

## **COUNCIL ACTION FORM**

**SUBJECT:**           **INTERRUPTIBLE ELECTRIC OPTION**

**BACKGROUND:**

Electric Services is responsible for providing electricity to the majority of the City's residents and to parts of Iowa State University on a wholesale and retail level. As an electric utility, the Ames Municipal Electric System (AMES) strives to provide reliable and secure service to its customers at the best possible price.

AMES traditionally establishes ongoing operating plans using a "supply-side management" philosophy. Not only does the electric utility need to meet ever-changing energy needs on a minute by minute basis, but it is required by the Midcontinent Independent System Operator to meet the hourly maximum peak demand requirement plus a 7-10% margin of reserve.

As demand has continued to grow through the years, the City's energy and capacity needs were met through multi-year power-supply contracts and through construction of new generation. New generation is expensive to build and affects the rates paid by AMES customers. The City's last base generating unit was installed in 1982 and the last peaking generating unit in 2006.

In 2007 the City Council also embarked on a progressive approach to keep rates stable by delaying the need to expand generation capacity by initiating a demand-side-management (DSM) program. Through incentives and rebates, the AMES began to help customer accelerate the replacement of older, less efficient equipment, appliances, and lights with new ones that use less energy. As a result of these programs, it is estimated that the City's projected peak demand has been reduced by over 21 megawatts, and 33,000,000 kilowatt hours of energy has been saved. More importantly, the success of the DSM program has eliminated the need for the next generating unit originally outlined in the 2007 CIP with its associated large capital expenditure.

While the City's DSM program remains effective in slowing electric demand growth, a new peak of 130.6 megawatts was set in July, 2012, and came close again in August 2013 with a peak load of 130.2 megawatts. The maximum demand in 2014 would again have been close to the 130 megawatt-or-greater level had it not been for a cool summer and process changes by the utility's largest customer. So far in 2018, the City has experienced a peak of 122.1 Mw; the second highest on record in the June time frame. If we again start setting new, increasing peak loads, future CIPs will again include a project to add additional generation capacity to meet expected demand growth.

In order to reduce or control peaks and to delay the need for added capacity, many larger utilities across the country modify their electric rate designs. The City does this today on a very limited basis. AMES electric rates are different between the summer season and the rest

of the year. This is done in part because Ames is a summer peaking utility and energy is more expensive when air conditioning is needed.

Through a new interruptible program, the AMES could work cooperatively with our largest, industrial customers to reduce consumption during the peaking window of 4:00 pm to 8:00 pm on our highest load days. The utility and the community would benefit when large electric users are encouraged to reduce their demand during peak hours of a day on peak days of a year.

**An interruptible program is a pricing strategy whereby AMES would lower the demand cost in the summer for those willing to reduce energy consumption to a predetermined level when called to do so. If a customer does reduce load when called, additional savings to the customer can be realized. Failure to interrupt will cause a demand penalty to be imposed on the customer. Interruptible pricing will allow AMES to better control costs and mitigate any negative system impacts related to times of peak demand.**

**Having done extensive exploration and analysis of potential Interruptible rates with one of the likely participants, staff is now recommending that a pilot program be implemented for the City's Industrial Rate customers using an interruptible rate.** The Industrial Rate customers include Amcor, 3M, Danfoss, MGMC, and the College of Veterinary Medicine. Use of this rate would not be mandated for any customer, but would be optional.

Electric Services staff has worked with Amcor, the City's largest Industrial Rate customer, to develop a TOU rate that Amcor is willing to be subject to through a pilot period. The basic components are shown in the attachment at the end.

The following estimated revenue impacts would occur with implementation of this rate. Assuming there is a 2,000 kW peak reduction as a result of the rate, the utility's corresponding revenue would decrease by \$20,800. This loss of revenue could be offset in a combination of two ways. First, as a form of demand side management, some or all of the lost revenue could be credited toward the existing DSM budget. The current Council approved DSM budget for FY 18/19 is \$1,200,000. Second, the reduction of the City's peak would delay the need for new generation and a large capital expenditure. If the reduction delayed a \$25,000,000 expenditure, that would equate to roughly a \$390,000 annual avoided cost.

The proposed rate addition would not alter existing Municipal Code Chapter 28, Section 28:108, Industrial Electric Rates and Charges, but would add an optional Interruptible incentive under the TOU rate in the Code. It is intended that this rate addition be optional and only be offered to Industrial Rate customers within Electric Services' service territory. Advanced metering and individual billing calculations are required, which currently limit the ability to cost effectively apply this to smaller customers at this time. The Optional interruptible incentive to Industrial Electric customers would be offered for 24 months, so it can be evaluated for system and revenue impacts and for utility and customer efficiency. The rate would expire after the 2021 summer billing season. **The pilot period would thus extend through two summer seasons. Should the optional Interruptible incentive be deemed beneficial after that time, staff would approach Council seeking authority to make this a permanent part of the Municipal Code.**

Attached is the program design which would be finalized with the customer and attached to a Memo of Understanding. In Appendix H to the Ames Municipal Code (the electric utility's tariff), Section 2.4(5) states that "The utility may supply power service pursuant to provisions of a special contract...where the type, quantity or use of service is so unusual that none of the classes of service as aforesaid are applicable, in the judgment of the governing body." Since this is an "unusual" use of service, outside our normal classes of service, the Electric Services may enter into such a contract with Council approval.

**ALTERNATIVES:**

1. Allow the Director of Electric Service to establish an Interruptible Rate program for Industrial customers for a 24-month trial period. Grant authority to the Director to sign a Memo of Understanding with participating Industrial customers.
2. Refer back to staff with direction to develop an alternative rate structure. Depending on the complexity of the desired rate structure, this action would likely delay implementation of an interruptible rate for 2018 and result in not having a rate induced method for assisting in the control of electric demand for this year's summer peak season.
3. Do not approve the addition of a TOU rate into the Municipal Code at this time.

**MANAGER'S RECOMMENDED ACTION:**

The City's electric utility does an excellent job in meeting the electric needs of its customers and tempering rate increases. Through demand side management programs, customers are encouraged to use less electricity by replacing older equipment with more energy efficient equipment.

The next step in energy conservation and peak usage control is specialized rates that more closely align wholesale costs and retail consumption. A pilot study using an Interruption feature will allow staff to determine the benefits and costs for both the individual customer using the rate and for all electric customers served by the City.

Normally staff would ask the City Council to vote on an ordinance change. However, the interruptible rate option is only available to the 5 Industrial customers, with only one, Amcor, who has opted into our Time-of-Use rate. Further, swift action is needed in order for a program to be in place and for the industrial customer who chooses the interruptible rate option to make necessary advance arrangements prior to this summer's peaking season.

Therefore, it is the recommendation of the City Manager that the City Council adopt Alternative No. 1 as stated above.

## **CITY OF AMES ELECTRIC SERVICES INDUSTRIAL INTERRUPTIBLE POWER SERVICE RATE**

### **Availability**

Service under this rate shall be available within the corporate limits of the City of Ames, Iowa for industrial customers with monthly demands of 2,500 Kilovolt-Amps (KVA) or greater. Service under this rate schedule is interruptible and customers must agree to interrupt electric service as provided under these interruptible rate rules established by Electric Services.

Availability is subject to the following General Terms and Conditions Governing Electric Service and the Utility Service Rules and Regulations.

1. A minimum interruptible load of 500 kVA is required to qualify for interruptible service.
2. Electric Services shall verify Customer compliance with this requirement through the use of customer-specific interval demand meters.
3. Any customer eligible for the interruptible rate who wishes to participate shall establish an interrupt amount based on their previous 12 monthly rolling KVA demand.
4. The interrupt amount shall be agreed upon by the customer and City of Ames Electric Services.
5. Customer shall be given a minimum of 4 hours notification on the day of interruption. If, the customer is given less than a 4 hour notice, customer will make best efforts to interrupt.
6. Interruptions are to begin no earlier than 3:00 pm, Monday – Friday.
7. Customer must interrupt at the agreed upon elected amount between the hours of 3:00 pm and 8:00 pm, or shorter direction as determined by the City.
8. Customer shall not be interrupted on more than three consecutive days.
9. Customer credits for participating in the interruptible rate shall be applied to the customer's bill for the months of June, July, August, and September. These correspond to the bills mailed out in July, August, September and October.
10. Customer participation credits are applied irrespective of their receiving a request to interrupt.
11. Any customer on this rate will be given a credit of \$2.60 per elected kVA as a participation incentive. This credit is representative of the difference between the actual KVA demand charge and the elected KVA charge. This credit is applied during summer peak months of June, July, August, and September regardless of actual interrupt requests.
12. In addition to the participation credit outlined above, a customer will be given a compliance credit of \$2.60 per elected KVA for successfully lowering their demand by at least the amount of the elected kVA.
13. In the event a participating customer is unable to interrupt load a non-compliance penalty in the amount of \$12.00 per KVA for each KVA of demand over the established election amount will be charged.
14. Example:
  - Customer agrees to interrupt 2 megawatts (MW) when asked.
    - Monthly credit for participation = \$5,200 (2,000 KVA x \$2.60 = \$5,200).
    - Monthly credit for actual interruption = \$5,200 (2,000 KVA x \$2.60 = \$5,200).
    - Customer interrupts 1 MW. Monthly penalty for non-compliance = \$12,000 (1,000 KVA x \$12.00 = \$12,000).

**Energy Rate Adjustment**

This Electric Rate is subject to the Fuel Adjustment Clause contained in Section 28.102 of the City of Ames Municipal Code.

**State and Local Taxes**

All Industrial customers are subject to appropriate State and Local Taxes.

**Billing Demand**

The billing demand for each month shall be the greatest of the following amounts in kilowatts:

1. Highest average actual demand during any period of 15 consecutive minutes in that month; or,
2. Seventy-Five (75) percent of the highest actual demand occurring in the most current billing months of June, July, August, or September.

**Unauthorized Use Charge**

During any period that Electric Services interrupts electric service, any customer using electricity shall be subject to a non-compliance penalty in the amount of \$12.00 per KVA for each KVA of demand over the established election amount. Such charge shall be in addition to any charges otherwise payable to Electric Services of electric service under this rate schedule. The payment of this unauthorized use charge shall not be considered as a substitute for any other remedy available to Electric Services, including, but not limited to, reduction of service.

**Power Factor Adjustment**

Customer demand charges shall be assessed using a Kilovolt-Amp (KVA) calculation and will include a Power Factor charge representative of the monthly peak measured Power Factor less than 100%. The power factor shall be the kW demand divided by the coincident Power Factor expressed as a percentage, for the peak 15-minute interval during the billing month.

**Monthly Charges:**

<b>Component</b>	<b>Base Rate</b>	<b>Interruptible Option</b>
<b>Service Charge</b>	\$156	\$250
<b>Summer Demand Charge/KVA</b>	\$10.40/kVA	\$7.80/Elected kVA
<b>All Winter Demand Charges/KVA</b>	\$7.80/kVA	\$7.80/kVA
<b>Summer Energy Charge/kWh</b>	\$0.0644/kWh	\$0.0644/kWh
<b>Winter Energy Charge/kWh</b>	\$0.0644/kWh	\$0.0644/kWh
<b>Summer Demand Charge if actually interrupted</b>		\$5.20/Interrupted kVA
<b>ECA</b>	Monthly ECA	Monthly ECA