# Energy Efficiency Implementation Project (EEIP)

Frontier Associates on behalf of the
Electric Utility Marketing Mangers of Texas
(EUMMOT)

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EUMMOT
ELECTRIC UTILITY
MARKETING MANAGERS
OF TEXAS

FRONTIER
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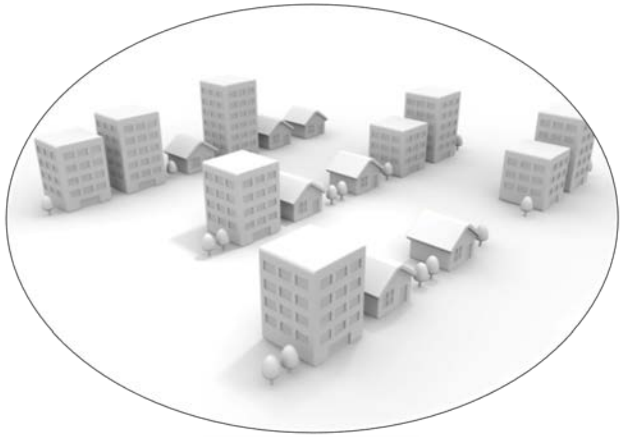
# TRM 5.0 Update

## Residential Measures



# 2.1 RES Lighting

## Key Changes:

- Reviewed impact of ENERGY STAR reduction of rated life requirement to 15,000 hours and increment EUL tables based on proximity to EISA 2020 backstop

## Savings Impact:

- Changes only impact lifetime savings
- Rather than using a 20 year EUL for all LEDs, measure is moving to the tiered approach used in the CFL measure
  - Products with at least a 20,000 hr rated life will still have a 20 year EUL
  - Products with a less than 20,000 hr rated life will have their EUL reduced to 16 years

## Implementation Changes:

- None

# 2.2.2 Duct Efficiency

## Key Changes:

- Removed transitional adjustment factors in favor of exclusive enforcement of modeled deemed savings tables introduced in TRM v4.0

## Savings Impact:

- Substantial decrease for second consecutive year (equal to impact of savings decrease in TRM v4.0)

## Implementation Changes:

- TRM 4.0 algorithm adjustment factors will not be allowed in PY 2018

# 2.2.3 Central ACs & 2.2.5 Central HPs

**Key Changes:**

- Added 12.44 SEER and 6.8 HSPF savings tables
- Updated energy savings for consistency with TMY3 temperature bin hours
- Updated demand savings for consistency with current peak definition
- Incorporated savings credit for rightsizing (upsizing not eligible)

**Savings Impact:**

- Minor decrease in cooling energy savings; minor increase in heating energy savings
- Minor increase in demand savings for units < 17 SEER; minor decrease for 17+ SEER systems (opposite for Climate Zone 4)
- Increased heating savings available for early retirement of Central HPs installed before 1/23/2006 (6.8 HSPF baseline)
- Increased savings available when properly documented downsizing occurs

**Implementation Changes:**

- New Construction is not eligible for downsizing
- Downsizing projects must follow same documentation requirements as Early Retirement projects

# 2.2.4 Ground Source HPs

**Key Changes:**

- Updated coincidence factors for consistency with current peak definition

**Savings Impact:**

- Summer demand savings decreasing by an average of 25%
- Winter demand savings decreasing by an average of 41%

**Implementation Changes:**

- Utilities with service territory covering multiple climate zones will now vary demand savings by zone in accordance with current peak definition

# 2.2.6 Room ACs

## Key Changes:

- Updated coincidence factors for consistency with current peak definition

## Savings Impact:

- Demand savings increasing by an average of 7% for Climate Zones 1-3 & 5; decreasing by 4% for Climate Zone 4

## Implementation Changes:

- Utilities with service territory covering multiple climate zones will now vary demand savings by zone in accordance with current peak definition

# 2.3 Envelope Measure Eligibility

**Key Changes:**

- Added language clarifying that homes with mini-splits are eligible to claim deemed summer demand savings specified for homes with refrigerated cooling

**Savings Impact:**

- None

**Implementation Changes:**

- None unless previously disallowing homes with mini-splits

# 2.3.3 Attic Encapsulation

## Key Changes:

- Added secondary savings path to claim infiltration savings associated with attic encapsulation in addition to insulation savings

## Savings Impact:

- Increased savings opportunity for attic encapsulation in situations where no blower door is performed and no separate infiltration savings are being claimed

## Implementation Changes:

- Can claim combined savings or can claim only the insulation savings and claim infiltration savings separately through existing air infiltration measure
- Utilities need to take additional steps to prevent a single project from claiming infiltration savings through both measures

# 2.3.4 Wall Insulation

**Key Changes:**

- Updated measure language to clarify that blown-in or loose fill cellulose insulation is eligible in addition to fiberglass batt and spray foam insulation

**Savings Impact:**

- None

**Implementation Changes:**

- None unless previously disallowing cellulose insulation

# 2.5.2 ENERGY STAR Clothes Washers

## Key Changes:

- Updated baseline to reflect changes in federal standard
- Added baseline for compact units to reflect federal standard
- Updated front-load washers to reflect changes in ENERGY STAR specification

## Savings Impact:

- Most savings have decreased significantly (may be partially counteracted by future ENERGY STAR specification updates)
- Savings for some DHW/Dryer fuel type combinations unchanged

## Implementation Changes:

- Enforce new high-efficiency condition for front-loading standard washers

# New Measures

## 2.4.8 Showerhead Thermostatic Restrictor Valves (TRV):

- Installing a TRV between the existing shower arm and showerhead, restricting hot water flow through the showerhead once the water reaches a set temperature to prevent behavioral waste

## 2.4.9 Tub Spout and Showerhead TRV:

- Replacing existing tub spout and showerhead with an automatically diverting system with a TRV installed between the existing shower arm and showerhead, allowing the tub spout to divert flow to the showerhead and restrict hot water flow through the showerhead once the water reaches a set temperature to prevent behavioral waste

# New Measures

## 2.5.5 Pool Pumps:

- Measure incorporates ENERGY STAR pool pump calculator savings methodology supplemented with available field data
- Above ground pools and pools serving multiple tenants in a common area are not eligible for this measure
- Multi-speed pumps require a high speed override reset controller to revert back to low speed after a period not to exceed 24 hours

## Cool Roofs:

- Reflective roof coating that reduces the overall heat load on a home by reducing the total heat absorbed from solar radiation. Savings vary by for roof slope, existing attic insulation levels, and roof material 3-year solar reflectance ratings
- Will be filed separately then incorporated into TRM v6.0

# TRM 5.0 Update

## Non-Residential Measures

# 2.1.1 Lamps and Fixtures

## Key Changes:

- Updated fixture certification language
- Updated new construction LPDs (interior and exterior) to IECC 2015/ASHRAE 90.1-2013
- Incorporated new building types (24-hr Restaurants and Data Centers) and new Manufacturing building categories

## Savings Impact:

- New construction baselines decreasing between 7.3 and 43.0%
- Average decrease of 20.4%

## Implementation Changes:

- Can now target new buildings types
- Manufacturing building type split into 1, 2, and 3 shift options
- Code requirement for state-funded buildings is ASHRAE 90.1-2013 instead of IECC 2015

# 2.1.1 Lamps and Fixtures

## Key Whole Building Updates:

| Building Type | IECC 2009 LPD ($W/ft^2$) | IECC 2015 LPD ($W/ft^2$) |
|---|---|---|
| Dining: Cafeteria/Fast Food | 1.4 | 0.90 |
| Dining: Family | 1.6 | 0.95 |
| Health Care Clinic | 1.0 | 0.90 |
| Hospital | 1.2 | 1.05 |
| Hotel/Motel | 1.0 | 0.87 |
| Manufacturing | 1.3 | 1.17 |
| Multifamily | 0.7 | 0.51 |
| Office | 1.0 | 0.82 |
| Parking Garage | 0.3 | 0.21 |
| Retail | 1.5 | 1.26 |
| School/University | 1.2 | 0.87 |
| Warehouse | 0.8 | 0.66 |

# 2.2.2 Split/Packaged ACs and HPs

## Key Changes:

- Updated ER baseline tables to reference current and previous IECC code changes
- Updated NC/ROB baseline efficiencies to IECC 2015
- Incorporated new building types (24-hr Full Service Restaurants, 24-hr Quick Service Restaurants, and 24-hr Stand Alone Retail)
- Updated RUL table for to cover 1-4 year old systems and to cap RUL at 75$^{th}$ percentile of equipment age

## Savings Impact:

- Cooling demand and heating energy baselines remain unchanged; Cooling energy baselines increasing by an average of 11.9%

## Implementation Changes:

- Can now target new buildings types
- Although unlikely, early retirement baseline now applicable to 1-4 year old equipment

# 2.2.3 Chillers

## Key Changes:

- Updated ER baseline tables to reference current and previous IECC code changes and to include separate Path B baseline tables
- Updated NC/ROB baseline efficiencies to IECC 2015
- Added separate savings methodology for Path B chillers, which operate mostly at part-load
- Incorporated new 24-hr Stand Alone Retail building type
- Updated RUL table for to cover 1-4 year old systems and to cap RUL at 75$^{th}$ percentile of equipment age

## Savings Impact:

- Air Cooled Chiller demand baselines increasing by an average of 5.6%; energy baselines increasing by an average of 9.7%
- Water Cooled Chiller demand baselines increasing by an average of 4.0%; energy baselines increasing by an average of 6.9%
- Path B expected to have increased kW savings and decreased kWh savings compared to what was awarded in 2017 using Path A baseline

# 2.2.3 Chillers

**Implementation Changes:**

- Need to distinguish between Path A and Path B
- Increases number of qualifying projects for utilities not already allowing Path B
- While Path A and Path B calculations only reference either full-load or part-load efficiency, installed equipment must meet or exceed BOTH full and part-load baselines in order be eligible to claim savings
- Can now target new buildings type
- Although unlikely, early retirement baseline now applicable to 1-4 year old equipment

# 2.2.4 PTAC/PTHP & Room AC/HP

## Key Changes:

- Updated NC/ROB baseline efficiencies to IECC 2015
- Updated PTAC CF and EFLH values for existing building types and establish values for additional building types (Schools, Restaurants, Strip Mall, and Small Office)
- Updated coincidence factors must comply with current peak definition
- Updated RUL table for to cover 1-4 year old systems and to cap RUL at 75$^{th}$ percentile of equipment age

## Savings Impact:

- Cooling savings for standard size PTACs (not PTHPs) will decrease based on baseline change to IECC 2015; other baselines are unchanged except for PTHP heating baseline, which was not updated because IECC 2015 values are lower than federal standard
- Increased savings options with addition of new building types; minimal savings change for existing hotels and motels

## Implementation Changes:

- Can now target new buildings types
- Although unlikely, early retirement baseline now applicable to 1-4 year old equipment

# 2.2.5 HVAC VFDs on AHUs

**Key Changes:**

- Updated operating hours for select building types
- Updated demand savings for compliance with current peak definition

**Savings Impact:**

- Minor changes in kWh energy savings
- Major reduction in kW demand savings due to high coincidence of peak hours and equipment operation

**Implementation Changes:**

- None

# New Measures

## 2.5.5 Pool Pumps:

- Measure incorporates ENERGY STAR pool pump calculator savings methodology supplemented with available field data
- Measure applies to pump sizes up to 3 hp; larger sizes should be implemented through custom program
- Multi-speed pumps are not eligible because if half-speed option is unable to complete required recirculation cycle, high speed motor will operate exclusively
- Low-speed option is typically not sufficient enough to handle higher turnover requirements for commercial pool pumps

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