

TRONOX

COLORADO RIVER
COMMISSION

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Mr. Craig N. Pyper
Hydropower Program Manager
Colorado River Commission of Nevada
555 E. Washington Avenue, Suite 3100
Las Vegas, Nevada 89101-1048

Dear Mr. Pyper:

Enclosed is Tronox LLC's status report for items that are part of the Colorado River Commission's Integrated Resource Plan.

If you have any questions, please call John Holmstrom at (702) 651-2305.

Sincerely,


Fredrick R. Stater
Plant Manager

FRS/JEH/rgs
f/CRC Status Report11-08.doc

Enc.

cc: S. M. Haigh
J. E. Holmstrom

Tronox LLC
2007-2008 Integrated Resource Plan
On-Going Activities

- 1) As a manufacturer of products for worldwide markets, Tronox LLC (Tronox) continuously looks for ways to reduce costs and improve quality. Tronox monitors energy usage in all of its processes looking for areas to reduce costs and consumption.
- 2) Tronox continues to fund its share of the operation and maintenance costs for the power system serving the industrial complex where they are located. Savings from this operation include greater capacity without the installation of more facilities and improved efficiency reducing losses.
- 3) Tronox operates and maintains its 5 and 15 kV distribution systems to maximize efficiency and reliability while reducing I^2R losses.
- 4) Tronox monitors the operation of its power system with the aid of in-plant metering and a Supervisory Control and Data Acquisition (SCADA) system in order to identify opportunities for power conservation and efficiency improvement.
- 5) Tronox continues its policy of evaluating electric motors based on cost, efficiency, and reliability. Tronox installs high-efficient motors that meet or exceed the Federal energy efficiency requirements.
- 6) Tronox continues to install, operate, and maintain modern, high-efficient anodes in its electrolytic cells, in order to meet quality standards for production while reducing electricity usage in the cells. At current production levels, these improvements result in significant energy savings each year.
- 7) Tronox has an ongoing maintenance program for its electrolytic cells to clean and rebuild cells to maximize efficiency, maintain quality, and reduce losses.
- 8) Tronox continues to consider lighting efficiency on all new installations and upgrades to ensure lighting meets the requirements of the project in the most economical and efficient manner possible. Tronox installs, operates, and maintains high efficient lighting systems to reduce electrical consumption.
- 9) Tronox continues to perform infrared surveys of its AC and DC systems annually. These surveys are used to identify equipment which may be operating inefficiently and require service.
- 10) Tronox continues to consider transformer efficiencies when specifying and evaluating replacements for power transformers.
- 11) Tronox recently purchased and installed a new boiler for steam generation. This new boiler replaced a much older unit and has provided greater efficiency at reduced costs.
- 12) Tronox has installed a heat recovery system at its Steam Plant. The recovered energy at the Steam Plant is used to reduce the amount of additional energy used for steam production. It also improves the operation and maintenance of the steam generation equipment.

- 13) Tronox operates three steam generators for the production of steam used in our processes. The fired units are tuned annually to ensure that they are operating at peak obtainable efficiency while meeting emission requirements. We continuously monitor technological advances that may be applicable to our units to further improve efficiency and economics. These improvements can be measured by reduced power usage by the boiler plant and reduction in disruptions to the processes using steam.
- 14) Tronox continues to maintain insulation and traps on plant steam lines to reduce energy losses.
- 15) Tronox has installed reduced voltage starters on all of its large motors. This modern equipment improves operating efficiencies, lowers in-rush currents during motor start-up, and reduces motor starting impacts on the electrical system.
- 16) Tronox employs new technologies to efficiently control process flows and reduce energy usage.
- 17) Tronox's maintenance program for its process pipelines, ensures that the energy required to move materials through the processes is used efficiently.
- 18) Tronox has consolidated its sodium chlorate production at a sister facility, and is benefiting from the improved economics of these consolidated operations at a larger facility.
- 19) Tronox has installed equipment to recover energy from the process waste streams. This recovered energy is then used as an energy input to the processes and reduces the requirement for new energy.
- 20) Tronox had a third party survey done of its compressed air distribution and utilization systems in order to identify where losses could be reduced and efficiencies improved upon. Tronox is now working to address the various recommendations.

Tronox Chemical LLC
2007-2008 Integrated Resource Plan
Short Term Activities

- 1) At Tronox, we are evaluating different anode technologies that may improve production or reduce costs by improving the operating efficiency of our electrolytic cell lines.
- 2) Proposals for the development of on-site generation in the form of cogeneration plants that produce steam for the manufacturing processes, peaking generators to reduce demand peaks, and power generation facilities using renewable resources are received and evaluated periodically.
- 3) Tronox is working on a brownfield redevelopment of unused production areas to include a solar generating station. This redevelopment will put the land back in to use providing jobs and expanding the tax base while delivering green energy to the local area.
- 4) Tronox is currently negotiating to consolidate steam generation in the industrial complex. Such an agreement would improve efficiencies, reduce emissions, and lower costs.
- 5) Tronox continues to look for technologies that will economically and efficiently recover materials from process waste streams. The recovery of raw materials reduces the amount of new resources required to maintain current production rates, and reduces the amount of electrical power required to process raw materials.
- 6) Tronox has begun installation of equipment for a pilot project to recover metals from a solids waste stream that is currently landfilled.
- 7) Tronox continues its program to replace the 1940's vintage power transformers. Replacement transformers are specified to meet the power needs for today's operations and to perform efficiently and reliably. Specifications include requirements for reducing losses. Included is a requirement for manufacturer certified efficiency reports for various loading levels in order to evaluate operating costs.
- 8) The equipment installed by Tronox to capture and treat carbon monoxide gas helps reduce the presence of this gas in the Las Vegas Valley and improves our community. The equipment for this process includes a reaction vessel that contains an exothermic reaction. Tronox is looking into methods of capturing this heat and using it to reduce the power input required for our processes.
- 9) Tronox continues evaluating technologies to expand and improve its waste heat recovery systems and to use this energy to provide heating for process streams. These systems reduce the amount of heat required to maintain proper operating temperatures in the processes.
- 10) Tronox has budgeted funding to begin engineering for the replacement of its 15kV switchgear. New switchgear will operate more efficiently, improve the reliability of its operations, and improve the ability to monitor energy usage. The benefits should be seen as reduced losses on the power system, reduced losses due to disruptions in operations, and better ability to track and control costs.

Tronox Chemical LLC
2007-2008 Integrated Resource Plan
Long Term Activities

- 1) **SCADA System:** The installation of a Supervisory Control and Data Acquisition System to replace the plant metering equipment would provide additional details on the plant's power usage profile and may help to make incremental improvements in plant efficiency. The installation of such a system is being evaluated and the measure of success would likely be the reduction in plant demand and/or power usage.
- 2) **Cell Redesign:** Electrolytic processes include electrolytic cells where a large amount of power is used. Tronox is working on a new design for its electrolytic cells that could significantly improve the operation of these cells. The success of this work will be seen in reduced power usage per ton of production, as well as improvements in the quality of the product manufactured.
- 3) **Processes:** Tronox continues to research ways to improve the efficiencies of its processes and equipment to ensure that the facility is operating at the highest attainable levels in order to reduce utility and resource costs that must be reflected in the prices for the products produced.