Memorandum

To: IL TRM Technical Advisory Committee

**FROM:** KEITH CRONIN, PROJECT MANAGER and SAM DENT, TECHNICAL LEAD - VEIC

subject: IL TRM Version 13.0 Draft 1 - Summary

date: 06/21/2024

**Cc:** CELIA JOHNSON, SAG

VEIC has submitted the first full draft of the version 13.0 Illinois TRM to the Technical Advisory Committee and uploaded to SharePoint. This draft includes both proposed redline changes to existing measures and new measures (also in redline) proposed to be included for the first time in this version. Changes have been made to all four volumes:

* IL-TRM\_Effective\_010125\_v13.0\_Vol\_1\_Overview\_06212024\_DRAFT
* IL-TRM\_Effective\_010125\_v13.0\_Vol\_2\_C\_and\_I\_06212024\_DRAFT
* IL-TRM\_Effective\_010125\_v13.0\_Vol\_3\_Res\_06212024\_DRAFT
* IL-TRM\_Effective\_010125\_v13.0\_Vol\_4\_X-Cutting\_Measures\_and\_Attach\_06212024\_DRAFT

VEIC have also provided on SharePoint:

* A draft errata memo documenting both approved and new changes to Version 12.0, effective 1/1/2024.

Presented below are two summary tables. The first provides the measures that have been edited or added, with a brief description of what has changed, whether it is being considered an errata, and a link to the corresponding SharePoint Tracker Item(s). The second table provides a list of those tracker items still pending, with progress made to date and those requests that have not resulted in a change.

| **Measure # and Name** | **Errata?** | **Brief description of what changed** | **Tracker Item(s)** |
| --- | --- | --- | --- |
| **Volume 1 – Overview and User Guide** |
| 3.11 | Discount Rates, Inflation Rates, and O&M Costs | N | Final values are still being discussed and will be presented in Draft 2. | [Discount and Inflation Rate updates](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1132) |
| **Volume 2 – Commercial and Industrial Measures** |
| 4.1.11 | Commercial LED Grow Lights | Y | Error discovered in calculation file of CFs where additional hour beyond peak period was being included. | N/A |
| N | Reliability Review.Updated to leverage new DLC Horticultural specifications, v3.0. | N/A |
| 4.1.13 | Irrigation Pump VFD | N | Reliability Review.Example added. | [Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.1.14 | High Efficiency Grain Dryer | N | Reliability Review.Example added.  | [Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.1.15 | Grain Dryer Tune-Up | N | Reliability Review.No updates recommended. | N/A |
| 4.1.16 | Greenhouse Boiler Tune-Up | N | Reliability Review.Typo fixes. | N/A |
| 4.1.17 | Greenhouse Thermal Curtains | N | Reliability Review.Updates to measure cost | N/A |
| 4.1.18 | Infrared Film for Greenhouse | N | Reliability Review.No updates recommended. | N/A |
| 4.1.19 | ENERGY STAR Dairy Water Heater | N | Reliability Review.Updates to code language.Updated reference to effective residential water heater ENERGY STAR spec. | N/A |
| 4.1.20 | Commercial Electric Lawn Mower | N | Example added.  | [Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.2.1 | Combination Oven | N | Update to coincidence factor.Fix to example calculation. | [Identify availability of data to update Food Service assumptions](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1090) |
| 4.2.3 | Steam Cooker | Y | Idle calculation fixed to divide preheat time by 60 minutes per hour. | [Correction to Commercial Steam Cooker calculations](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1092) |
| N | Addition of unknown option to CF table | [Correct Commercial Steam Cooker Demand /CF](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1087) |
| 4.2.5 | ENERGY STAR Convection Oven | N | Update to coincidence factor. | [Identify availability of data to update Food Service assumptions](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1090) |
| 4.2.6 | ENERGY STAR Dishwasher | N | Update measure life assumptions. | [Identify availability of data to update Food Service assumptions](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1090) |
| 4.2.7 | ENERGY STAR Fryer | N | Update to coincidence factor. | [Identify availability of data to update Food Service assumptions](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1090) |
| 4.2.8 | ENERGY STAR Griddle | N | Update to coincidence factor. | [Identify availability of data to update Food Service assumptions](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1090) |
| 4.2.9 | ENERGY STAR Hot Food Holding Cabinet | N | Update to coincidence factor. | [Identify availability of data to update Food Service assumptions](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1090) |
| 4.2.12 | Infrared Charbroiler | N | Example added.  | [Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.2.18 | Rack Oven - Double Oven | Y | Fixed error in deemed savings calculation. Added Days variable to Algorithm section. | N/A |
| 4.2.22 | Automatic Conveyor Broiler | Y | Fixed error in preheat energy calculation. | N/A |
| N | Example added.  | [Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.3.1 | Water Heater | Y | Updates to code language.Fixed error in large water heater fuel switch calculation.Added fuel switch example. | N/A[Correction to savings algorithm for fuel switching on large commercial water heaters](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1068)[Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.3.3 | Low Flow Showerheads | N | Reliability Review.No updates recommended. | N/A |
| 4.3.4 | Commercial Pool Covers | N | Reliability Review.Updates to code language. | N/A |
| 4.3.7 | Multifamily Central Domestic Hot Water Plants | N | Reliability Review.Updates to code language. | N/A |
| 4.3.8 | Controls for Central Domestic Hot Water | N | Clarification to boiler capacity assumption | N/A |
| 4.3.10 | DHW Boiler and Water Heater Tune-up | N | Addition of all water heater types in addition to DHW boiler.Addition of methodology to calculate consumption by number of people for multifamily | [DHW Boiler Tune-up - Additional HW Gal/Year Option](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1095) |
| 4.4.1 | Air Conditioner Tune-Up | N | Reliability Review.No updates recommended. | N/A |
| 4.4.1 | Space Heating Boiler Tune-Up | N | Reliability Review.No updates recommended. | N/A |
| 4.4.6 | Electric Chiller | N | Update to measure costs.Example added.  | [Electric Chillers (IL TRM v12, 4.4.6)](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1104)[Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.4.7 | ENERGY STAR and CEE Tier 2 Room AC | Y | Update to ENERGY STAR and CEE Tier 2 specifications that came in to effect in October 2023.Measure cost update. | [Code and Standard Updates](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1130) |
| 4.4.9 | Air and Water Source Heat Pump Systems (Centrally Ducted and Ductless) | N | Combining ducted and ductless (4.4.59) measures. Updates to code language.Addition of deemed earl replacement and full v partial displacement assumptions.Addition of accounting for distribution savings.Addition of ability to analyze partial displacement scenarios – addition of HeatLoadFactor and PD\_Adj. | [Apply Res HP Methodology to Commercial Measure](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1069) |
| 4.4.10 | High Efficiency Boiler | Y | Update to baseline after the 2023 Federal Standard update was vacated. | [Federal Standard for Commercial Boilers](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1140) |
| 4.4.11 | High Efficiency Furnace | N | Update to residential sized measure cost. | N/A |
| 4.4.12 | Infrared Heaters | N | Reliability Review.Minor clarifications added. | N/A |
| 4.4.14 | Pipe Insulation | N | Reliability Review.Minor clarifications added.Example calculation added | N/A[Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.4.15 | Single-Package and Split System Unitary Air Conditioners | N | Updates to code language. | N/A |
| 4.4.16 | Steam Trap Replacement or Repair | N | Reliability Review.Minor clarifications added | N/A |
| 4.4.17 | Variable Speed Drives for HVAC Pumps and Cooling Tower Fans | N | Reliability Review.Updates to code language. Updated reference sources, provided more incremental cost options for differing motor sizes.Added a motor efficiency table instead of a single static default motor efficiency. | N/A |
| 4.4.20 | High Turndown Burner for Space Heating Boilers | N | Reliability Review.Updated heating run hours and hours when boiler is cycling with new TMYx data. Updated reference sources. | N/A |
| 4.4.26 | Variable Speed Drives for HVAC Supply and Return Fans | N | Updates to code language.  | N/A |
| 4.4.27 | Energy Recovery Ventilator | N | Updates to code language.  | N/A |
| 4.4.28 | Stack Economizer for Boilers Serving HVAC Loads | N | Reliability Review.Minor clarifications added | N/A |
| 4.4.33 | Commercial & Industrial Air Curtain | N | Reliability Review.Edited to include Commercial as well as Industrial air curtains.Additional size options added.Deemed HVAC efficiencies provided. | [Commercial Air Curtain](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=869) |
| 4.4.34 | Destratification Fan | N | Reliability Review.Updated efficiency table with code updates | N/A |
| 4.4.38 | Covers and Gap Sealers for Room Air Conditioners | N | Addition of tables if floor of AC is unknown. | [Room AC Covers - Algorithm Modification for Number of Floors](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1094) |
| 4.4.48 | Small Commercial Thermostats | N | Example added.  | [Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.4.44 | Commercial Ground Source and Ground Water Source Heat Pump | N | Reliability Review.Updates to code language.  | N/A |
| 4.4.51 | Advanced Rooftop Controls with High Rotor Pole Switch Reluctance Motors | Y | Addition of load factor and motor efficiency into the energy savings algorithm since study used is calculated on brake horsepower and not nominal horsepower.Updates to code language. | [Advanced Rooftop Controls with High Rotor Pole Switch Reluctance Motors](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1133) |
| 4.4.53 | HVAC Supply, Return and Exhaust Fans – Fan Energy Index | N | Reliability Review.No updates recommended. | N/A |
| 4.4.54 | Process Heating Boiler | Y | Update to baseline after the 2023 Federal Standard update was vacated. | [Federal Standard for Commercial Boilers](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1140) |
| 4.4.55 | Commercial Gas Heat Pump | N | Reliability Review.Updates to code language. | N/A |
| 4.4.59  | Ductless Heat Pumps | N | Measure removed and combined with 4.4.9 Air and Water Source Heat Pump System (Centrally Ducted and Ductless) | N/A |
| 4.4.62 | Cooling Tower Water Side Economizer | N | Reliability Review.Minor clarifications added | N/A |
| 4.4.65 | Computer Room Air Conditioner (CRAC) | N | New measure | N/A |
| 4.4.66 | Steam Leak Repair | N | New Measure | [Add Measure for Steam Leak Fix-it-Now](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1098) |
| 4.5.4 | LED Bulbs and Fixtures | N | Addition of mogul LED ISR assumption. | [BUS LED - Update Mogul LED ISRs](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1137) |
| 4.5.7 | Lighting Power Density | N | Updates to code language.  | N/A |
| 4.5.10 | Lighting Controls | N | Example added.  | [Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.5.13 | Occupancy Controlled Bi-Level Lighting Fixtures | Y | Reliability Review.Clarification that measure is limited to 24/7 operation and therefore CFbaseline fixed to 1.0.  | N/A |
| 4.5.16 | LED Streetlighting | N | Reliability Review.No updates recommended. | N/A |
| 4.6.2 | Beverage and Snack Machine Controls | N | Reliability Review.No updates recommended. | N/A |
| 4.6.4 | Electronically Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Freezers | N | Reliability Review.Measure cost update | N/A |
| 4.6.5 | ENERGY STAR Refrigerated Beverage Vending Machine | N | Reliability Review.Minor clarifications added | N/A |
| 4.6.6 | Evaporator Fan Control for Electrically Commutated Motors | N | Reliability Review.No updates recommended. | N/A |
| 4.6.8 | Refrigeration Economizers | Y | Fixed analysis error where condenser fan savings had not been appropriately adjusted to reflect Illinois climate. | [4.6.8 - Refrigeration Economizers](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1061) |
| 4.6.12 | Variable Speed Drive for Condenser Fans | N | Reliability Review.Minor clarifications added | N/A |
| 4.6.15 | Zero Energy Doors for Refrigerated Cases | N | New measure | [New Measure- Zero Energy Refrigerated Case Doors](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1066) |
| 4.6.16 | Door Gaskets for Walk-in and Reach-in Coolers and Freezers | N | New measure | [Door Gaskets for Walk-in and Reach-in Coolers and Freezers](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1093) |
| 4.7.3 | Compressed Air No-Loss Condensate Drains | N | Reliability Review.Measure life update.Coincident Factor update. | N/A |
| 4.7.4 | Efficient Compressed Air Nozzles | N | Example added.  | [Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.7.12 | AODD Pump Controls | N | Reliability Review.Provided default assumptions for the system power reduction per air demand if compressor control type unknown. | N/A |
| 4.7.13 | Compressed Air Leak Repair | N | Example added.  | [Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.8.2 | Roof Insulation for C&I Facilities | N | Updates to code language.  | N/A |
| 4.8.5 | High Speed Clothes Washer | N | Additional options for high speed clothes washer upgrades. | [High Speed Clothes Washers - Additional Options](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1096) |
| 4.8.9 | High Frequency Battery Chargers | Y | Fixed error in kW algorithm. | N/A |
| N | Update to measure cost.Adjustment to savings factors resulting in reduction in savings. | N/A |
| 4.8.13 | Variable Speed Drives for Process Fans | N | Reliability Review.Updates to code language. | N/A |
| 4.8.15 | Smart Irrigation Controls | N | Example added.  | [Add Calculation examples to more measures](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1088) |
| 4.8.18 | ENERGY STAR Low Wattage Uninterruptible Power Supply | N | Restriction of measure to low wattage applications (less than or equal to 1,875 watts).Savings updated utilizing the latest ENERGY STAR qualified product list.  | [Data Center Efficient UPS/(Uninterruptible Power Supply)](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1102) |
| 4.8.19 | Energy Efficient Rectifier and High Wattage UPS | N | Addition of high wattage UPS applications (greater than 1,875 watts). | [Baseline UPS efficiency tables are not valid at larger sizes](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1073) |
| 4.8.22 | Smart Sockets | N | Reliability Review.No updates recommended. | N/A |
| 4.8.23 | Lithium Ion Forklift Batteries | N | Reliability Review.No updates recommended. | N/A |
| 4.8.24 | Building Operator Certification | N | Reliability Review.No updates recommended. | N/A |
| 4.8.25 | Warm-Mix Asphalt Chemical Additives | Y | Reliability Review.Fixed error in SF table for Additives. | N/A |
| 4.8.31 | Elevator Modernization | N | New measure | [Elevator Modernization](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1101) |
| 4.8.32 | Commercial Secondary Windows | N | New measure | [(4.8.New) Commercial Secondary Windows](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1077) |
| **Volume 3 – Residential Measures** |
| 5.1.1 | ENERGY STAR Air Purifier/Cleaner | N | Reliability Review.Addition of ENERGY STAR Most Efficient.Update to Federal Standard.Default savings update. | [Update Air Purifier for ENERGY STAR market conditions and DOE Conservation Standard](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1127) |
| 5.1.2 | ENERGY STAR Clothes Washer | Y | Fixed transcription error in electric v fuel DHW split for Peoples Gas unknown, and resultant all DU value. | N/A |
| N | Reliability Review.Measure cost updateUpdate to IQAdj.Update to number of cycles assumption.Updates to %Electric\_DHW and %Fossil\_DHW assumption.Defaults updated. | [Residential TRM Incremental Cost Data Assumption Review and update - Residential HVAC (Gas and Electric) End Uses Space heating, Water Heating and cooking](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1115)N/A[Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.1.3 | ENERGY STAR Dehumidifier | N | Addition of Whole Home Dehumidfiers.Measure cost update. | [Update Dehumidifier ENERGY STAR market conditions and consider adding whole-home](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1127) |
| 5.1.4 | ENERGY STAR Dishwasher | Y | Fixed transcription error in electric v fuel DHW split for Peoples Gas unknown, and resultant all DU value. | N/A |
| N | Updates to %Electric\_DHW and %Fossil\_DHW assumption. | [Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.1.6 | ENERGY STAR, CEE Tier 2 or CEE Tier 3 Refrigerator | N | Measure cost update. | [Residential TRM Incremental Cost Data Assumption Review and update - Residential HVAC (Gas and Electric) End Uses Space heating, Water Heating and cooking](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1115) |
| 5.1.7 | ENERGY STAR and CEE Tier 2 Room Air Conditioner | Y | Update to ENERGY STAR and CEE Tier 2 specifications that came in to effect in October 2023. | [Code and Standard Updates](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1130) |
| N | Reliability Review.Combining IQ and non-IQ version of measure. | [Possibly merge 5.1.7 and 5.1.13 for Room AC](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1100) |
| 5.1.10 | ENERGY STAR Clothes Dryer | N | Update to number of cycles assumption. | N/A |
| 5.1.12 | Ozone Laundry | Y | Fixed transcription error in electric v fuel DHW split for Peoples Gas unknown, and resultant all DU value. | N/A |
| N | Updates to %Electric\_DHW and %Fossil\_DHW assumption. | [Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.1.13 | Income Qualified: ENERGY STAR and CEE Tier 2 Room Air Conditioner | Y | Update to ENERGY STAR and CEE Tier 2 specifications that came in to effect in October 2023. | N/A |
| N | Measure removed and combined with 5.1.7 ENERGY STAR and CEE Tier 2 Room Air Conditioner | [Possibly merge 5.1.7 and 5.1.13 for Room AC](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1100) |
| 5.1.14 | Residential Induction Cooking Appliances | N | Updates to %ElectricHeat and %FossilHeat assumption. | [Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.1.15 | Residential Bolt-On Smart Dryer Sensor | N | Reliability Review.Minor clarifications added | N/A |
| 5.1.17 | ENERGY STAR All-in-One Clothes Washer-Dryer | N | New measure  | [All-in-one Washer/Electric Dryer and All-in-one Washer/Heat Pump Dryer](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1110) |
| 5.2.1 | Advanced Power Strip – Tier 1 | N | Clarification on direct install installations. | [Define DI installation guidelines](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1089) |
| 5.2.3 | ENERGY STAR Televisions | N | Reliability Review.Minor clarifications added | N/A |
| 5.3.1 | Centrally Ducted Air Source Heat Pump (Central, Ductless and Portable) | N | Addition of Portable Heat Pumps.Addition of full load hour assumption for ductless minisplit HPs providing supplemental cooling or portable heat pumps.Clarification that unknown efficiency ratings should not be derated by age.Clarification that partial displacement with simultaneous operation should use HeatLoadFactor and PDAdj of 1. | [Portable Heat Pumps](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1081) [Clarify treatment of zone-specific Residential Heat Pumps](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1086)[Furnace/Boiler - AFUE Exist Default and Derating](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1139)[Update Heat Pump measure for simultaneous operation](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1117) |
| 5.3.2 | Boiler Pipe Insulation  | N | Reliability Review.Measure life and measure cost update. | N/A |
| 5.3.3 | Central Air Conditioning | N | Addition of assumptions for mobile homes.Clarification that unknown efficiency ratings should not be derated by age. | [CAC for Mobile Homes](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1083)[Furnace/Boiler - AFUE Exist Default and Derating](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1139) |
| 5.3.4 | Duct Insulation and Sealing | N | Addition of methodology for duct insulation savings.Clarification of multifamily application.Updates to %ElectricHeat and %FossilHeat assumption. | [Add Measure for Residential Duct Insulation](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1097)[Multifmaily Common Use Spaces](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1125)[Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.3.6 | Gas High Efficiency Boiler | N | Clarification that unknown efficiency ratings should not be derated by age.Measure cost update. | [Furnace/Boiler - AFUE Exist Default and Derating](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1139)[Residential TRM Incremental Cost Data Assumption Review and update - Residential HVAC (Gas and Electric) End Uses Space heating, Water Heating and cooking](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1115) |
| 5.3.7 | Gas High Efficiency Furnace | N | Clarification that unknown efficiency ratings should not be derated by age.Measure cost update. | [Furnace/Boiler - AFUE Exist Default and Derating](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1139)[Residential TRM Incremental Cost Data Assumption Review and update - Residential HVAC (Gas and Electric) End Uses Space heating, Water Heating and cooking](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1115) |
| 5.3.8 | Ground Source Heat Pump | N | Clarification of multifamily application.Clarification that unknown efficiency ratings should not be derated by age. | [Multifmaily Common Use Spaces](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1125)[Furnace/Boiler - AFUE Exist Default and Derating](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1139) |
| 5.3.9 | High Efficiency Bathroom Exhaust or Radon Mitigation Fan | N | Addition of Radon mitigation fan. | [Radon Mitigation - Energy Star fans](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1080) |
| 5.3.10 | HVAC Tune Up (Central Air Conditioning or Air Source Heat Pump) | N | Clarification of multifamily application.Note measure development is ongoing to provide additional savings options including refrigerant management. | [Multifmaily Common Use Spaces](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1125) |
| 5.3.11 | Programmable Thermostats | N | Reliability Review.Minor clarifications addedClarification of multifamily application. | [Multifmaily Common Use Spaces](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1125) |
| 5.3.13 | Residential Furnace Tune-Up | Y | Typo fix in algorithm – 100,000 Btu per therm. | [Res Furnace Tune-up Typo](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1076) |
| N | Reliability Review.No updates recommended. | N/A |
| 5.3.16 | Advanced Thermostats | N | Clarification of multifamily application.ISR for self install added. | [Multifmaily Common Use Spaces](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1125)[Update to ISR For Self-install Smart Thermostats with no verification](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1085) |
| 5.3.20 | Residential Energy Recovery Ventilator (ERV) | N | Reliability Review. Update to loadshape.Update to HDD and CDD based on updated climate data.Updates to %ElectricHeat and %GasHeat assumption. | N/A[Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.4.1 | Domestic Hot Water Pipe Insulation | Y | Fixed transcription error in electric v fuel DHW split for Peoples Gas unknown, and resultant all DU value. | N/A |
| N | Reliability Review. Update to measure life.Updates to %Electric\_DHW and %Fossil\_DHW assumption. | N/A[Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.4.2 | Gas Water Heater | N | Reliability Review. Update to measure life and measure cost. | N/A |
| 5.4.3 | Heat Pump Water Heaters | N | Adjustment to the % heat removed from surrounding air that results in increased heating loan.Updates to %ElectricHeat and %FossilHeat assumption. | [HPWH - v.13 - Heating System Interactive Effect](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1142)[Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.4.4 | Low Flow Faucet Aerators | Y | Fixed transcription error in electric v fuel DHW split for Peoples Gas unknown, and resultant all DU value. | N/A |
| N | Reliability Review. Update to Direct Install ISR.Updates to %Electric\_DHW and %FossilDHW assumption. | [Updates to MF Direct Install Values](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1138)[Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.4.5 | Low Flow Showerheads | Y | Fixed transcription error in electric v fuel DHW split for Peoples Gas unknown, and resultant all DU value. | N/A |
| N | Reliability Review. Update to Direct Install ISR.Updates to %Electric\_DHW and %FossilDHW assumption. | [Updates to MF Direct Install Values](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1138)[Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.4.8 | Thermostatic Restrictor Shower Valve | Y | Fixed transcription error in electric v fuel DHW split for Peoples Gas unknown, and resultant all DU value. | N/A |
| N | Reliability Review. Updated measure cost.Updates to %Electric\_DHW and %FossilDHW assumption. | N/A[Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.4.9 | Shower Timer | Y | Fixed transcription error in electric v fuel DHW split for Peoples Gas unknown, and resultant all DU value. | N/A |
| N | Updates to %Electric\_DHW and %FossilDHW assumption. | [Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.4.12 | Recirculating Pump Controls | N | Reliability Review. Updated measure cost.Assumptions updated to reflect residential applications.Unknown assumptions added. | N/A |
| 5.4.13 | Auto-Diverting Tub Spout System | N | New measure | [Add Measure for Auto Diverting Tub Spout System](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1099) |
| 5.5.10 | Holiday String Lighting  | N | Reliability Review.No updates recommended. | N/A |
| 5.5.11 | LED Nightlights | N | Reliability Review.Replacement of 3 year ISR to single lifetime ISR assumption. | N/A |
| 5.6.1 | Air Sealing | N | Clarification for prescriptive measure installation locations.Clarification of multifamily application.Updates to %ElectricHeat and %FossilHeat assumption. | [Define DI installation guidelines](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1089)[Multifmaily Common Use Spaces](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1125)[Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.6.2 5.6.35.6.45.6.55.6.6 | Basement Sidewall InsulationFloor Insulation Above CrawlspaceWall InsulationCeiling/Attic InsulationRim/Band Joist Insulation | N | Reliability review.Clarification of multifamily application.Updates to %ElectricHeat and %FossilHeat assumption. | N/A[Multifmaily Common Use Spaces](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1125)[Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.6.7 | Low-E Storm Window | N | Clarification of multifamily application. | [Multifmaily Common Use Spaces](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1125) |
| 5.6.8 | High Performance Windows | Y | Fixed transcription error in savings tables for single pane windows. | N/A |
| N | Removal of Retrofit as applicable program type.Clarification of baseline for Time of Sale applications. | [5.6.8 High Performance Windows Update](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1116) |
| 5.6.9 | Insulated Cellular Shades | N | Clarification of multifamily application. | [Multifmaily Common Use Spaces](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1125) |
| 5.6.11 | Insulated Concrete Forms | N | Updates to %ElectricHeat and %FossilHeat assumption. | [Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.7.1 | High Efficiency Pool Pumps | N | Reliability review.Assumptions updated based on updated QPL. | N/A |
| 5.7.2 | Low Flow Toilets | N | Reliability Review.No updates recommended. | N/A |
| 5.7.3 | Level 2 Electric Vehicle Charger | N | Reliability Review.No updates recommended. | N/A |
| 5.7.5 | Tree Planting | N | Clarification of multifamily application.Updates to %ElectricHeat and %FossilHeat assumption. | [Multifmaily Common Use Spaces](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1125)[Update gas & electric space heat and DHW assumptions using implementation contractor data.](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1063) |
| 5.7.6 | Light Duty Electric Vehicle | N | New measure | [Electric Vehicles/EV Efficiency](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1074) |
| **Volume 4 – Cross-Cutting Measures and Attachments** |
| 6.1.1 | Adjustments to Behavior Savings to Account for Persistence |  | Addition of Retention Rates for when first year savings are negative. | [Clarification to Retention Rate and a Wave with Negative Savings](https://portal.veic.org/sites/illinoistrm/Lists/RequestTracker/DispForm.aspx?ID=1064) |

The following table provides a list of those tracker items still pending with progress made to date and those requests that have not resulted in a change.

| **Tracker Items:** | **Comments** |
| --- | --- |
| Clarify efficiency calculation for commercial boilers and furnaces | Question about why the formula in this measure includes efficiency terms as: ((EFF\_new - EFF\_base) / EFF\_base), while other measure use (1/EFF\_base - 1/EFF\_new). Difference is because CACs and HPs tend to rated in output capacity, while boilers/furnaces tend to be rated in input capacity. Discussed and resolved on TAC 05/13. |
| ERV Update for 2021 IECC Code | Requests for adding savings above new code minimum. VEIC are following up with Slipstream to see if this work can be performed.  |
| Combined Heat and Power | TAC decided that we should wait a further year before restarting the discussions on this measure. No updates this year. |
| Ductless Heat Pump Demand Savings | Request to add demand savings algorithm to the commercial ductless heat pump measure. This measure has now been combined with the 4.4.9 Air and Water Source Heat Pump measure. |
| Add Measure for Steam Leak Fix-it-Now | Measure is still in development, but may not go forward. |
| ENERGY STAR Clothes Dryer | Item indicating that the ENERGY STAR specification is being updated (to v2). The specification update is still pending any will likely be multiple years before it is effective.  |
| Update HVAC Tune-up Measure | A small cross utility/evaluator group met to discuss potential updates to future tune-up programs. Opinion Dynamics are preparing a workpaper to provide savings for different actions including significantly higher savings for refrigerant management activities. Plan to have this ready for draft 2. |
| HVAC Tune-Up Measure Adjust  |
| Update gas heating measures to apply to hybrid gas + electric heat pump configurations | Duplicate of another request. |
| EUL assumptions for IQ populations | Ongoing discussion in IQ working group on potential changes to IQ measure lives. |
| Use Standard Algebraic Expressions | On hold until a decision for any potential future change to the TRM format. |
| Label Equations and Tables | On hold until a decision for any potential future change to the TRM format. |
| Review climate data and assumptions | Updates to commercial modeling outputs using new TMYx data still pending:* HVAC: Heating EFLH, Cooling EFLH – by zone, building type and for Existing v New Construction
* HVAC Pumps: Heating Run Hours, Cooling Run Hours
* HVAC Fans: Total Heating/Cooling/Ventilation Run Hours
* VSD Energy Savings Factor (ESF): kW/HP
* Lighting: EFLH, WHFe, WHFd, CFs, IFTherms – by zone and building type
 |
| Reliability Review v13 | VEIC performed a reliability review on 76 measures. |
| IQ Systematic Review | No further updates forthcoming. |
| IQ Household size | Awaiting results of the baseline study for potential update to this (and other) residential assumptions. |
| Residential Electric Water Heater | Items not being pursued as per requestor. Some may be reviewed again in v14. |
| Commercial Chillers |
| Commercial Heat Pumps |
| Integrated Variable Frequency Drives |
| Residential Heat Pump |
| Update Res HP Measure Factors |
| Update unknown assumptions for space heat & water heating |
| Update Showerhead GPM Low Table |
| 5.7.4 Heat Pump Pool Heater Update |
| IQ Behavior program - Enhanced Energy Education |
| Heat Pump Market Adder |
| Commercial Water Heater Timer |
| Thermal Energy Storage System |
| Efficient Rooftop Unit |
| Laundry Center |
| High Lumen Screw Based Garage Lights |
| Cordless pruners |
| Pruning chainsaws |
| [PROVISIONAL On Demand Package Sealer](https://portal.veic.org/projects/illinoistrm/_layouts/15/listform.aspx?PageType=4&ListId=%7B79849E28%2D9AFD%2D4B3C%2D853F%2DE5AB4C6EFFDC%7D&ID=815&ContentTypeID=0x01006E8072940DC21C438869CEF567E36425) | No significant uptake of measure or evaluation effort. No updates at this time. |
| [PROVISIONAL Energy efficient hydraulic oils](https://portal.veic.org/projects/illinoistrm/_layouts/15/listform.aspx?PageType=4&ListId=%7B79849E28%2D9AFD%2D4B3C%2D853F%2DE5AB4C6EFFDC%7D&ID=740&ContentTypeID=0x01006E8072940DC21C438869CEF567E36425) | No significant uptake of measure or evaluation effort. No updates at this time. |
| [PROVISIONAL Energy Efficient Gear Oils](https://portal.veic.org/projects/illinoistrm/_layouts/15/listform.aspx?PageType=4&ListId=%7B79849E28%2D9AFD%2D4B3C%2D853F%2DE5AB4C6EFFDC%7D&ID=761&ContentTypeID=0x01006E8072940DC21C438869CEF567E36425) |