2024 CT C&I Early Retirement Implementation

The Early Retirement offering is available for equipment replacement projects where Participants are choosing to upgrade a functioning piece of equipment that is old with a high efficiency version. Small Business, Energy Opportunities and the Multifamily Initiative programs will use these pathways when a piece of equipment is being replaced before the end of life and with the same equipment type and capacity. Express, new construction/major renovation, midstream, energy optimization programs are not included.

Section 1: Overview CT C&I Early Retirement Energy Saving Calculations:

The Early Retirement approach creates an energy saving calculation that provides retrofit savings comparing the existing equipment to New Equipment or Replacement Equipment baseline efficiency (current energy code or Industry Standard Practice) over the estimated Remaining Useful Life (RUL) of the existing equipment if it was used until failure. The existing equipment efficiency is typically approximated by code compliance at the time of equipment installation (see Path 1 below), the lifetime is determined for these savings calculations per Path 1 and 2 rules and using input from the PSD or Tables 1 and 2 below. The new piece of equipment also receives additional energy savings for Lost Opportunity, comparing the new equipment efficiency to current energy code or Industry Standard Practice (ISP). The Lost Opportunity savings Lifetime is the standard Equipment Replacement Lifetime in years. The results of both energy calculations create a higher initial annual savings and additional lifetime energy savings for the project. Early Retirement can be referred to as "Dual Baseline" since two baselines are used in calculating savings.

To use the Early Retirement approach, the existing equipment must be in operation and capable of operation. Operation must be documented. An applicable level of documenting is based on age and incentive level.

- Path 1 will use the building code efficiency tables in place based on age of the existing equipment
  - ◊ Rooftop Unit, Heat Pumps, Variable Refrigerant Flow, Electric Chiller, Gas Fired Condensing Boiler and Furnace (existing conditions must be non-condensing), and Energy Efficient Transformers (Table 1)
- Path 2 is based on existing equipment
  - ◊ Motors and Custom Measures (Table 2)

Path 1: Method: Baseline is building code based on the age of the existing equipment.

Years	Age	Building Code
2024	0	2021 IECC
2023	1	
2022	2	2015 IECC
2021	3	
2020	4	
2019	5	
2018	6	2012 IECC
2017	7	
2016	8	2009 IECC
2015	9	
2014	10	
2013	11	
2012	12	
2011	13	2006 IECC
2010	14	
2009	15	
2008 and before	16 +	2003 IECC

- To determine the remaining useful life (RUL), use table 1.
  - ◊ Remaining Useful Life (RUL): This is how long the pre-existing but replaced piece of equipment would have remained in operation if the measure had not been installed.

Table 1: Path 1 Early Retirement Baseline, EUL and RUL Assumptions

Early Retirement Measures	EUL*	Equipment Nameplate Year	Determination of Savings
Rooftop Units, Heat Pumps and VRF (RUL = 5)	15	Equipment with a 2014 nameplate date or older, follow additional information requirements as listed in Section 3	**Retrofit:** Building energy code at time of installation of existing equipment compared to current ISP **Lost Opportunity:** High Efficiency proposed vs current Industry Standard Practice (ISP)
Electric Chiller (RUL = 5)	23	Equipment with a 2008 nameplate date or older, follow additional information requirements as listed in Section 3	
**Gas-Fired Condensing Boiler and Furnace & Energy efficient transformers (RUL = 7)	20	Equipment with a 2011 nameplate date or older, follow additional information requirements as listed in Section 3	

Note: *EUL assumptions are based on 2024 PSD. To determine RUL, use 1/3 of EUL if RUL is not specified in the PSD. Measure life assumptions will be revisited when new information is available from evaluation.

**Gas-Fired Condensing Boiler and Furnace can only replace existing non-condensing boiler or furnace. Effective Useful Life (EUL) is defined as the median number of years that the installed measure is in place and operable. In principle, this is the equipment technical life (e.g., median time to failure), discounted for measure persistence, the likelihood of the equipment being removed entirely from use due to business closure, remodeling, etc.

Incentives: For measures where the incentive for the Equipment Replacement is normally a 'prescriptive' incentive, Path 1 Incentive will be 50% higher than prescriptive incentive rates. For chillers & transformers the incentive will be a 25% increase of the single non-lighting custom incentive.

Path 2:

Method: Using existing efficiency as first stage baseline.

This path will be applied to measures where existing efficiency information can be collected/verified.

- In the absence of site-specific information, a default value of 1/3 of the EUL should be used per guidance from the X1939 Phase 1 Best Practices Research Study and the CT 2024 PSD. Table 2 summarizes the EUL, RUL and baseline assumptions for measures under Path 2:

Table 2: Path 2 Early Retirement Baseline, EUL and RUL Assumptions (Custom Measures, site specific to the building)

Early Retirement Measures	EUL	RUL	Equipment Nameplate Year	Determination of Savings
Energy Efficient motors	20	7 (1/3 EUL)	Equipment with a 2011 nameplate date or older follow additional information requirements as listed in Section 3	**Retrofit:** Existing efficiency information compared to current ISP
Custom measures as applicable	Measure Specific	Measure Specific	Measure Specific	**Lost Opportunity:** High Efficiency proposed vs current Industry Standard Practice (ISP)

Note: EUL assumptions are based on 2024 PSD. For custom measures, use 1/3 of EUL if site-specific is not available per X1939/2024 PSD guidance. Measure life assumptions will be revisited when new information is available from evaluation.

Incentives: For motors and custom measures, incentive will be a 25% increase of the single non-lighting custom incentive.

Section 3: Documentation Required

A) For all paths and all equipment provide photo(s) proving age (nameplate) & a signed Participant/Outside service contractor attestation confirming the equipment is operational. A video can be submitted to show the equipment is operational.

B) For equipment beyond 2/3 of useful life **and** if the per unit incentive-piece of equipment incentive $5,000 & up: provide documentation listed above and the additional information below, including but not limited to:
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- 36 months of current and past maintenance and repair history, records, and cost to show that the Participant has been maintaining the system and show this maintenance isn't a large operating cost (ex. repair costs should be under 20% of replacement cost)
- Operating data to prove the system is currently operable (ex. Trend data)
- Reliability history and issues
- Information on current plans or budgeting for expansions, remodels, replacements to ensure this piece of equipment will be maintained