

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 Pathways:

The early retirement approach provides retrofit savings comparing the new equipment to the estimated remaining useful life of the existing equipment if it was used until failure. A retrofit baseline and lifetime are determined for these savings calculations. After the retrofit savings lifetime, the new piece of equipment can receive additional energy savings. These are the same annual savings that are calculated comparing the equipment efficiency to current energy code or Industry Standard Practice (ISP). The benefit is the added lifetime years of energy savings for the project.

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)

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

Years	Age	Building Code
2023	0	2021 IECC
2022	1	2015 IECC
2021	2	
2020	3	
2019	4	
2018	5	2012 IECC
2017	6	
2016	7	2009 IECC
2015	8	
2014	9	
2013	10	
2012	11	
2011	12	2006 IECC
2010	13	
2009	14	
2008	15	2003 IECC
2007	16	
2006	17	
2005	18	
2004	19	
2003 and before	20+	use 2003 IECC as proxy

- 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.
- For calculating savings after the remaining life of the existing equipment, the baseline will be the building code or industry standard practice (ISP) in place at the time of replacement.

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

Early Retirement Measures	EUL*	Equipment Nameplate Year	Baseline Determination for Savings
Rooftop Units, Heat Pumps and VRF	15	Equipment with a 2013 nameplate date or older, follow additional information requirements as listed in Section 3	<p>First stage: Building code based on the age</p> <p>Second stage: Code or ISP at the time of replacement</p>
Electric Chiller	23	Equipment with a 2007 nameplate date or older, follow additional information requirements as listed in Section 3	
**Gas-Fired Condensing Boiler and Furnace & Energy efficient transformers	20	Equipment with a 2010 nameplate date or older, follow additional information requirements as listed in Section 3	

Note: *EUL assumptions are based on 2023 PSD. To determine RUL, use 1/3 of EUL if RUL is not specified in the PSD. The RUL of electric chillers in 2023 is 5 years. 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.

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 2023 PSD. For calculating savings after the remaining life of the existing equipment, the baseline will be the building code or industry standard practice (ISP) in place at the time of replacement. 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	Baseline Determination for Savings
Energy Efficient motors	20	7 (1/3 EUL)	Equipment with a 2010 nameplate date or older follow additional information requirements as listed in Section 3	<p>First stage: Existing efficiency information</p> <p>Second stage: Code or ISP at the time of replacement</p>
Custom measures as applicable	Measure Specific	Measure Specific	Measure Specific	

Note: EUL assumptions are based on 2023 PSD. For custom measures, use 1/3 of EUL if site-specific is not available per X1939/2023 PSD guidance. Measure life assumptions will be revisited when new information is available from evaluation.

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:

- 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

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