 1, 2018. Using a conservative \$1.6 million in annual labor related expenses would yield an annual savings of approximately \$2.7 million. Over a 10 year period these savings exceed **\$27 million**. These savings could be passed back on to the rate payers or invested in new generating assets that will last considerably longer than the Sims Power Plant, or a combination of the two. This number is conservative because it does not take into account increasing labor costs as wages and benefit expenses increase.
- ii. Repairs and Maintenance: Recent non-labor fixed and variable operations and maintenance costs are roughly \$3.5 million annually. If the community chooses to cease Sims operations, these cost savings may too be passed back on to the community. If the community feels it is in their best interest to maintain some local control and local ownership of their power supply with a smaller more flexible generating plant, it will have operating and maintenance costs roughly 1/3 that of the steam plant. For reference, the Marquette Board of Light & Power's Marquette Energy Center (MEC), which is a 54 MW facility, has approximately \$1.0 million of fixed and variable non-labor expenses for repairs and maintenance annually. That is a difference of \$1.5 million annually. Over a 10 year period the savings are roughly **\$15 million**.

B. What is the expected useful life of Sims if those costs are incurred?

- a. As stated above, the condition assessment would need to be taken further to determine the full magnitude of expenses for life extensions and their proposed useful life before such a prediction could be determined. This is one of the more problematic issues of putting the money required into Sims. It is possible with proper investments to extend the life of coal fired boilers between 40-50 years. However, for the amount of investments necessary for continued Sims operations, there may be nothing to show for it at the end of the next 10 years and significant amount of funds will have been spent that could have been used to either lower electric rates, build new generation with a much longer life span (and significantly lower costs to operate), or a combination of both.

C. Is it expected that regulatory changes, public perception or other factors unrelated to the physical condition of Sims might affect its useful life?

The Sims Generating Station does have some hurdles in regards to regulatory requirements but some of the regulations have been put on hold with the new Federal Administration. As a result, there is very little certainty regarding the long term impacts to the Sims Power Plant.

- a. Regulation: The Sims 3 Unit was built after the Clean Air Act and Clean Water Act amendments were enacted by Congress. Therefore, with the laws currently in place, it is well positioned to handle the current requirements with environmental regulations with a few known exceptions:
- i. Coal Combustion Residual (CCR) Rule: The Sims Plant currently uses two clay lined ponds to handle the wet bottom ash (from the boiler) and the wet slurry (from the flue gas desulphurization). Additionally, there are three unlined inactive ponds that were used during operation of Units 1 & 2. The plant can become compliant with the rule by closing the active ponds and building new compliant containment structures. Engineering plans have been developed to replace one of the ponds and associated piping with a water retaining concrete structure at budgetary costs of \$500,000. According to the CCR Rule, if the governing body certifies that it will cease operation of the coal fired power plant and have the existing ponds closed in accordance with the rule, it appears that this cost can be avoided. Staff is currently working with the American Public Power Association (APPA) to meet with the Environmental Protection Agency (both Headquarters in Washington D.C. and Region 5 in Chicago) to determine if this understanding is accurate. In the absence of a decision on the plant, this structure needs to be constructed by October 2018 if Sims is to continue operation.
 - ii. Effluent Limitation Guidelines: With the recent change in Administration, the effluent limitation guidelines have not progressed. Because Sims is not a closed loop system, if this rule is picked up by this administration or a future one, additional effluent controls will need to be installed at Sims. The costs associated with necessary water treatment for compliance to these rules has not been developed nor were they included in the Condition Assessment performed by staff.
 - iii. Clean Power Plan: Currently there is no movement with this rule. Under the previous rule provision, this rule would have significantly impacted the Sims power plant.
- b. Public Perception:

Refer to Section 6 of the Closure Report prepared by the Board dated April 24, 2017.

3. Could Sims be converted to a gas-fired facility?

Sims could be converted to a gas-fired facility; however, but such conversion is not cost-effective and is not a viable option. The Board evaluated that option as part of the *Natural Gas Generation Siting Study* conducted by the original Sims Unit 3 design engineering firm Black & Veatch in March 2014. The study concluded that it would be very costly and therefore uneconomical to convert Sims Unit 3 from coal to gas. The study employed the Electric Power Research Institutes (EPRI) Vista fuel quality impact program. The analysis showed that a conversion from coal to natural gas combustion would result in significant depressions in the heat transferred to the main steam and

reheat steam cycles, resulting in a reduction in temperature and net enthalpy available at the steam turbine. These reductions in temperature would result in a significant loss of turbine efficiency of approximately 4.6 MW. This option was not developed any further due to the conclusion that it would not be economically feasible for the Board to pursue this option.

4. If Sims is closed, could it be replaced with a new power generating facility?

The Board's current directive is to develop a diverse power supply portfolio. Therefore, if the community desires to own and control a piece of their power supply, then a new power generation facility can be constructed. However, it would not be recommended to build a plant as large as Sims because diversification becomes a problem (Refer to Section 3 of the Closure Report). Instead, a recommendation to replace Sims would likely revolve around a power station that is more appropriately designed to fit within Grand Haven's electric demand and size. Cities of similar electrical load and size to Grand Haven are transitioning away from coal fired generation and have opted to go with smaller more flexible reciprocating internal combustion engine technology. Labeled 'Smart Generation,' this technology offers an attractive heat rate (which equates to cheaper electrical generating costs), allows generation to be broken up over multiple units (which increases reliability and dispatch alternatives), allows for the expansion of larger renewable components in a portfolio (to meet State of Michigan changing renewable requirements), and provides quick (and potentially black) start generation capabilities.

A. If so, when, and at what costs, and with what effect on rates?

This type of newer power generation technology can be built in a very short amount of time. Two new power generation facilities were built using this technology in the Upper Peninsula of Michigan with construction taking less than 2 years to complete. There are some advantages; however, for Grand Haven to delay new construction until after the Sims Power Plant is decommissioned and the site is cleared and remediated. The first being that it would be desirable and allow for considerably lower construction costs to use the existing pilings for stability. It would also give the Board and the community enough time to develop an aesthetically appealing power facility given the visibility such a facility would have on Harbor Island. Given that full Network Integrated Transmission Service (NITS) will be available in June 2020, an interim low cost alternative power supply is available during construction, reducing the urgency to rush into a decision on a new power facility. The cost to construct a 30 MW plant is estimated at approximately 1,100/MW or \$33 million. Installing a new generating plant will allow the BLP to stabilize and maintain the current rate structure. This is the opposite effect of continued operation of the Sims Generating Station. This is due to the fact that the cost savings of ceasing operations of a coal fired power plant (due to the large required investments coupled with the annual fixed and variable operating & maintenance expenses) will sufficiently cover the capital costs of constructing a new smaller and more flexible generating station. What would have been spent on annual operating expenses from the operation of Sims over a 10 year period will be able to provide the Grand Haven community with a new generating facility that will last 30-35 years.

B. What would be the useful life of a replacement facility?

The useful life of a new generating station would be 30-35 years.

5. If the City does not generate electric power and is reliant on purchasing all its power:

A. How will rates be impacted?

They will go down as described above and in Section 1 of the Closure Report.

B. How will reliability be impacted?

Reliability will be maintained as discussed in Section 2 of the Closure Report

C. How could total power supply be affected?

The goal of developing a more sustainable, economical, and diversified power supply portfolio could be achieved as discussed in Section 3 of the Closure Report.

6. How would decommissioning Sims:

A. Affect Utility Employees: Refer to Section 5 of the Closure Report prepared by the Board dated April 24, 2017.

B. Affect post-retirement health, pension and other legacy costs: In 2017, the BLP closed the defined benefit pension plan. The reduction in work force will have the added benefit of limiting any future health care costs. As detailed in 2(A)(b)(i) above, the savings in wages and benefits will be substantial over a period of time, which will allow the utility to better stay ahead of unfunded legacy costs if properly managed.

C. Affect Facilities and equipment used for the utility: Along with the mechanical equipment, the building facilities are also reaching end of life issues. They either need investments in life extensions or need to be removed. This was most evident from the sheet pilings that were falling off the scrubber building in 2015. Protective sheeting was overlain on top of the failing siding which served to extend the timeline of when more costly replacements would need to be made. Additionally, both the plant and outer buildings need roof replacements. Patching of any leaks has been ongoing until a long term direction is set for the plant. Some of the vehicles in the fuel handling fleet still hold some value but that value is quite limited. A plan was previously in place to start replacing this equipment (starting with the 824C built in 1994) in fiscal year 2020 but has been put on hold until a long term decision is made on the plant.

7. If the utility is downsized by decommissioning Sims:

A. What impacts might result in the distribution utility?

As the Sims Closure Report suggests, more of the BLP's resources may be directed toward this function, as was recommended by Hometown Connections in their BLP Organizational Check-up.

B. How will responses to power outages be affected? No impact

C. How will the property be remediated and or reused?

It will be remediated as required by regulatory authorities and will potentially have a continued use by the BLP (with a likely smaller footprint).

8. What benefits does the City derive from generating electricity?

BLP customers require electricity to meet their needs (the benefits of electricity). There are benefits to generating this power locally and there are also substantial risks – particularly associated with using the Sims Power Plant – as the BLP points out in the Closure Report. Any future local generating option needs to be evaluated on the costs and benefits that particular facility may provide the community. There are differing benefits, costs, and risks associated with various types of local generation.

9. What disadvantages does the City suffer from generating electric power?

Same answer as 8.

10. How will decommissioning Sims affect the downtown snowmelt system?

The most opportune time to figure out a good long term solution to snowmelt is before large investments are made in the Sims Generating Station with only limited life extension benefits. Currently snowmelt can be provided either through the reheat system of the scrubber modules (which are currently failing) or through the auxiliary boiler. While the auxiliary boiler is not of sufficient capacity to provide both snowmelt and building heat during the coldest winter months, it can and has been used as a supplement when Unit 3 is offline. This auxiliary boiler is rated for 21 mmbtu/hour and is of sufficient size to provide snow melt (which according to the report referenced below requires 12 mmbtu/hour) if it is not also required to supply heat to the Sims power plant.

A. What alternative sources of hot water are available and at what costs?

Refer to the *Snowmelt System Alternative Energy Source Study* conducted by GMBae for the City of Grand Haven dated January 16, 2018. The study identified requiring two 6,000,000 Btu/hour gas fired boilers with a third being used as a backup. Alternate energy sources evaluated included combined heat and power (CHP) and heat pump systems but the conclusion of the study was that a higher-efficiency gas-fired boiler would be the “simplest, least expensive and easiest to install.” The costs for this option are estimated in this report. These costs may be lower if incorporated into a new BLP electrical generation facility on the Sims power plant site.

B. How will operational costs be affected?

Refer to Section 5 of the Closure Report prepared by the Board dated April 24, 2017.

C. How will downtown businesses be affected?

Refer to Section 5 of the Closure Report prepared by the Board dated April 24, 2017.

11. How will decommissioning Sims affect the amounts of payments in-lieu-of taxes (PILOT) collected by the City?

Refer to Section 5 of the Closure Report prepared by the Board dated April 24, 2018.

12. How will decommissioning Sims affect harbor dredging?

Refer to Section 5 of the Closure Report prepared by the Board dated April 24, 2018.

13. If the City no longer generates electric power, what are the advantages and disadvantages of continuing to operate the electric utility?

Refer to Section 7 of the Closure Report prepared by the Board dated April 24, 2018.

14. Has any consideration been given to alternatives such as:

A. Selling Sims or seeking another operator of Sims?

As the Closure Report suggests, there is little value another would gain (for continued operations) without making the same cost prohibitive investments. There may be some salvage value of certain equipment at the plant. The BLP will investigate further this potential if and when the Sims closure date is known.

B. Ceasing City operation of the electric utility and selling its assets?

See answer to question 13 above

C. Contracting with another entity for operations of the City electric utility?

The BLP has not reviewed this alternative but does not believe it would present a cost effective option. After operating the local utility efficiently and effectively since 1896, why would one believe it is now potentially more cost effective to have someone else operate it simply because a particular piece of equipment (or facility) has reached the end of its useful life? As the closure report suggests in Section 7, the closure of Sims is actually an opportunity to improve the effectiveness of the utility without being strapped with an uncompetitive generating resource; why would this opportunity lead one to scrap the local operations entirely (and sell the utility) or suggest another entity may now be better to step in and take over such operations?