

MICHIGAN STATE UNIVERSITY

June 11, 2014

MEMORANDUM

To: Trustee Finance Committee

From: Satish Udpa *Satish Udpa*
Executive Vice President for Administrative Services

Subject: **Authorization to Plan**
Power Plant Capacity and Future Needs

RECOMMENDATION

BE IT RESOLVED that the Trustee Finance Committee recommends that the Board of Trustees authorize the Administration to plan for the project entitled Power Plant Capacity and Future Needs.

BACKGROUND

Program Need:

The power and steam needs for a majority of the developed campus north of Mt. Hope Road are provided by MSU's co-generation steam and electrical power plant. An additional 18-20 megawatts of electrical power will be needed for operation of the Facility for Rare Isotope Beams (FRIB) starting approximately 2018. The University is also actively expanding its research capacity, which will require additional electrical power and heat.

The power plant utilizes both natural gas and solid fuels (biomass and coal) to produce electric power and steam. The power plant has reduced its use of, and reliance on, coal. Despite this reduction, the power plant will probably be forced to further cut or eliminate its use of coal as a fuel in the relatively near future due to increasing regulatory requirements that make use of coal cost-prohibitive and the need to meet the goals established by MSU's Energy Transition Plan. The power plant has the capability to operate its current equipment solely with natural gas as fuel. However, demands placed on the public utility gas delivery infrastructure last winter demonstrated that the current gas pipeline to the power plant does not have sufficient capacity to ensure that the power plant maintains required reliability when operating solely on natural gas. Nor could the current gas pipeline support any increased production capacity at the power plant.



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In addition, an electrical substation presently provides an interconnection between the power plant and the local utility electric grid. The substation makes it possible for the University to purchase electric power from the local utility and provides firming capacity for the power plant. However, the current capacity of the substation is insufficient to address the University's increasing need for electric power.

General Description of the Project:

Planning for this project will include the evaluation of potential solutions for a number of interrelated problems while giving priority to the more immediate power needs of the FRIB project. Maintaining the reliability of the power plant and providing power at the lowest possible cost are paramount, but the additional aims of the project include: improving the efficiency of the existing power plant, positioning the plant to meet the longer term growth needs of the campus for both heating (steam and possibly hot water) and electricity, and enabling the University to make progress towards achieving the goals of the Energy Transition Plan.

A range of options and their merits will be explored to provide recommendations that most closely address the needs identified. Planning options will include: expanding the existing substation and increasing the tie-line capacity, increasing the capacity of the natural gas delivery infrastructure, adding to the boiler and turbine capacity of the existing power plant, installing natural gas internal combustion engines with electrical alternators and investigating renewable energy sources, including photovoltaic (solar) and wind power. The advantages, disadvantages, and feasibility of public-private partnerships will also be examined.

Communication Plan:

The campus community will be given opportunities to provide feedback on the project during the planning phase. Input from the project planning team will be solicited during this planning phase.

Preliminary Project Cost Information:

One of the important outcomes of the planning phase will be to develop a comparison of capital and longer term operating costs for each option examined. A funding plan will emerge from the planning process.

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Authorization to Plan Power Plant Capacity and Future Needs

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Power Plant

