



# Memo

Electric Services Department

**TO:** Honorable Mayor Campbell and Members of the City Council

**FROM:** Donald Kom, Director, Electric Services Department

**DATE:** October 22, 2008

**SUBJECT:** Emergency Purchase of 2500 kVA Transformer

The City of Ames has been experiencing a higher than normal failure of 2,500 kVA transformers that service the utility's largest customers. On August 18, 2008, Electric Services engineering staff met with representatives of Ball Corporation to discuss events they had experienced with outages that resulted from these failures. The most recent of these events led to the change-out of one of these 2500 kVA transformers on August 3, 2008. The result of the subsequent August 18 meeting was that Electric Services took proactive action by committing to investigate the cause of the outages. At that time, there were no remaining 2500 kVA transformers in stock, so Electric Services also asked the Purchasing Division to issue a Request for Information to determine availability, lead-time, and brand-name performance specifications of potential replacement transformers. The result was lead times of 11-19 weeks with no units immediately available.

Staff initially took oil samples from all 2,500 kVA transformers on our system and sent them in for Dissolved Gas Analysis. Reports on several transformers came back on September 26, 2008, with higher than expected dissolved gases from TJ H2b Analytical Services, Inc. Standard procedure is to take a second sample and retest to eliminate possible sampling or lab errors. We chose to send the second sample to a different independent testing facility, SD Myers. Similar results were found in this second test, the results of which were communicated to Electric Services on October 14, 2008, and recommendations summarized in written format on October 16, 2008.

Of particular concern in these test results were the extremely high gases found in the transformer currently in service at Ball Corporation identified as T2. The recommendation from the testing lab was to remove this transformer from service immediately. Considering this recommendation, it was determined that it was critical to the continuation of service to Ball Corporation that the transformer be replaced immediately.

Staff went to work to locate a suitable replacement, coordinate an outage with the customer, arrange for a crane, and schedule the crew. City of Ames operates at a distribution voltage of 13.8 kV. Although not a unique voltage, staff was limited in the number of utilities from which a suitable transformer could be located. Inquiries were made to Xcel Energy out of Minneapolis, Rochester Public Utilities, Alliant,

and Mid American Energy. Only Alliant and Mid American responded back with a workable transformer. Alliant's transformer was selected due to lower cost, dimensions, and location. With applicable sales taxes, the total cost of the transformer is \$50,825 (\$47,500 plus \$3,325 sales tax). With customer reliability, customer service and the critical condition of the transformer in mind, a change-out was scheduled for Thursday afternoon October 23, 2008, in order to most expediently insure continuation of services to the customer.

The purchase of this transformer was made under the City's emergency purchasing policy, Section 8.01 A., which defines an emergency as "*as situation that occurs suddenly and unexpectedly and demands immediate action to prevent delays which may vitally affect the life, safety, or health of the public or City employees, or the continuation of services to the citizens, or serious lost or injury to the City*".

Electric Services staff is continuing to monitor the other 2500 kVA transformers. There is another unit with high gas test results that is of concern. More tests beyond the standard DGA tests will be conducted and additional analysis and recommendation services from SD Meyers will be enlisted to better guide the utility's next steps. The object is to assess how critical the situation is with each transformer and determine whether immediate action needs to be taken on other units or if there is more time to decide how to proceed. The Electrical Engineering Manager is researching different factors that could be contributing to the problem with these units (load characteristics, manufacture design-specific factors, general specification changes that may be needed, etc).

Approved by Sheila Lunnell  
for purchase 10/21/08