

## **Recommendation to Ames Mayor and City Council - Getting off the starting line on climate action**

November 22, 2021

From: Bob Haug  
3517 Oakland Street  
515-971-8480

An effective climate action plan will require commitment, resources, and community support, but many actions have very low costs and some more than pay for themselves, such as the one outlined below. While the city contemplates what goal to set and how to achieve it, why not start now?

**Recommended Action:** Reduce the volume of waste the city sends to the power plant, so that it can be burned at optimal levels in the smaller of the two steam units (unit 7). Purchasing more energy from the wholesale market will produce significant net dollar savings and much lower emissions. Net savings are very likely in the range of from \$4.4 million to \$5.9 million per year<sup>i</sup>. Emissions of CO<sub>2</sub> are reduced because wind energy makes up a large part of the generation mix in Iowa's MISO resource zone. For example, if unit 8 had not run in 2019 and Ames had purchased more energy from the grid, there would have been about 30,000 fewer tons of CO<sub>2</sub> emitted, comparing Ames unit 8 emissions with emissions from grid energy for the rest of Iowa.<sup>ii</sup>

### WHY THIS WORKS:

1. Energy purchased from the wholesale market is cheaper, it is produced from units that have lower heat rates than the Ames units, e.g., they require less input energy to produce a unit of electricity, and more grid energy is produced with renewable resources that have low or zero fuel costs.
2. The Ames power plant runs only because it must burn waste. Thermal generators are dispatched to run by MISO on the basis of their heat rate.<sup>iii</sup> Except for unusual circumstances, the Ames power plant would not be economically dispatched. It's "must run" status is granted only because the plant also serves as a waste incinerator.
3. The Council has recognized that operating the current incinerator is not sustainable, even after the conversion from coal to gas. And it is not compatible with a meaningful climate action plan. The weight of CO<sub>2</sub> emitted just from natural gas used to combust RDF, is greater than the weight of the waste that is burned.
4. The current study may find that a new incinerator is the best waste management option, but the time for regulatory approval and construction will likely be measured in years. Furthermore, a new incinerator is not likely to be permitted without aggressive recycling before combustion, so we ought to start recycling now.<sup>iv</sup>
5. Savings from this action would pay for all the programs necessary to optimize RDF volume to unit 7 and would support the utility's critical investment in renewable resources, advanced distribution automation, and advanced metering infrastructure. It is well past time for the electric utility to be more in the energy business and much less in waste management.

### HOW TO DO IT:

6. Remove and recycle at least 15% of the plastic and additional material to “right-size” the volume of RDF to the capacity of boiler unit 7 through these steps:
  - a. Approve installation of the air-knife recovery system, high-speed spreader, and the optical scanner and sorter recommended in the 2018 waste reduction study by SCS engineers.<sup>v</sup> (At the time of the study, the installed cost of this facilities was estimated to be between \$700,000 to \$1.1 million and was expected to pay for itself in two years.)
  - b. Implement a program of voluntary recycling of types 1 & 2 plastic (PET and HDPE), for which IDNR expects good markets to remain available and grow in the future. A voluntary program could be modeled on the city’s successful glass recycling program, with collection bins located throughout the waste-recovery area.<sup>vi</sup>
7. Change the status of unit 8 in MISO from “must-run” to be available for economic dispatch or simply stop operating the unit. (The utility would choose an option that maintains the capacity value of unit 8, i.e., for economic reasons it must be able to operate, even if not dispatched.)

NOTE: The data sources and spreadsheets used to support this recommendation are available upon request. Data is from public sources, such reports made to DOE/EIA and to the council. Analysis could be refined with access to more detailed information from the electric department and resource recovery plant. No refinement will change the fact that the recommended action pays for itself.

End Notes:

<sup>i</sup> Net savings are based on reported average net generation for the years 2015 – 2019 and do not account for offsetting costs and new revenue, for which data is limited. Additional costs include additional tipping fees (no more than \$600,000/year, likely much less) and one-time costs for installing equipment in the resource recovery plant.

There would also be one-time and on-going costs for implementing a voluntary program for recycling types 1 and 2 plastics, though those costs would be at least partially offset by revenue from sale of the recycled plastic.

<sup>ii</sup> The emission rate is from DOE's [Data Explorer](#) (Ames' emission rate was 1,173 lbs. per MWH in 2019). The rate was multiplied by the MWH reported by Ames in EIA 923. Ames reports aggregated production data for units 7 and 8, so this analysis assumes unit 8's emissions are 2/3 of the total (its share of the plant's total capacity).

<sup>iii</sup> The heat rate of the Ames power plant is higher than other thermal units in the resource zone, i.e., it takes more fuel (Btu) than other plants to produce a unit of electricity.

<sup>iv</sup> The following text is from an email from IDNR's Jennifer Wright to the League of Women Voters, during its study of the Ames/Story County waste management system. "Iowa's current solid waste hierarchy does not favor incineration as a form of disposal nor do the guiding principles of SMM without robust diversion programs preceding incineration."

<sup>v</sup> "Waste Diversion Enhancement & Recommendations," SCS Engineers, Clive, IA.

<sup>vi</sup> An alternative to a voluntary program would be to move to mandatory curbside recycling. A voluntary program would likely ensure better separation by type and cleaner material, which would command a higher price. Curbside pickup could eventually operate on top of the voluntary system to produce a second, possibly lower-value product.