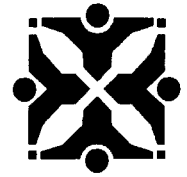


City of Columbia

701 East Broadway, Columbia, Missouri 65201



Agenda Item Number: REP 84-15

Department Source: Water & Light

To: City Council

From: City Manager & Staff

Council Meeting Date: 8/17/2015

Re: Columbia Municipal Power Plant

Documents Included With This Agenda Item

Council memo

Supporting documentation includes: None

Executive Summary

The last two Electric Integrated Resource Plans identified both solid fuel electric generating units, Boilers #6 and #7, at the Municipal Power Plant as being retired in 2015. In considering the current regulatory environment and other operational factors the actual situation regarding these units has become clear. The current plan for these solid fuel units is to operate one of the units during the 2015 summer season, then in early September the operating solid fuel unit will be brought off-line. This will end coal fired generation at the Columbia Municipal Power Plant. Columbia Water & Light will continue to study the possibility for a conversion of Boiler #7 to burn 100% Biomass.

Discussion

Columbia Water & Light has long recognized that the future of the solid fuel electric generating units, Boilers #6 and #7, at the Municipal Power Plant (MPP) was limited. In the last two revisions of the Integrated Resource Plan (IRP), 2008 and 2013, identified both units as being retired in 2015. The actual situation regarding the units has become clear.

The Cross State Air Pollution Rule (CSAPR) regulates the emissions of SO₂ and NO_x, and took effect on January 1, 2015. The rule significantly decreased the allowances for both pollutants available to CWL for power generation. As a result, CWL solid fuel fired generation in calendar 2015 will be about 30% of historically typical levels.

The solid fuel units are also subject to the Industrial Boiler MACT rule. Per this rule, the solid fuel units will not be able to operate over a 10% capacity factor after January 30, 2016. The Plant Condition Assessment completed in 2012 identified several boiler systems as requiring significant overhaul or replacement for continued reliable operation, particularly grates and fuel feeders. It is impractical to keep operating the units after that date, as significant expense would be required for low resulting energy production.

On April 17, 2015 the Environmental Protection Agency (EPA) issued rules regarding the handling and disposal of Coal Combustion Residuals or CCRs. These rules take effect on October 14, 2015.

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Since the MPP still uses a wet ash system to handle and transport ash, the new rules make it very advantageous for CWL to cease using the wet ash system before the effective date of the rule. CWL will have a 30 month period from the effective date to completely remediate More's Lake at the MPP.

Considering these factors, and other operational considerations, the current plan for the solid fuel units is to operate one of the units during the peak summer season. Boiler #7 will be brought on-line about July 1, 2015 and will operate into early September. The unit will be brought off-line when either CWL runs out of CSAPR allowances or runs out of fuel, whichever happens first. This will end coal fired generation at the MPP.

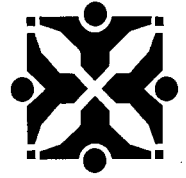
CWL will continue to study the possible conversion of Boiler #7 to burn 100% biomass. Current activities include:

- An air permit application was filed with MDNR in January to authorize the improvements necessary for the Boiler 8 NOx reduction project and the conversion of Boiler #7 to use 100% wood as fuel. CWL expects that a final permit will be issued later this summer that will allow CWL to operate Boiler #7 at a maximum capacity factor of 50% using 100% wood as fuel. This would mean a maximum of about 96,360 MWh of wood fired energy per year would be permitted.
- CWL staff continues to research conversion to 100% biomass fuel and is developing a comprehensive scope of work and cost estimates for a potential project. The scope of the project includes converting Boiler #7 and a general plant rehabilitation of the related systems. The project is being conceived as a thorough plant rehabilitation that will provide an additional 10-15 years of reliable renewable energy production. More details regarding this potential project will be forwarded as they become available.
- Contracts with Lutz, Daily & Brain (LDB) will soon begin a detailed thermal and Computational Fluid Dynamics (CFD) modeling of Boiler #7. LDB will take measurements of Boiler #7 during summer operations and develop detailed models of the combustion process. Then using the models, studies will be conducted to determine boiler performance if the fuel is switched to 100% wood. The modeling should provide a definitive answer of whether Boiler #7 can be switched to 100% wood and the resulting changes in boiler performance and emissions. This work should be completed sometime this fall.

Future actions largely depend upon the results of the Boiler #7 modeling efforts. If modeling shows that conversion to 100% biomass is not feasible, then both units at the MPP will be retired. If modeling shows that conversion to 100% biomass is feasible, then it becomes an economic and policy decision on whether to perform a biomass project with Boiler #7 at the MPP as a part of CWL's renewable energy portfolio.

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Fiscal Impact

Short-Term Impact: None

Long-Term Impact: None

Vision, Strategic & Comprehensive Plan Impact

Vision Impact: Not Applicable

Strategic Plan Impact: Not Applicable

Comprehensive Plan Impact: Not Applicable

Suggested Council Action

Information

Legislative History

None


Department Approved


City Manager Approved