
MEMORANDUM

TO: IL TRM TECHNICAL ADVISORY COMMITTEE

FROM: KALEE WHITEHOUSE, PROJECT MANAGER and SAM DENT, TECHNICAL LEAD - VEIC

SUBJECT: IL TRM VERSION 11.0 FINAL - SUMMARY

DATE: 09/23/2022

Cc: CELIA JOHNSON, SAG

VEIC has submitted the Final version 11.0 Illinois TRM to the Technical Advisory Committee and uploaded to SharePoint. This 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_010123_v11.0_Vol_1_Overview_09232022_FINAL
- IL-TRM_Effective_010123_v11.0_Vol_2_C_and_I_09232022_FINAL
- IL-TRM_Effective_010123_v11.0_Vol_3_Res_09232022_FINAL
- IL-TRM_Effective_010123_v11.0_Vol_4_X-Cutting_Measures_and_Attach_09232022_FINAL

VEIC have also provided on SharePoint:

- An Excel file titled 'IL Comment Matrix_09232022' containing all comments received from Deliverable 1, 2 and 3, together with VEIC response and outcome.

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). Highlighted in red are changes made since the third deliverable. The second table provides a list of those tracker items 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 | | | | |
| 1.3.1 | Climate and Equitable Job Act | N | Removal of section that was added temporarily for v10 due to timing of CEJA passing. | N/A |
| 3.2 | General Savings Assumptions | N | Addition of language relating to fossil fuel savings being presented in therms. | N/A |
| 3.3.1 | Early Replacement Baseline Assumptions: LED Lamps | N | Removal of section relating to previous treatment of LED Lamps including mid-life adjustments. | N/A |
| 3.4 | Carryover Savings / Deferred Installs | N | New section with additional detail on carryover/deferred installs – now only applicable to T-LEDs. | Clarify Carryover Savings Assumptions |
| 3.7 | Electrical Loadshapes (kWh) | N | New loadshape added for “Residential Induction Cooktop” | Induction Cooking |
| 3.12 | Interactive Effects | N | Expect to add language to this section in relation to the interaction of electrification measures and other load-reducing measures occurring at the same time. This is being discussed in the Policy Manual group. | N/A |
| 3.13 | Electrification and Fossil Fuel Baselines (Public Act 102-0662) | Y | New section relating to electrification measures, explaining methodology and baseline assumptions if not already specified in measure characterization. Additional language on splitting fuel switch measure savings in to fuel switch and non-fuel switch components where applicable. Update to clothes dryer calculation to split savings accordingly. | Global Language for Including Fuel Switching Baselines for Measures with Electric Savings |
| 3.13.2 | Fuel Units and Conversion Factors | Y | New section providing units and conversion factors between fuels. Diesel added to table (used in 4.8.23 Lithium Ion Forklift Batteries measure) | N/A |
| 3.14 | Secondary kWh Savings from Fossil Fuel Savings Measures | Y | New section stating that secondary electric savings due to the reduction in heating consumption should be claimed for any heating fuel regardless of what is specified in the measure. | N/A |
| Volume 2 – Commercial and Industrial Measures | | | | |
| 4.1.5 | Fan Thermostat Controller | N | Replacing ΔkWh/HP with ΔkWh. | Ag Fan Thermostat Controller |

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|--------------------|--------------------------------|---------|---|--|
| 4.1.11 | Commercial LED Grow Light | Y | Clarification that WHFe would be 1 if no cooling. | N/A |
| | | N | Adjustments to baseline PPE assumption and addition of new crop type categories. Update algorithm approach. Removal of heating impacts from waste heat. Example calculations and units were added to the characterization. | Commercial LED Grow Lights |
| 4.1.17 | Greenhouse Thermal Curtains | N | IECC 2021 details thermal envelope requirements for new construction greenhouses. The impacts of these code specifications are still being evaluated and the characterization will require further update. | IECC 2021 adoption? |
| 4.1.18 | Infrared Film for Greenhouse | N | | |
| 4.1.19 | ENERGY STAR Dairy Water Heater | N | Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. | IECC 2021 adoption? |
| 4.2.1 | Combination Oven | N | ENERGY STAR v3.0 update to rating values and addition of 3-4 pan capacity electric oven category and new pre-heat assumptions. Fuel Switch/Electrification algorithms added. Correction to cost effectiveness section to divide by 1000 to get kWh. Slight language update to cost effectiveness screening section. | Combination Ovens |
| 4.2.3 | Steam Cooker | N | Fuel Switch/Electrification algorithms added. Slight language update to cost effectiveness screening section. | Commercial Steam Cooker |
| 4.2.5 | ENERGY STAR Convection Oven | N | Combining this measure with '4.2.19 ENERGY STAR Electric Convection Oven.' Fuel Switch/Electrification algorithms added. Energy savings assumptions updated to be based on data package provided alongside ENERGY STAR Commercial Ovens Specifications Version 3.0. Update to measure cost based on ENERGY STAR Commercial Kitchen Calculator, updated March 2021. | Electric Convection Ovens |

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|--------------------|---------------------------------------|---------|---|---|
| | | | Slight language update to cost effectiveness screening section. | |
| 4.2.7 | ENERGY STAR Fryer | N | Fuel Switch/Electrification algorithms added. Energy savings assumptions updated to be consistent with ENERGY STAR Commercial Kitchen Calculator updated March 2021. Slight language update to cost effectiveness screening section. | Fryer |
| 4.2.8 | ENERGY STAR Griddle | N | Fuel Switch/Electrification algorithms added. Energy savings assumptions updated to be consistent with ENERGY STAR Commercial Kitchen Calculator updated March 2021. Slight language update to cost effectiveness screening section. | Griddles |
| 4.2.9 | ENERGY STAR Hot Food Holding Cabinets | N | Reliability review. Energy savings assumptions updated to be consistent with ENERGY STAR Commercial Kitchen Calculator updated March 2021. Bins based on volume versus full, and fraction sizes. Updated Costs. | N/A |
| 4.2.10 | Ice Maker | N | Reliability review. No updates recommended. | N/A |
| 4.2.16 | Kitchen Demand Ventilation Controls | N | Update of reference to IECC 2021. | IECC 2021 adoption? |
| 4.2.19 | ENERGY STAR Electric Convection Oven | N | Measure removed – and consolidated with ‘4.2.5 ENERGY STAR Convection Oven.’ | Electric Convection Ovens |
| 4.2.22 | Automatic Conveyor Broiler | N | New measure | Automatic Conveyor Broiler |
| 4.3.1 | Water Heater | N | Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. Update to tankless heater incremental cost assumptions. Fuel Switch/Electrification algorithms added. | IECC 2021 adoption? Instantaneous Water Heater - Revise incremental cost Water Heater |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|---|---------|---|---|
| | | | Added unknown consumption/capacity. Slight language update to cost effectiveness screening section. | Update "Unknown" building type Consumption Capacity for Water Heaters |
| 4.3.2 | Low Flow Faucet Aerator | N | Update to %Electric and %Fossil hot water assumptions based on 2015 Potential Study to replace existing assumption based on residential data. | N/A |
| 4.3.3 | Low Flow Showerheads | N | Update to %Electric and %Fossil hot water assumptions based on 2015 Potential Study to replace existing assumption based on residential data. | N/A |
| 4.3.4 | Commercial Pool Covers | N | Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. | IECC 2021 adoption? |
| 4.3.6 | Ozone Laundry | N | Reliability review. No updates recommended. | N/A |
| 4.3.7 | Multifamily Central Domestic Hot Water Plants | N | Reliability review. Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. | IECC 2021 adoption? |
| 4.3.8 | Controls for Central Domestic Hot Water | N | Replacement of deemed kWh savings to algorithmic approach. Addition of multifamily application. Update to %Electric and %Fossil hot water assumptions based on 2015 Potential Study to replace existing assumption based on residential data. | Expand applications for recirculation pump controls |
| 4.4.3 | Process Boiler Tune-up | N | Adjusted lifetime to 1 year and baseline condition requirement that no tune-up within the past year. Upon discussion, measure life updated to 2 years plus requirement that no tune-up within the past 24 months. | Adjust lifetime of Process boiler Tune-Up measure |
| 4.4.5 | Condensing Unit Heaters | N | Update of reference to IECC 2021. | IECC 2021 adoption? |
| 4.4.6 | Electric Chiller | N | Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. | IECC 2021 adoption? |
| 4.4.9 | | Y | Capacity _{heat} is incorrectly labelled as input capacity, but should be output capacity | Correct equations for Air and Water Source Heat Pumps |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|---|---------|--|---|
| | Air and Water Source Heat Pump Systems | N | <p>Update to appropriate federal standard and code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code.</p> <p>Addition of language that if evaluation determines that the new code is not applicable due to supply constraints etc – previous iteration of code may be used in 2023.</p> <p>Conversion factors added to compare old and new rating system.</p> <p>Separation of FuelSwitch and NonFuelSwitch savings within fuel switch calculations.</p> <p>Addition of HSPF_ClimateAdj term in algorithm</p> <p>Slight language update to cost effectiveness screening section.</p> | <p>IECC 2021 adoption?</p> <p>N/A</p> |
| 4.4.10 | High Efficiency Boiler | N | Reference to federal standard and IECC 2021 code updates. Addition of language to direct user to municipality code. Note updated baseline standards adopted from 1/1/2024. | IECC 2021 adoption? |
| 4.4.11 | High Efficiency Furnace | N | Reference to updated federal standard. Addition of language to direct user to municipality code. Note updated baseline standards adopted from 1/1/2024. | IECC 2021 adoption? |
| 4.4.12 | Infrared Heaters | N | Reliability review. Clarified & defined GRC & Radiation Sizing Factor. | N/A |
| 4.4.13 | Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP) | N | <p>Fuel Switch/Electrification algorithms added.</p> <p>Edits to language to allow other HVAC systems as baseline for fuel switching.</p> <p>Slight language update to cost effectiveness screening section.</p> | Packaged Terminal Heat Pump |
| 4.4.14 | Pipe Insulation | N | Update of reference to IECC 2021. | IECC 2021 adoption? |
| 4.4.15 | Single-Package and Split System Unitary Air Conditioners | N | <p>Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code.</p> <p>Addition of language that if evaluation determines that the new code is not</p> | IECC 2021 adoption? |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|---|---------|---|---|
| | | | applicable due to supply constraints etc – previous iteration of code may be used in 2023. Conversion factors added to compare old and new rating system. | |
| 4.4.16 | Steam Trap Replacement or Repair | N | Clarifications and adjustments to assumed default parameters for low pressure systems leveraging a large dataset provided by Franklin Energy. | Steam Traps |
| 4.4.17 | Variable Speed Drives for HVAC Pumps and Cooling Tower Fans | N | Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. Updated measure costs. | IECC 2021 adoption? VFD-HVAC measure cost update |
| 4.4.20 | High Turndown Burner for Space Heating Boilers | N | Update of reference to IECC 2021. | IECC 2021 adoption? |
| 4.4.26 | Variable Speed Drives for HVAC Supply and Return Fans | N | Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. | IECC 2021 adoption? |
| 4.4.27 | Energy Recovery Ventilator | N | Reliability Review. Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. Note reversal of original reliability review changes that suggested multifamily should be removed due to IECC 2021. Further discussion informed that many applications where code would not be triggered. | IECC 2021 adoption? |
| 4.4.31 | Small Business Furnace and Rooftop Unit Tune-Up | N | Reliability Review. Addition of gas-fired rooftop unit. Updates to references. | Rooftop Unit Tune-Ups |
| 4.4.32 | Combined Heat and Power | N | Addition of language relating to appropriate TRM version to use based on permit date. The CHP Working Group has been unable to reach consensus on two key issues – the appropriate gas savings methodology and the appropriate emission rate values. V11 is therefore identical to v10 except for the permit date language above. Discussions | Combined Heat and Power - use of Application Date N/A |

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|--------------------|---|---------|--|---|
| | | | will continue in 2023 and if required a non-consensus exhibit will be drafted in order that the Commission can provide a ruling on the appropriate methodology. | |
| 4.4.33 | Industrial Air Curtain | N | Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. | IECC 2021 adoption? |
| 4.4.34 | Destratification Fan | N | Updated reference to appropriate federal standard baseline for heat pumps. | IECC 2021 adoption? |
| 4.4.35 | Economizer Repair and Optimization | N | Reliability Review. Minor formatting and clarifications. | N/A |
| 4.4.36 | Multi-Family Space Heating Steam Boiler Averaging Controls | N | Reliability Review. No updates recommended. | N/A |
| 4.4.37 | Unitary HVAC Condensing Furnace | N | Reliability Review. Incorporated new federal standards, which are aligned with IECC 2021. Timing of baseline change stated to be 1/1/2024 to be consistent with other CFR standard changes. | N/A |
| 4.4.38 | Covers and Gap Sealers for Room Air Conditioners | N | Reliability Review. Fixed hours used in example calculation. | N/A |
| 4.4.39 | High Temperature Heating and Ventilation (HTHV) Direct Fired Heater | N | Reliability Review. No updates recommended. | N/A |
| 4.4.40 | Gas High Efficiency Single Package Vertical Air Conditioner | N | Reliability Review. Update to EER code requirement. Minor formatting and clarifications. | N/A |
| 4.4.41 | Advanced Rooftop Controls (ARC) | N | Reliability Review. No updates recommended. | N/A |
| 4.4.43 | Packaged RTU Sealing | N | Reliability Review. Removal of EFLH tables and reference to section 4.4. Example calculations update. | N/A |
| 4.4.44 | Commercial Ground Source and Ground Water Source Heat Pump | Y | Removal of 3412 BTU/kWh term from GSHPSiteWaterImpactElectric algorithm to result in MMBtu. | Res and Com Ground Source Heat Pump (4.4.44, 5.3.8) |
| | | N | Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. Conversion factors | IECC 2021 adoption? |

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|--------------------|---|---------|---|---|
| | | | <p>added to compare old and new rating system.</p> <p>Updates to full install costs of ASHPs.</p> <p>Separation of FuelSwitch and NonFuelSwitch savings within fuel switch calculations.</p> <p>Slight language update to cost effectiveness screening section.</p> | |
| 4.4.48 | Small Commercial Thermostats | Y | In the ΔkWh algorithm, the term $(1 - \%ElectricHeat)$ is incorrectly applied since it is already applied in the $\Delta Therms$ algorithm. | N/A |
| | | N | Added midstream efficiency assumptions. After TAC call, HSPF default assumption removed until data can inform proportion of electric furnace v heat pump. Replaced with language to use evaluation to determine. | Clarify treatment of Small Commercial Thermostats in Midstream Applications |
| 4.4.50 | Electric Chillers with Integrated Controls | N | Update of reference to IECC 2021. | IECC 2021 adoption? |
| 4.4.51 | Advanced Rooftop Controls with High Rotor Pole Switch Reluctance Motors | N | Clarifications and updated Energy Savings Factors | Energy Savings Factors Adjustment in measure 4.4.51 |
| | | N | Update of reference to IECC 2021. | IECC 2021 adoption? |
| 4.4.53 | HVAC Supply, Return and Exhaust Fans - Fan Energy Index | N | Reliability Review. Minor formatting and clarifications. Update of reference to IECC 2021. Addition of language to direct user to municipality code. | N/A |
| 4.4.54 | Process Heating Boiler | N | Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. | IECC 2021 adoption? |
| 4.4.55 | Commercial Gas Heat Pump | N | Reliability Review. Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. Slight language update to cost effectiveness screening section. | IECC 2021 adoption? |
| 4.4.56 | Commercial Duct Sealing | N | New measure | C&I Duct Sealing |

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|--------------------|---|---------|---|--|
| 4.4.57 | Condensate Recovery System | N | New measure | Condensate Recovery System |
| 4.4.58 | Steam Trap Monitoring System | N | New measure | Steam Trap Monitoring System |
| 4.4.59 | Ductless Heat Pump | N | <p>New measure</p> <p>Update to default additional electrification cost to \$300. Assumption to be reviewed and discussed for potential update in v12. HSPF_Climate_Adj values added - clarification that only applies to whole heat load displacement scenarios.</p> <p>Added ComEd, Ameren and Statewide weighted average values to HeatLoadFactor tables. Unknown tables removed and language added that for programs where displacement scenario and switchover temperature is unknown, evaluation should determine appropriate weightings of the various scenarios including full displacement, partial displacement, and cooling/heating only.</p> <p>Final HeatLoadFactor values copied from Residential measure.</p> <p>Clarification that capacity values should be total capacity of all units installed and should be heating capacity rated at 47F.</p> <p>Slight language update to cost effectiveness screening section.</p> | Add C/I version of a Ductless Mini Split Heat Pump measure |
| 4.4.60 | Variable Refrigerant Flow HVAC System – Provisional Measure | N | <p>New measure</p> <p>Slight language update to cost effectiveness screening section.</p> | PROVISIONAL Variable Refrigerant Flow Measure |
| 4.4.61 | Chiller Condenser Water Temperature Reset | N | New measure | Cooling Tower Controls |
| 4.4.62 | Cooling Tower Water Side Economizer | N | New measure | Cooling Tower Controls |
| 4.5.4 | LED Bulbs and Fixtures | Y | <p>Clarification that the Center Beam Candle Power methodology for determining WattsBase is the preferred approach, and that the new default assumptions added in v10 are for use only when the necessary information is not available.</p> | <p>PAR, MR and MRX Lamp Types</p> <p>N/A</p> |

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|--------------------|--|---------|---|---|
| | | | V10 errata relating to deferred installs in 2023 and 2024 should use v10 assumptions. | |
| | | N | <p>Introductory language describing negotiated compromise added. Res v C&I split specified only for non-IQ stores.</p> <p>Changes relating to May 2022 Final Rule enacting the backstop provision. Business programs assume LED baseline from 6/30/2023. Measure reverts to 2 year measure life. Language added to use equivalent of last ENERGY STAR specifications (since ENERGY STAR may be ending labeling of screw-based and some fixture measures).</p> <p>ISR simplified to single first year value removing need for deferred installs for screw based LED (maintained for T-LEDs).</p> <p>Mid-life adjustments and O&M baseline cost assumptions removed for screw based LEDs.</p> <p>Addition of T-shaped, S and ST bulb category to the decorative shapes.</p> | <p>Review lighting forecast</p> <p>Review lighting base wattage for T8 and T10 screw-in</p> |
| 4.5.7 | Lighting Power Density | N | Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. | IECC 2021 adoption? |
| 4.5.9 | Multi-Level Lighting Switch | N | Update of reference to IECC 2021. | IECC 2021 adoption? |
| 4.5.13 | Occupancy Controlled Bi-Level Lighting Fixtures | N | Update of reference to IECC 2021. | IECC 2021 adoption? |
| 4.5.16 | LED Streetlighting | N | Clarification of high pressure sodium alignment to existing mercury vapor lamps. | Update Mercury Vapor midlife adjustment |
| 4.6.1 | Automatic Door Closer for Walk-In Coolers and Freezers | N | Reliability Review. Updated incremental costs and deemed energy savings to align with the most up-to-date California workpaper. | N/A |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|--|---------|--|-------------------------------------|
| 4.7.4 | Efficient Compressed Air Nozzles | N | Reliability Review. Minor clean up and clarifications. | N/A |
| 4.7.8 | Desiccant Dryer Dew Point Demand Control | N | Reliability Review. Minor clean up and clarifications. | N/A |
| 4.7.9 | Compressed Air Heat Recovery | N | Reliability Review. Minor clean up and clarifications. | N/A |
| 4.7.10 | Compressed Air Storage Receiver Tank | N | Reliability Review. Minor clean up and clarifications. | N/A |
| 4.7.11 | Reduce Compressed Air Setpoint | N | Reliability Review. No updates recommended. | N/A |
| 4.8.2 | Roof Insulation for C&I Facilities | N | Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. Update to cooling efficiency if unknown to be consistent with other measures. | IECC 2021 adoption? |
| 4.8.4 | Modulating Commercial Gas Clothes Dryer | N | Reliability Review Since retrofit measure should not assume full lifetime of the machine, therefore 10 year measure life proposed. | N/A |
| 4.8.7 | Advanced Power Strip – Tier 1 Commercial | N | Addition of kits assumption with specific ISR. | APS C&I Kit ISR |
| 4.8.10 | Commercial Clothes Dryer Moisture Sensor | N | Reliability Review. Since retrofit measure should not assume full lifetime of the machine, therefore 10 year measure life proposed. | N/A |
| 4.8.11 | Efficient Thermal Oxidizers | N | Reliability Review. Minor clean up and clarifications. | N/A |
| 4.8.13 | Variable Speed Drives for Process Fans | N | Reliability Review. Update to appropriate code baselines for new construction with addition of IECC 2021. Addition of language to direct user to municipality code. Added default costs. | IECC 2021 adoption? |
| 4.8.16 | Commercial Weather Stripping | N | Reliability Review. Added default cooling savings based on same workpaper approach as heating side. Measure added back in. | N/A |

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|--|---|---------|---|---|
| | | | Note added referring user to more comprehensive approach to C&I air sealing opportunities in '4.8.27 C&I Air Sealing' | |
| 4.8.17 | Switch Peripheral Equipment Consolidation | N | Reliability Review. Update cooling CF to be consistent with other measures. | N/A |
| 4.8.18 | ENERGY STAR Uninterruptible Power Supply | N | Reliability Review. Updated measure with new federal appliance standards. Impact baseline efficiency and default savings. | N/A |
| 4.8.19 | Energy Efficient Rectifier | N | Reliability Review. Minor clean up and clarifications. | N/A |
| 4.8.23 | Lithium Ion Forklift Batteries | N | Fuel Switch/Electrification algorithms added. Addition of fossil fuel systems in the baseline section. Updates to costs. Calculations updated to use policy manual defined energy content of propane and diesel. Typo fixed. Slight language update to cost effectiveness screening section. | Lithium Ion Forklift Batteries |
| 4.8.24 | Building Operator Certification | N | Updated evaluation information. | Building Operator Certification |
| 4.8.26 | Energy Efficient Hand Dryers | N | New methodology for calculating coincidence factors with updated usage assumptions. | Update hand dryer measure |
| 4.8.27 | C&I Air Sealing | N | New measure Note added referring user to prescriptive approach to door sweep measure in '4.8.16 Commercial Weather Stripping' | C&I Air Sealing Measure |
| 4.8.28 | High Speed Overhead Doors | N | New measure Columns for unknown or average orientation have been added. | High Speed Doors |
| 4.8.29 | Dock Door Seals and Shelter | N | New measure | Truck Dock Seals |
| 4.8.30 | Commercial Wall Insulation | N | New measure | C&I Wall Insulation Measure |
| Volume 3 – Residential Measures | | | | |
| 5.1.2 | ENERGY STAR Clothes Washer | N | Reliability Review. Addition of CEE Advanced Tier, update to measure costs. | N/A |

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|--------------------|---|---------|---|-----------------|
| | | | Recalculation of savings based on new Technical Document and updated data savings Unknown %Electric and %Gas DHW updated. Final values proposed across utilities and statewide. Unknown %Electric and %Gas Dryer assumptions updated, and subsequent default savings recalculated. ΔWater term defined in the secondary kWh section. | |
| 5.1.4 | ENERGY STAR Dishwasher | N | Reliability Review. Pushed to next year as ENERGY STAR v7.0 currently in draft. Unknown %Electric and %Gas DHW updated. Final values proposed across utilities and statewide. Default assumptions updated using new unknown (location and building type) assumption. | N/A |
| 5.1.5 | ENERGY STAR Freezer | N | Reliability Review. Updates to costs and lifetimes. Reanalysis based on updated QPI data and new Department of Energy Technical Doc/LCC spreadsheet. | N/A |
| 5.1.6 | ENERGY STAR CEE Tier 2 or CEE Tier 3 Refrigerator | N | Reliability Review. Addition of CEE Tier 3 specifications. Updates to costs and lifetimes. Reanalysis based on updated QPI data and new Department of Energy Technical Doc/LCC spreadsheet. | N/A |
| 5.1.7 | ENERGY STAR and CEE Tier 2 Room Air Conditioner | N | Split of EFLHcool Weighted Average assumptions in to ComEd, Ameren and Statewide. Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate. | N/A |
| 5.1.9 | Room Air Conditioner Recycling | N | Reliability Review. Split of EFLHcool Weighted Average assumptions in to ComEd, Ameren and Statewide. Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program- | N/A |

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| | | | weighted assumptions can be used if appropriate. | |
| 5.1.10 | ENERGY STAR Clothes Dryer | N | Addition of assumptions for heat pump clothes dryers. Fuel Switch/Electrification algorithms added. Savings split in to fuel switch and non-fuel switch components. Example calculation updated accordingly. CEFeff assumptions updated based on current QPL. Removed "Vented" from heat pump name. Slight language update to cost effectiveness screening section. | Heat Pump Clothes Dryers Clothes Dryer |
| 5.1.12 | Ozone Laundry | N | Reliability Review. Addition of recovery efficiency assumption for heat pump water heaters, and update to gas water heater recovery efficiency assumption. Unknown %Electric and %Gas DHW updated. Final values proposed across utilities and statewide. | N/A |
| 5.1.13 | Income Qualified: ENERGY STAR and CEE Tier 2 Room Air Conditioner | N | Split of EFLHcool Weighted Average assumptions in to ComEd, Ameren and Statewide. Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate. | N/A |
| 5.1.14 | Residential Induction Cooktop | N | New measure Measure cost updated. Typo fixed. Reference for savings added to supporting document folder. Slight language update to cost effectiveness screening section. | Induction Cooking |
| 5.1.15 | Residential Bolt-On Smart Dryer Sensor | N | New measure Measure reinstated as new third-party manufacturer likely to produce product. Clarification added for electric dryer option. | Residential Smart IoT Dryer Sensor |
| 5.2.1 | Advanced Power Strip | Y | Addition of ISR for IQ kits | IQ ISR Kit Updates |
| 5.2.3 | ENERGY STAR Televisions | N | New measure | Television |
| 5.3.1 | Centrally Ducted Air Source Heat Pump | N | Added "Central Ducted" to the measure name. Added language that measure does | Electric Air Source Heat Pump HSPF Adjustment Factor |

| Measure # and Name | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|---------|--|--|
| | | <p>not apply to “Hybrid” systems. Clarified not apply to midstream where it is unknown.</p> <p>Reference to upcoming federal standard changes that will become baseline 1/1/2024.</p> <p>Addition of conversion factors from SEER2/EER2/HSPF2 to SEER/EER/HSPF for use if purchased unit only has new rating.</p> <p>Addition of non-gas fossil baseline assumptions. Addition of electric resistance assumption.</p> <p>Clarification of deemed early replacement rate being appropriate for downstream programs and that for midstream or other programs it may be appropriate to apply a deemed percent split of Time of Sale and Early Replacement assumptions based on evaluation results.</p> <p>Updates to full install costs of ASHPs. High efficiency costs trended from existing assumptions.</p> <p>Removal of language that actual costs must be used for fuel switch measures.</p> <p>Update to default additional electrification cost to \$2000. Assumption to be reviewed and discussed for potential update in v12.</p> <p>Separation of FuelSwitch and NonFuelSwitch savings within fuel switch calculations.</p> <p>Clarification that SEERadj and HSPFadj should be only applied if variable speed unit.</p> <p>Addition of HSPF_ClimateAdj – values proposed for when using HSPF or HSPF2 rating.</p> <p>Addition of Midstream program algorithms. Section heating changed to “Programs where existing system unknown (e.g. Midstream)”</p> | <p>ASHP incremental costs</p> <p>Alternate Fuel Baselines for Heat Pumps</p> <p>Clarify Assumed Baseline Conditions for ASHP and DMSHP in Midstream Applications</p> |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|--------------------------|---------|---|-----------------|
| | | | <p>Unknown / midstream efficiency assumptions added. Final values applied.</p> <p>Update to existing unit SEER, HSPF and EER assumptions to account for multiple years since study and increasing efficiency of the average. Final values applied.</p> <p>Split of EFLHcool and EFLHHeat Weighted Average assumptions in to ComEd, Ameren and Statewide.</p> <p>Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> <p>Example calculations updated with final values.</p> <p>Slight language update to cost effectiveness screening section.</p> | |
| 5.3.2 | Boiler Pipe Insulation | N | <p>Split of FLH_heat Weighted Average assumptions in to ComEd, Ameren and Statewide. Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> | N/A |
| 5.3.3 | Central Air Conditioning | N | <p>Reliability Review.</p> <p>Reference to upcoming federal standard changes that will become baseline 1/1/2024.</p> <p>Addition of conversion factors from SEER2/EER2 to SEER/EER for use if purchased unit only has new rating.</p> <p>ENERGY STAR v6.1 specifications added.</p> <p>Clarification of deemed early replacement rate being appropriate for downstream programs and that for midstream or other programs it may be appropriate to apply a deemed percent split of Time of Sale and</p> | N/A |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|-----------------------------|---------|---|---|
| | | | <p>Early Replacement assumptions based on evaluation results.</p> <p>Split of EFLHcool Weighted Average assumptions in to ComEd, Ameren and Statewide.</p> <p>Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> | |
| 5.3.4 | Duct Insulation and Sealing | N | <p>Split of EFLHcool and EFLHheat Weighted Average assumptions in to ComEd, Ameren and Statewide. Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> | N/A |
| 5.3.5 | Furnace Blower Motor | N | Update to retrofit measure costs based on program data. | ECM Retrofit cost update |
| 5.3.6 | Gas High Efficiency Boiler | N | Clarification of deemed early replacement rate being appropriate for downstream programs and that for midstream or other programs it may be appropriate to apply a deemed percent split of Time of Sale and Early Replacement assumptions based on evaluation results. | N/A |
| 5.3.7 | Gas High Efficiency Furnace | N | <p>Additional cost for mobile home installations.</p> <p>Clarification of deemed early replacement rate being appropriate for downstream programs and that for midstream or other programs it may be appropriate to apply a deemed percent split of Time of Sale and Early Replacement assumptions based on evaluation results.</p> | Mobile home specific HVAC costs |
| 5.3.8 | Ground Source Heat Pump | Y | Removal of 3412 BTU/kWh term from GSHPSiteWaterImpactElectric algorithm to result in MMBtu. | Res and Com Ground Source Heat Pump (4.4.44, 5.3.8) |
| | | N | Reference to upcoming federal standard changes that will become baseline 1/1/2024. | Alternate Fuel Baselines for Heat Pumps Clarify Assumed Baseline Conditions for ASHP and DMSHP in Midstream Applications |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|---------------------|---------|---|--|
| | | | <p>Addition of conversion factors from SEER2/EER2/HSPF2 to SEER/EER/HSPF for use if purchased unit only has new rating.</p> <p>Addition of non-gas fossil baseline assumptions.</p> <p>Updates to full install costs of ASHPs.</p> <p>Separation of FuelSwitch and NonFuelSwitch savings within fuel switch calculations.</p> <p>Addition of Midstream program algorithms and default efficiency assumptions. Final values applied.</p> <p>Split of EFLHcool and EFLHHeat Weighted Average assumptions in to ComEd, Ameren and Statewide.</p> <p>Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> <p>Update to existing unit SEER, HSPF and EER assumptions to account for multiple years since study and increasing efficiency of the average.</p> <p>Slight language update to cost effectiveness screening section.</p> | |
| 5.3.10 | HVAC Tune Up | N | <p>Split of EFLHcool Weighted Average assumptions in to ComEd, Ameren and Statewide. Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> | N/A |
| 5.3.12 | Ductless Heat Pumps | N | <p>Reference to upcoming federal standard changes that will become baseline 1/1/2024.</p> | <p>Electric Air Source Heat Pump HSPF Adjustment Factor</p> <p>Alternate Fuel Baselines for Heat Pumps</p> |

| Measure # and Name | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|---------|--|--|
| | | <p>Addition of conversion factors from SEER2/EER2/HSPF2 to SEER/EER/HSPF for use if purchased unit only has new rating.</p> <p>Clarification of deemed early replacement rate being appropriate for downstream programs and that for midstream or other programs it may be appropriate to apply a deemed percent split of Time of Sale and Early Replacement assumptions based on evaluation results.</p> <p>Addition of non-gas fossil baseline assumptions. Addition of electric resistance assumption.</p> <p>Updates to full install costs of ASHPs. Update to default additional electrification cost to \$300. Assumption to be reviewed and discussed for potential update in v12.</p> <p>Separation of FuelSwitch and NonFuelSwitch savings within fuel switch calculations.</p> <p>Addition of HSPF_ClimateAdj – clarification that only applies to whole heat load displacement scenarios.</p> <p>Clarification that capacity values should be total capacity of all units installed and should be heating capacity rated at 47F.</p> <p>Update to existing unit SEER, HSPF and EER assumptions to account for multiple years since study and increasing efficiency of the average. Final values applied.</p> <p>Addition of HeatLoadFactor to account for partial displacement. Changed to be ranges in kBtu. Added ComEd, Ameren and Statewide weighted average values. Note row order has been updated to be consistent with other tables (i.e. zone 1 to 5). Unknown tables removed and language added that for programs where displacement scenario and switchover</p> | <p>ASHP incremental costs</p> <p>Clarify Assumed Baseline Conditions for ASHP and DMSHP in Midstream Applications</p> <p>Update Ductless Heat Pump Hours of Use for Partial Displacement</p> |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|--|---------|---|---|
| | | | <p>temperature is unknown, evaluation should determine appropriate weightings of the various scenarios including full displacement, partial displacement, and cooling/heating only.</p> <p>Addition of Midstream program algorithms and default efficiency assumptions.</p> <p>Split of EFLHcool and EFLHHeat Weighted Average assumptions in to ComEd, Ameren and Statewide.</p> <p>Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> <p>Slight language update to cost effectiveness screening section.</p> | |
| 5.3.13 | Residential Furnace Tune-Up | N | <p>Split of EFLH Weighted Average assumptions in to ComEd, Ameren and Statewide. Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> | N/A |
| 5.3.15 | ENERGY STAR Ceiling Fan | N | <p>Reliability Review.</p> <p>Updated assumptions to latest ENERGY STAR QPL for Fan Watts at Low, Med, High.</p> | N/A |
| 5.3.16 | Advanced Thermostats | N | <p>Measure cost update</p> <p>Split of EFLHcool and EFLHHeat Weighted Average assumptions in to ComEd, Ameren and Statewide. Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> <p>Typo fixed in Electric Heating Consumption table.</p> | Advanced Thermostat Cost Information |
| 5.3.17 | Gas High Efficiency Combination Boiler | N | <p>Addition of deemed early replacement rate. Clarification of deemed early replacement rate being appropriate for downstream programs and that for</p> | Clarify to allow use of 93%/7% TOS/Early Replacement split for HVAC savings portion of Two-in-One Boilers |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|---|---------|--|--|
| | | | <p>midstream or other programs it may be appropriate to apply a deemed percent split of Time of Sale and Early Replacement assumptions based on evaluation results.</p> <p>Reliability Review. DHW section made consistent with gas water heater measure and update average tankless efficiency. Cost updated to better reflect incremental costs.</p> | N/A |
| 5.3.21 | Air Handler Filter Cleaning/Replacement | N | New measure | Direct Install Furnace Filter Replacement |
| 5.4.1 | Domestic Hot Water Pipe Insulation | N | Update to ISR assumptions. Unknown %Electric and %Gas DHW updated. Final values proposed across utilities and statewide. | IQ ISR Kit Updates |
| 5.4.3 | Heat Pump Water Heaters | N | <p>Addition of fuel switch scenario calculations and additional fuel baselines. Term names updated to be consistent. All HVAC efficiency assumptions are now based on code minimum and the mid-life adjustment has been removed. Slight language update to cost effectiveness screening section.</p> | Alternate Fuel Baselines & Fuel Switch Calculations for HPWH |
| 5.4.4 | Low Flow Faucet Aerators | N | <p>Unknown %Electric and %Gas DHW updated. Final values proposed across utilities and statewide.</p> <p>ISR updates.</p> | <p>N/A</p> <p>IQ ISR Kit Updates</p> |
| 5.4.5 | Low Flow Showerheads | N | <p>Unknown %Electric and %Gas DHW updated. Final values proposed across utilities and statewide.</p> <p>ISR updates.</p> | <p>N/A</p> <p>IQ ISR Kit Updates</p> |
| 5.4.8 | Thermostatic Restrictor Shower Valve | N | Unknown %Electric and %Gas DHW updated. Final values proposed across utilities and statewide. | N/A |
| 5.4.9 | Shower Timer | N | Unknown %Electric and %Gas DHW updated. Final values proposed across utilities and statewide. | N/A |
| 5.4.11 | Drain Water Heat Recovery | N | <p>Reliability Review.</p> <p>Added HPWH option to electric recovery efficiency and update to gas recovery efficiency.</p> | N/A |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|---------------------------------------|---------|---|---|
| | | | Savings factor and cost revised due to better source, a slight increase. GPM clarification based on implementation method for this measure. | |
| 5.4.12 | Recirculating Pump Controls | N | New measure | Recirculation Pump Controls |
| 5.5.6 | LED Specialty Lamps | Y | V10 errata relating to deferred installs in 2023 and 2024 should use v10 assumptions. | N/A |
| | | N | Introductory language describing negotiated compromise added. Res v C&I split specified only for non-IQ stores. Changes relating to May 2022 Final Rule enacting the backstop provision. Non-IQ programs assume LED baseline from 6/30/2023. Measure reverts to 2 year measure life. IQ programs assume halogen baseline for 8 years through program year 2025. Language added to use equivalent of last ENERGY STAR specifications (since ENERGY STAR may be ending labeling of screw-based and some fixture measures). ISR simplified to single first year value removing need for deferred installs. Mid-life adjustments removed. O&M baseline cost limited to annual baseline replacement for IQ, no O&M impact for non-IQ. Added ST and S lamp types to the measure table. | Review lighting forecast |
| 5.5.8 | LED Screw Based Omnidirectional Bulbs | Y | V10 errata relating to deferred installs in 2023 and 2024 should use v10 assumptions. | N/A |
| | | N | Introductory language describing negotiated compromise added. Res v C&I split specified only for non-IQ stores. Changes relating to May 2022 Final Rule enacting the backstop provision. Non-IQ programs assume LED baseline from 6/30/2023. Measure reverts to 2 year measure life. | Review lighting forecast |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|--------------------------|---------|---|--|
| | | | <p>IQ programs assume halogen baseline for 8 years through program year 2025. Language added to use equivalent of last ENERGY STAR specifications (since ENERGY STAR may be ending labeling of screw-based and some fixture measures). ISR simplified to single first year value removing need for deferred installs. Mid-life adjustments removed. O&M baseline cost limited to annual baseline replacement for IQ, no O&M impact for non-IQ.</p> | |
| 5.5.9 | LED Fixtures | N | <p>Introductory language describing negotiated compromise added. Res v C&I split specified only for non-IQ stores.</p> <p>Changes relating to May 2022 Final Rule enacting the backstop provision. Non-IQ programs assume LED baseline from 6/30/2023. Measure reverts to 2 year measure life.</p> <p>IQ programs assume halogen baseline for 8 years through program year 2025. Language added to use equivalent of last ENERGY STAR specifications (since ENERGY STAR may be ending labeling of screw-based and some fixture measures). Mid-life adjustments removed. O&M baseline cost limited to annual baseline replacement for IQ, no O&M impact for non-IQ.</p> | Review lighting forecast |
| 5.5.10 | Holiday String Lighting | N | <p>Reliability Review. Updated lamp watt assumptions based on updated data.</p> | N/A |
| 5.5.12 | Connected LED Lamps | N | <p>Reliability Review. Updated SVG percentage based on new study. ISR updated to match omni measure.</p> | N/A |
| 5.5.13 | EISA Exempt LED Lighting | N | <p>New measure T-LEDS added.</p> | N/A |
| 5.6.1 | Air Sealing | N | <p>Changes from gas to fossil fuel language. Addition of other fuel baselines.</p> <p>Clarification to heating system efficiency language.</p> | Alternate Fuel Savings for Shell Measures/Furnace Fan Savings Clarification from Shell |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|-------------------------------------|---------|---|---|
| | | | <p>Addition of rule for unknown %Electric and Gas heat if supported by gas and electric utility.</p> <p>Updates to ISR for kits.</p> <p>Split of EFLHcool Weighted Average assumptions in to ComEd, Ameren and Statewide. Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> | <p>Clarify the distribution efficiency assumption in residential shell measures</p> <p>%ElectricHeat and %GasHeat Clarification</p> <p>IQ ISR Kit Updates</p> |
| 5.6.2 | Basement Sidewall Insulation | N | Clarification to heating system efficiency language. | <p>Clarify the distribution efficiency assumption in residential shell measures</p> <p>Alternate Fuel Savings for Shell Measures/Furnace Fan Savings Clarification from Shell</p> <p>%ElectricHeat and %GasHeat Clarification</p> |
| 5.6.3 | Floor Insulation Above Crawlspace | | Changes from gas to fossil fuel language. | |
| 5.6.4 | Wall Insulation | | Addition of other fuel baselines | |
| 5.6.5 | Ceiling/Attic Insulation | | Addition of rule for unknown %Electric and Gas heat if supported by gas and electric utility. | |
| 5.6.6 | Rim/Band Joist Insulation | | | |
| 5.6.7 | Low-E Storm Window | N | <p>Split of EFLHcool Weighted Average assumptions in to ComEd, Ameren and Statewide. Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> <p>Changes from gas to fossil fuel language.</p> | N/A |
| 5.6.8 | Triple Pane and Thin Triple Windows | N | <p>Split of EFLHcool Weighted Average assumptions in to ComEd, Ameren and Statewide. Methodology revised to use actual accounts as weighting for Ameren and only use zones 1 and 2 for ComEd. Note added that alternative program-weighted assumptions can be used if appropriate.</p> <p>Changes from gas to fossil fuel language.</p> | N/A |
| 5.6.9 | Insulated Cellular Shades | N | New Measure | Insulating Cellular Shades |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--|--|---------|---|---|
| 5.6.10 | Multifamily Whole Building Aerosol Sealing | N | New Measure | MF Whole home sealing |
| 5.7.3 | Level 2 Electric Vehicle Charger | Y | Errata to fix kW which is incorrectly characterizing the increase of an electric car rather than the demand savings from the Level 2 charger. | N/A |
| | | N | Reliability Review. Updates based on updated RTF spreadsheet. | N/A |
| 5.7.4 | Heat Pump Swimming Pool Heater | N | New Measure | Heat Pump Swimming Pool Heaters |
| 5.7.5 | Tree Planting | N | New Measure Updates to change from deferred savings approach to reduced annual savings from first year. Added factor labeled 'NPVDiscount.' | Tree Planting Measure |
| Volume 4 – Cross-Cutting Measures and Attachments | | | | |
| 6.1.1 | Adjustments to Behavior Savings to Account for Persistence | N | Language to document how different persistence factors should be applied in shift from CY2021 to CY2022. Update to measure cost definitions. Update to retention rate assumption. | Residential Behavior Persistence Factor Shift in CY2022 Revise the Deemed Measure Cost for Behavior Change Residential Behavior Retention Rates |
| 6.2.1 | Voltage Optimization | N | Updates to measure life and threshold definition. Edit to Lifetime section removing language about not recalculating energy savings after the 15 year period and replacing with language relating to the possible development of a new measure providing greater savings in the future. Edits to O&M section to make clear assumptions continue through each 15 years renewal. Review deadline fixed to 1/1/2028. Edits to paragraph after deadline. | Increase Voltage Optimization Measure Life |
| 6.3.1 | Efficient Choice Tool | N | New protocol for claiming savings for the Efficient Choice Tool. Final draft has been loaded after key stakeholders reviewed comments. | Efficient Choice |
| Attachment C | 1.7 Market Transformation Savings Protocol | N | New section | V. 4 Attachment C Amendment |

| Measure # and Name | | Errata? | Brief description of what changed | Tracker Item(s) |
|--------------------|--|---------|-----------------------------------|---|
| | Process Recommendation | | | |
| Attachment C | 3 Addendum: Market Transformation ENERGY STAR Retail Products Platform Evaluation Protocol | N | New section | V. 4 Attachment C Amendment |
| Attachment C | 4 Addendum: Stretch Code Market Transformation Programs | N | New section | ESRPP evaluation protocol |

The following table provides a list of those tracker items that have not resulted in a change.

| Tracker Items: | Comments |
|---|---|
| Soundbar | VEIC believe that the workpaper provided use sources for savings and cost that are out of date. This likely will be put on hold for v12. |
| IQ TRM Baseline Updates - HVAC Efficiencies and Existing Shell Conditions | Opinion Dynamics have presented initial findings on IQ HVAC efficiencies and determined that no immediate edits to the TRM assumptions are appropriate. |
| Fuel Type Defaults for Heating and Water Heating | TAC discussed leaving the space heat %Electric v %Gas as in the current thermostat measures since these assumptions are based on thermostat program data and are likely to be different to general population due to likely external thermostat installs. Defaults for %Electric and %Gas water heaters have been provided in deliverable 2. |
| Baseline for New Construction (electrification potential?) | Discussed in CEJA working group. As per HP measures, baselines for electrification measures in new construction are to be determined through evaluation. Deemed rates may be applied in later versions if data available to support. |
| IQ Behavior program - Enhanced Energy Education | IQ working group will track and discuss developments with this measure but not going to be ready for v11. |
| Battery Backup Lamp | Discussed with TAC and IQ working group that the existing lamp measures can be used for this application. |
| Nonresidential LED Cost Update | Item placed on hold until v12. |
| Update exterior lighting HOU/CF | Item placed on hold until v12. |
| Cold Climate Heat Pumps | Items placed on hold until v12 or removed as per requester. |
| Add blended building types | |
| Networked lighting HOU for education | |

| Tracker Items: | Comments |
|---|---|
| Prescriptive Air Sealing algorithm consistency | |
| Heat Pump Water Heater Incremental Cost Information | |
| Synchronous Motors (CFS application) | |
| Commercial Air Curtain | |
| Electric Deck Ovens | |
| Projector | |
| Residential Smart Sockets | |
| Adjust Temperature Set Point | Agreed on TAC not to proceed |
| PROVISIONAL On Demand Package Sealer | No new data to inform update. |
| PROVISIONAL Air Deflector for Unit Ventilator | Covid delays but evaluation results expected to provide update next year. |
| PROVISIONAL Energy efficient hydraulic oils | Evaluation results expected to provide update next year. |
| PROVISIONAL Energy Efficient Gear Oils | Evaluation results expected to provide update next year. |
| PROVISIONAL Vortex Tube Thermostat | No new data to inform update. |