South Dakota Public Utilities Commission
Docket GE17-002
MidAmerican Energy Company
Second Data Request

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2-1 **South Dakota Data Request**

For the Smart Programmable Thermostat, Refrigerator, and Freezer savings algorithms provided in response to Staff DR 1-7, please identify what assumptions were used to calculate the average energy savings per unit (that then gets applied to all units).

Response:

All assumptions for savings for these measures are based on Iowa Technical Reference Manual (TRM) information adjusted for South Dakota-specific climate or usage information where that information is known or can be identified.

Assumptions for Smart Thermostat savings are as follows and are calculated based on an electric/gas combination single family home:

- Electric (savings are for cooling load only)
  - 576 cooling load hours for a single family home
  - 36,000 BTU cooling equipment installed with a SEER 13 efficiency level
  - 8.0% cooling reduction assumed
  - 12.12% load factor assumed to calculate peak demand savings
- Gas (savings are for heating load only)
  - 721 therms per year average annual usage
  - 6.8% heating reduction assumed
  - 16.58% load factor assumed to calculate peak demand savings

Savings for refrigerator recycling are based on the deemed approach found in the Iowa TRM, which assumes 1,106 kWh Unit Energy Consumption (amount of energy a typical refrigerator uses in a year) multiplied by 93% to account for units that are not running through the entire year.

Savings for freezer recycling are based on the deemed approach found in the Iowa TRM, which assumes 919 kWh Unit Energy Consumption (amount of energy a typical freezer uses in a year) multiplied by 85% to account for units that are not running through the entire year.