

Energy Life Cycle Cost Guidelines

1.0 General

It is the policy of the State of Washington, as required by RCW 39.35, that major facility designs be based on the total life cycle cost, including the initial construction cost, the cost of the energy consumed, and the costs of the operation and maintenance of the facility over its economic life.

Therefore, an Energy Life Cycle Cost Analysis (ELCCA) shall be prepared for any major facility (defined as having twenty-five thousand square feet or more of usable floor space) that is to be constructed or renovated by any public agency. The preparation of an ELCCA is considered an extra service to the basic agreement.

The latest version of the "Energy Life Cycle Cost Analysis Guidelines for Public Agencies" shall be used for the preparation of ELCCAs, the reporting of results and the definition of terms. For further information visit the ELCCA web page (<http://www.ga.wa.gov/eas/elcca>). A complete copy of the Energy Life Cycle Cost Analysis Guidelines for Public Agencies is available from E&AS.

The following supplements the ELCCA Guidelines and shall be met by the A/E Consultant and ELCCA Analyst preparing the ELCCA for E&AS.

2.0 Participants and Responsibilities

The responsibilities outlined herein are in addition to or a clarification of those in the ELCCA Guidelines. They do not constitute a complete listing of the responsibilities of each participant.

- 2.1 The PM will contract for the ELCCA analyst early in the Schematic Design Phase. The PM may contract with the A/E Consultant, with the Value Engineer, or with a third party to provide ELCCA analyst services.
- 2.2 The A/E Consultant shall coordinate a meeting during the Schematic Design Phase to identify and recommend energy conservation measures that may be incorporated into the ELCCA Work Plan. The following shall be invited to participate: Owner's representative, Project Manager, ELCCA Analyst, Mechanical and Electrical Sub-Consultants, electric and gas utility representatives, and the ELCCA reviewer. The A/E Consultant shall participate in all phases of the ELCCA process as described in the ELCCA Guidelines.
- 2.3 The E&AS Lead ELCCA engineer or designee will be the ELCCA reviewer for projects accomplished under the direction of E&AS. The ELCCA reviewer and PM will coordinate reviews and approvals to comply with project milestones. The ELCCA reviewer will participate in all phases of the ELCCA process as described in the ELCCA Guidelines.
- 2.4 The ELCCA analyst shall prepare and submit the Work Plan for approval by the ELCCA reviewer prior to the completion of the Schematic Design. The energy simulation software shall be identified on the Work Plan. The ELCCA analyst shall participate in all phases of the ELCCA process as described in the ELCCA Guidelines.
- 2.5 The ELCCA analyst shall prepare and submit the report to the ELCCA reviewer. The ELCCA analyst will have the report approved prior to opening of construction bids.
- 2.6 The Project Manager as the State's authorized representative and the client agency will perform the Owner's function.
- 2.7 The A/E Consultant shall complete the Verification Checklist as part of the punch list inspection. A copy of the signed Verification Checklist shall be submitted to the ELCCA reviewer.

3.0 Energy Analysis

There are three approved methods for complying with the ELCCA Guidelines. They are the Prescriptive Path, Prototypical Design, and Detailed Analysis. The method will be determined during the development of the Work Plan.

An acceptable ELCCA is dependent upon good prior planning and engineering. The following criteria should be considered when involved in the development of a major project:

- 3.1 The formal ELCCA process begins in the Schematic Design Phase. However, energy efficiency and energy systems need to be considered in the pre-design and budget phase. Project budgets must be adequate to allow for the installation of efficient building systems.
- 3.2 The Work Plan is developed by the ELCCA analyst in collaboration with the ELCCA reviewer. The energy systems to be analyzed are presented in the Work Plan.
- 3.3 Do not conduct a detailed analysis of anything that the Owner will not allow to be included in the final design.
- 3.4 The ELCCA for the first phase of a project should consider future phases to ensure appropriate long-term solutions. Future ELCCAs will only require updating.
- 3.5 In a campus facility consider the potential impact on existing systems when conducting the analysis.

4.0 Report

The report is used to convey the results and recommendations of the ELCCA to both a technical and non-technical audience. It must be understandable by reviewers who are familiar with the project and others who are not familiar with the project. In addition to the instructions included in the ELCCA Guidelines the following items shall be included:

- 4.1 The Project name and E&AS project number shall be included on the report cover and title page.
- 4.2 Include a copy of the building simulation inputs for the computer model for the base run and copies of pages of subsequent runs that change, with changes highlighted. Auxiliary reports (such as Trane Traces' Engineering Checks) should be included if available, to facilitate review.

5.0 Installation & Commissioning

- 5.1 When the Owner has selected and approved the ELCCA recommendations, the A/E Consultant shall proceed to incorporate these recommendations into the construction documents. In the event the A/E Consultant fails to incorporate the recommendations into the construction documents, it will be considered a design error and the A/E Consultant will be liable to reimburse the State for any lost utility incentive, to provide for the correction of the error, or to reimburse the State for the present value of the lost energy savings over the economic life of the building.
- 5.2 The A/E Consultant shall include a statement in the construction documents to inform the contractor of the importance of proper installation of the energy conservation measures. The statement shall also provide for the reimbursement to the State for any lost utility incentive, correction of improperly installed measures, or the reimbursement to the State for the present value of the lost energy savings over the life of the building.
- 5.3 The A/E Consultant shall provide for the proper commissioning of the energy conservation measures whether or not a formal commissioning program is to be implemented.