



ENERGY STAR® Connected Thermostat Products

Draft 1 Method for Demonstrating Field Savings Rev. Nov-2015

1) OVERVIEW

This method shall be used to demonstrate field savings for ENERGY STAR Connected Thermostat (CT) Products.

Note: This Draft 1 Method includes procedures for demonstrating field savings consistent with the criteria in the Version 1.0 ENERGY STAR Specification for Connected Thermostat Products. EPA is releasing this draft in conjunction with the Draft 2 spec to enable stakeholders to understand how ENERGY STAR qualification will be demonstrated using field data. EPA encourages stakeholder comments and expects to release further drafts before finalizing.

2) APPLICABILITY

This ENERGY STAR Method is applicable to Connected Thermostat Products as defined in the ENERGY STAR Eligibility Criteria for Connected Thermostat Products.

3) DEFINITIONS

Unless otherwise specified, all terms used in this document are consistent with the definitions contained in the ENERGY STAR Eligibility Criteria for Connected Thermostat Products.

4) TEST CONDUCT

Field savings of CT Products shall be developed by Service Provider Partners and will be assessed for product certification as well as for periodic reporting as detailed in the Partner Agreement.

1. Install and configure the ENERGY STAR CT Field Savings Software into the CT service provider's Python environment using the open-source code and instructions available at:
 - Documentation: <http://thermostat.readthedocs.org/en/latest/>
 - Source code: <https://github.com/impactlab/thermostat>
2. Construct a representative sample in the input file formats specified in the documentation:
 - a. From the set of all instances of a fielded CT Product in the US, generate a randomly selected data set that consists of at least X CT Products.
 - b. Optionally, eliminate instances where:
 - i. The CT Product was installed after the start of the relevant reporting period,
 - ii. The CT Product was uninstalled prior to the end of the relevant reporting period, and/or
 - iii. The CT Product controls HVAC equipment other than:
 - Single stage heat pump with or without aux and/or emergency heat
 - Single stage non heat pump with or without single-stage central air conditioning
 - Single stage central air conditioning without central heating
 - c. From the set of products selected, generate the requisite input files for the ENERGY STAR CT Field Savings software, as detailed in the Field Savings Software documentation.

- 42 3. Process the data set using the ENERGY STAR CT Field Savings software tool.
- 43 4. Check if the tool outputs a mean savings score (% run time reduction) with a standard error of the
- 44 mean $< X$. If not, revert to step 8A2 and increase the number of homes in the sample.
- 45 5. Once the minimum standard error of the mean is achieved, report to EPA the following
- 46 information from the module output:
- 47 • Mean cooling and heating savings scores (% run time reduction) with associated
 - 48 standard error of the mean,
 - 49 • Mean resistance heat utilization in 5°F outdoor temperature bins from 60°F to 0°F
 - 50

51 **Note:** The CT Product Field Savings Metric applies to all connected thermostats. The list of output data

52 to be reported reflects the current draft criteria elements. Additional statistical data may be added,

53 depending on the final requirements in the specification. While the current metric does not apply to dual

54 stage or variable speed equipment, EPA intends to extend it in the future to cover all common types of

55 HVAC equipment.