

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY**

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**INTEROFFICE COMMUNICATION**

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TO: Tecumseh Project Files  
FROM: Kurt Swendsen  
DATE: March 11, 2014  
SUBJECT: Green Project for Tecumseh Aerator Uprates, Project No. 5562-01

The project's entire construction consists of aerator replacements, which was justified as green by the attached green business case that asserts the project will result in an 80 percent energy reduction.

The winning bid amount was \$478,900, but was for two motors, one of which was determined to be ineligible. The eligible construction amount is \$355,700, which is the base bid price for one motor. Because the applicant received an S2 Grant for the entire design engineering amount, design engineering is not part of the calculation for the project's green total. Therefore, the **project's total green amount is \$395,063**, which was calculated by adding the eligible construction amount of \$355,700, plus the prorated portion of the construction engineering line item of \$39,363.

City of Tecumseh

Green Reserve Funding Business Case

Prepared July 2013

Brian Rubel – Tetra Tech

The purpose of this memo is to document the basis for determining that the City of Tecumseh's SRF Project qualifies for the green project reserve funding under the ARRA. The project will replace inefficient blowers with modern, efficient blowers and an automated system to pace the blower operation upon the dissolved oxygen demand of the wastewater. This will reduce the energy consumption for aeration of the wastewater by approximately 80% which is well in excess of EPA's minimum guidance of 20%. The following information was used to make this determination.

The City completed an engineering study evaluating the existing blower operation and new blower alternatives. The existing blowers at the WWTP date to 1988 and are a capacity of 2,200 cfm with an average energy cost of \$56,000. The blowers can only be controlled by manually throttling an air inlet valve and is impractical to adjust based on the strength and oxygen demand of the wastewater.

Recent technology makes it practical to control the amount of air supplied based on dissolved oxygen measurements within the treatment process. Thus, an optimal amount of air is supplied by the blowers saving electrical energy and money. However, this control work also requires blowers able to be controlled in this manner. Advances in blower technology also have made modern blowers more energy efficient than blowers in 1988.

The City of Tecumseh will be bidding the removal of two blowers and the replacement of these blowers by either one large blower or two smaller blowers. Engineering calculations reveal that after construction the aeration system will consume an average of 700 cfm of air and \$14,000 of electricity annually thereby saving the City of Tecumseh \$42,000 annually in electrical energy.

The project payback is approximately nine years which is less than a 20-year useful life assumed for the replacement equipment. The City of Tecumseh has demonstrated that a one blower option is cost effective. This technology has proven successful at other installations throughout Michigan.

## Swendsen, Kurt (DEQ)

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**From:** Rubel, Brian <Brian.Rubel@tetrattech.com>  
**Sent:** Tuesday, July 30, 2013 3:01 PM  
**To:** Swendsen, Kurt (DEQ)  
**Subject:** RE: Tecumseh Green Reserve

Unfortunately, no. They only get one bill for the whole facility and the existing blower use and cost was calculated from the size of the units and the runtime history.

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**From:** Swendsen, Kurt (DEQ) [<mailto:SWENDSENK@michigan.gov>]  
**Sent:** Tuesday, July 30, 2013 2:43 PM  
**To:** Rubel, Brian  
**Subject:** RE: Tecumseh Green Reserve

Is there any verification that the City provided you of the average energy cost just due to the blower operation?

Kurt

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**From:** Rubel, Brian [<mailto:Brian.Rubel@tetrattech.com>]  
**Sent:** Tuesday, July 30, 2013 2:32 PM  
**To:** Swendsen, Kurt (DEQ)  
**Subject:** Tecumseh Green Reserve

Hi Kurt;

Please find attached a Business Case for Tecumseh. I do appreciate the reminder.

I'm around today if I need to do something more or different but this seemed to follow others I say and the EPA guidance.

Brian R.