WAC 194-50-140 Normative Annex X—Investment criteria.

X1 Demonstrating compliance with the investment criteria. Buildings seeking compliance using the exception to Section 9.1.1.1 or 9.1.1.2 shall demonstrate compliance with the financial investment criteria of this annex. The investment criteria shall be documented using a level 2 energy audit and by performing the life cycle cost analysis (LCCA) as per X2.2.

X1.1 General guidance on cost and benefits for the base case and alternative case.

The life cycle cost analysis is a process which compares the base case of the existing building to the alternative case that implements EEMs proposed by the energy audit. Total life cycle cost of each case are produced by the analysis, but the resulting cost and benefits of interest are the incremental life cycle cost difference between each case. Measures and bundles of measures demonstrating positive life cycle cost compared to the base case are to be implemented in accordance with chapter 9.

The base case will include all costs for energy, operations and maintenance and other related cost scheduled in the analysis period. This may include replacement of existing equipment upon failure with code compliant equipment. All these costs are captured in the base case.

The alternate case captures all cost and benefits associated with implementing additional efficiency features. All costs and all benefits of implementing EEMs required by Section 9 should be captured by the analysis. All documented costs may be considered.

Extended implementation periods are allowed by this standard. This allows more EEMs to be considered at time of failure resulting in much of the cost of implementation being attributed to the base case. This requires including the implementation timing of the measure in the extended compliance period. Ultimately, this reduces the cost of the alternative case and will likely make EEMs that are not cost effective as an early replacement be cost effective as replacement upgrades.

X2 Energy audits and investment criteria pathway.

X2.1 Buildings qualifying under the investment criteria must complete a LCCA and implement an optimized bundle of energy efficiency measures that provide maximum energy savings without resulting in a savings-to-investment ratio of less than one.

Exception: Building owners may demonstrate compliance with this section by completing the Level 2 energy audit and implementing all EEMs determined to have a simple payback that is less than the EEMs expected useful life.

X2.2 The procedures for developing the investment criteria shall be based on ANSI/ASHRAE/ACCA Standard 211 Section 5.5.2 and Section 5.5.3 Life-Cycle Cost Analysis (LCCA) as modified by section X2. The LCCA shall also follow, and consider the findings of, the Level 2 Audit as defined by ANSI/ASHRAE/ACCA Standard 211 Section 5.4.

X2.3 Investment criteria chronological process.

X2.3.1 Level 2 audit. Evaluate a comprehensive list of individual EEMs using simple payback as a screening criteria. Individual EEMs determined to have a simple payback that is greater than the EEMs useful life may be excluded from further consideration.

X2.3.2 Life cycle cost assessment. Identify an optimized bundle of EEMs that provides maximum energy savings without resulting in a savings-to-investment ratio of less than one. The optimized bundle of measures shall be implemented based on the schedule established within the energy management plan.

X2.3.2.1 Life cycle cost assessment on individual measures. Individual measures that do not meet the life cycle cost test may be excluded from the implementation plan if they are not integral to the implementation of other cost effective measures in the bundle.

X2.3.2.2 Phased implementation. The LCCA and energy management plan may include phased implementation such that the building owner is not required to replace a system or equipment before the end of the system's or equipment's useful life.

X3 Included LCCA costs and savings.
X3.1 The costs and savings to be included within the life cycle cost analysis shall be based on ANSI/ASHRAE/ACCA Standard 211 Sections 5.4.8.1, 5.5.2 and 5.5.3 as modified by the following:

X3.1.1 Cost for implementation of EEM, as required by Section 9.

Estimate EEM Costs (based on Standard 211 Sections 5.4.8).

Estimate the total expected cost of implementation for each practical measure. Cost estimates shall include the following factors, as applicable:

1. Material costs;
2. Labor costs, contracted or executed by employees;
3. Design fees;
4. Construction management, contracted or executed by employees;
5. Site-specific installation factors;
6. Permits;
7. Temporary services;
8. Testing, adjusting, and balancing;
9. Utility service upgrades;
10. Verification, as required in Section 9.2.2 only;
11. Commissioning;
12. Taxes;
13. Profit;
14. Any additional adjustments that significantly impact the cost estimate of the EEM.

***Informative Note*:** Multiple measures affecting the same building systems or end uses may be combined and their costs estimated as a group. Combining costs may improve the cost effectiveness of combined measures.

Hazardous material abatement (based on standard 211, 5.4.8.2). Estimation of hazardous material abatement costs is not required. If the possible presence of hazardous materials is apparent at the site, either through observation or as reported by others, the possible presence of the hazardous material shall be included in the report (see Standard 211 Section 6.2.5) as potentially affecting health and safety and installation costs.

Cost and cost savings of recommended EEMs (based on standard 211 Section 5.5.2).

Estimate the initial and recurring costs, energy cost savings, and nonenergy cost savings of each measure and each integrated group of measures. Cost estimates shall either be:

1. Obtained from a vendor at the quoted price; or
2. Based on quotations of similar projects within the last year; or
3. Based on labor cost estimates for employee labor.

Life-cycle cost analysis (LCCA) (based on standard 211 section 5.5.2). LCCA 7,8,9,10 of each recommended EEM shall be conducted for a time frame that spans, at a minimum, the life of the measure with the longest service useful life and shall include the following:

1. Initial costs (per Standard 211 Section 5.4.8.1);
2. Financing costs;
3. Annual energy costs;
4. Escalation rates as published by the AHJ citing the source within the energy audit report;
5. Discount rates as published by the AHJ citing the source within the energy audit report;
6. Tax credits and deductions;
7. Cash incentives, grants, and rebates;
8. Expected periodic replacements;
9. Estimated recurring nonenergy costs (maintenance, etc.), of each measure or set of measures. Such costs include annual maintenance and service labor costs, routine replacement of worn parts, or annual warranty fees from manufacturers;
10. Contingency funds not to exceed 5% of estimated EEM implementation cost; and
11. Water & sewer savings from EEM. EEMs that provide water and/or wastewater savings shall include the operations and maintenance savings resulting from implementation of the EEM.

X4 Life cycle cost analysis methodology, form and key variables.

X4.1 Life-cycle cost analysis completed for buildings qualifying under the investment Criteria shall follow the *National Institute of Standards and Technology (NIST) Life-Cycle Costing Manual Handbook 135* except as specified in this standard in Table X4.

Table X4 Life Cycle Cost Analysis Variables Independent Of NIST Handbook - 135 Methodology.

Public owner discount rate	A fixed annual rate based on the cost of borrowing through the Washington state treasurer, certificate of participation programs, the local program and the state lease-purchase program.
Private owner discount rate	Shall be the published *Wall Street Journal Prime Rate* for based on the average of the previous twelve months.
Financing	Applicants with documented costs of borrowing assuming one hundred percent of the EEM implementation costs are financed at an actual cost of borrowing and stated terms when the property being improved is listed as loan collateral.
Rate of inflation	A fixed annual rate, as published annually by the Washington state office of financial management.
Fuel escalation rate	Based on the most recent edition of *NIST Handbook - 135 Annual Supplement - Fuel Escalation Rates.*
Study period	Equal to the useful life of the longest-lived EEM within an optimized bundle. (STD 211, 5.5.3)

X4.2 Publication of analysis variables. The AHJ shall on an annual basis publish the public owner discount rate, private owner discount

rate, rate of inflation and fuel escalation rates on the agency website.

[Statutory Authority: RCW 19.27A.210. WSR 20-22-059, § 194-50-140, filed 10/30/20, effective 11/30/20.]