



Energy Smart Services

solutions &
incentives for
business

SECTION 3

TECHNICAL ASSISTANCE SERVICES

- Today's buildings have increasingly complex technological needs. Not paying attention to energy performance can be a costly mistake. Further, new technologies offer efficiency and control opportunities difficult for busy facilities staff to track. That's where Technical Assistance comes in.
- Developers building new commercial spaces, or planning major renovations, will want to take advantage of our Building Commissioning Services, Energy Analysis Assistance, and Assistance With LEED® Sustainability Certification, all of which work to maximize energy and environmental performance.
- Customers with existing buildings can have a City Light Energy Management Analyst perform a free Facility Assessment, providing an analysis and written report on existing conditions, as well as a summary of proposed improvements. Companies looking for ways to reduce greenhouse gas emissions can get help and support through the Climate Wise Program.
- Industrial plant managers recognize that identifying new efficiency technology for their specific process calls for specialized expertise. City Light can assist with the exploration of plant changes that can save energy while yielding production benefits.
- Let Seattle City Light work with you to effectively manage your facility's energy consumption. Technical Assistance from Energy Smart Services can help new buildings start off on the right path, and help existing buildings operate at peak efficiency.

from  Seattle City Light

Section 3. Technical Assistance Services

- Facility Assessment
- Energy Analysis Assistance
- Building Commissioning Assistance
- The Lighting Design Lab
- Assistance with LEED Certification for Sustainable New Buildings
- Climate Wise Greenhouse Gas Reduction Assistance

Facility Assessment

Commercial and industrial customers interested in making their facilities more energy efficient may receive a free Facility Assessment conducted by an Energy Management Analyst or a consultant hired by Seattle City Light.

During a Facility Assessment, the customer provides expertise about their business and their facility, and the Energy Management Analyst provides knowledge about energy efficient equipment, the Energy Smart Services program, and energy savings calculations. The result is a practical plan of action for how funding can be used to benefit both the utility and the customer by increasing the effectiveness of the electricity consumed.

GETTING STARTED

To get started, the customer sends Seattle City Light an Energy Smart Services *Application for Service*, and requests a Facility Assessment.

GATHERING INFORMATION

Once an Energy Management Analyst has been assigned to a project, he or she schedules a visit to the site. On site, the Energy Management Analyst performs the following activities:

- Meets with the customer's administrator to discuss the company's plans and goals so that the recommended conservation measures are consistent with the customer's business plan.
- Meets with operations staff to walk through the building and discuss operations patterns, equipment performance, and operations goals.
- Reviews mechanical drawings and operations manuals if they are available.
- Makes on-site measurements as appropriate and reviews any relevant trend logs from the building's control systems.
- On industrial sites, learns about the manufacturing process production patterns.
- Explains Energy Smart Services funding options and requirements and goes over the customer's electrical billing history with the customer.

THE FACILITY ASSESSMENT REPORT

The Energy Management Analyst next writes a Facility Assessment Report and provides a copy to the customer.

The report includes the following information:

- A description of the facility (square footage, year of construction, types of lighting, HVAC, and other loads.)

- A brief description of any previous Energy Smart Services projects at the facility and the time frame of any upcoming construction projects or changes in occupancy patterns
- A discussion of the electricity billing history and consumption patterns (daily, weekly, and seasonal, changes over the years, etc), and a copy of the customer's current Seattle City Light electric rate
- A list of Energy Conservation Measures, with estimated annual kWh savings and Seattle City Light funding for each
- A list of Operations and Maintenance Measures (O&Ms) that would offer the customer a rapid payback due to high energy savings and low cost
- Optional: For each of the recommended Energy Conservation Measures, a set of specifications covering the critical energy savings elements of the proposed measure. (Specifications address critical efficiency ratings and controls sequences assumed in the calculations. They also include any significant capacity ratings, and specification of any parameters the Energy Management Analyst considers critical to achieving the calculated savings. Includes a schematic sketch of the system layout.)
- If specifications aren't provided: A clear description of the proposed Energy Conservation Measures

The methods used to estimate energy savings for the recommended Energy Conservation Measures conform to the methods outlined for Simple Rebates, Standard Incentives and Custom Incentives in this Program Manual.

The scope of the Facility Assessment is adjusted to the complexity of the facility and the recommended measures. A preliminary set of rough calculations may be used to help the customer identify a scope of measures to be presented in the Facility Assessment if the customer wants to focus only on those measures that can be quickly implemented.

THE ACTION PLAN

From City Light's perspective, the goal of a Facility Assessment is to help the customer take action(s) yielding energy savings. To that end, the Energy Management Analyst works with the customer to develop a Facility Assessment Action Plan that builds on the recommendations in the Facility Assessment Report. The overall strategy taken in most Action Plans is the following:

- Immediate implementation of recommended Operations and Maintenance Measures (O&Ms)
- Immediate transition to project development for one or more capital Energy Conservation Measures
- Further investigation of one or more possible Energy Conservation Measures, potentially with additional technical assistance and support from Seattle City Light

MOVING FROM RECOMMENDATION TO INSTALLATION

The Facility Assessment Report and Action Plan become the springboard from which the customer may apply for Seattle City Light funding to install recommended Energy Conservation Measures. Once the Report and Plan have been completed, the following steps are taken to realize the potential energy savings that have been identified.

1. Review of Report Findings

The Energy Management Analyst provides a copy of the Facility Assessment Report and Action Plan to the customer and meets with the customer to identify a scope of work for a Financial Incentive for ECM Installation contract

2. Design

Once the customer has decided which measures to pursue, he may choose to hire a design consultant to complete a full design of some of the recommended Energy Conservation Measures. A full design typically includes a set of scaled drawings, equipment schedules (giving equipment performance at specific design conditions), and extensive specifications for the full range of the customer's design criteria (e.g. safety, comfort, worker or manufacturing equipment performance). A full design is most desirable if (1) the project is new construction, (2) a funded Energy Conservation Measure affects facility operation or safety, or (3) the project is going out for a competitive bid. For projects that change ventilation levels, the Energy Smart Services program requires that the installation meet ASHRAE ventilation standard 62-89 or other applicable code or standard. The customer should include compliance with this program requirement as part of the scope of work for the designer. Seattle City Light does not select design consultants or review design documents. When hiring a design consultant, the customer should make sure the design documents are consistent with Seattle City Light contract requirements.

3. Bids

The customer obtains bids for the Energy Conservation Measures he is interested in.

4. Seattle City Light Contract

The Energy Management Analyst finalizes the calculations of energy savings and City Light funding levels, and then a contract is signed between the customer and Seattle City Light. See the Program Manual Section 2—*Financial Incentives for ECM Installations*.

CONSERVING WATER AND NATURAL GAS

Seattle City Light encourages the customer to benefit from all available conservation programs. While performing a Facility Assessment, the Energy Management Analyst helps the customer take advantage of the technical assistance and grants that may be available from Seattle Public Utilities (SPU) for water conservation and Puget Sound Energy (PSE) for natural gas conservation.

Energy Analysis Assistance

PURPOSE

The purpose of Energy Analysis Assistance (formerly Design Assistance) is to provide the customers with in-depth analyses of proposed electrical Energy Conservation Measures not covered by Standard Incentives. Through Energy Analysis Assistance, engineering expertise is applied to a full range of commercial and industrial energy conservation strategies to produce cost and savings information and to assess the eligibility for Seattle City Light Custom Incentive funding.

SCOPE

Energy Analysis Assistance funding is offered for measures that show potential for considerable electrical energy savings and require detailed engineering analysis in order to realize the savings. This service is particularly useful for new construction projects. Through Energy Analysis Assistance, designers and customers are able to consider annual electric savings and Seattle City Light funding for alternative design options. In the case of existing facilities, Energy Analysis Assistance is applied to unusual applications and complex measures, particularly those that involve state of the art industrial process equipment.

The list of measures to be covered by an Energy Analysis Assistance contract is agreed upon in advance by the customer, the consultant, and the Energy Management Analyst. If there is a Standard Incentive that can be applied to a proposed Energy Conservation Measure, the measure will not be covered under an Energy Analysis Assistance contract.

OVERVIEW OF THE ENERGY ANALYSIS PROCESS

The Energy Analysis Assistance contract is based on a proposal by a consultant to analyze a specific list of measures using methods explained in the proposal. The customer selects and hires the consultant.

New Construction. In new construction and major retrofit projects, Seattle City Light offers a contract for 100% of the analysis cost agreed upon by Seattle City Light. Payment is made upon Seattle City Light approval of the Energy Analysis Report.

Existing Facilities. Seattle City Light offers the customer a contract for half the approved amount. Payment is made upon review and approval of the Energy Analysis Report by Seattle City Light. Reimbursement for the second half of the Energy Analysis is provided if the customer installs all measures with a payback of less than 2.5 years within 18 months of the payment for the first half of the Energy Analysis Assistance.

The rest of this section covers the following topics in more detail:

- Steps to Participate
- The Proposal
- The Energy Analysis Report
- Installation

STEPS TO PARTICIPATE

- 1) **Application.** The customer contacts Seattle City Light or sends in an *Application for Service* to begin discussions about the project.
- 2) **Scoping.** The Energy Analysis consultant, City Light Energy Management Analyst and customer work closely to specify the scope of the Energy Conservation Measures to be analyzed, analysis methodology, contents of the final report, and the budget and timeline for the analysis work. For new construction projects, these discussions will include the architect, and/or the mechanical and electrical design consultant(s). (Unless indicated otherwise, “consultant” is used here to mean the consultant who writes the Energy Analysis Report, not the design consultants, unless they are the same.) The customer’s willingness and ability to implement the measures once the analysis is complete are also assessed at this time. For existing facilities, the scoping process often involves a visit to the project site and an inventory of existing conditions.
- 3) **Proposal.** The consultant prepares a proposal and sends it to the customer. The proposal describes the scope of the analysis, budget, and timeline as agreed upon by the project team. See “The Proposal” section, below.
- 4) **Proposal Review by Customer.** The customer reviews the proposal and submits it to Seattle City Light.
- 5) **Proposal Review by Seattle City Light.** Seattle City Light reviews the proposal for accuracy, completeness, and reasonableness of cost.
- 6) **Contract for Energy Analysis.** Once the proposal has been approved, Seattle City Light prepares a contract stating the funding level available for the analysis work and the terms of the agreement. The contract is mailed to the owner.
- 7) **Customer Signature.** The customer signs two copies of the contract and returns them to Seattle City Light.
- 8) The customer signs a separate agreement with the consultant that clearly describes the scope and cost of the work.

- 9) **Analysis.** The consultant proceeds with the analysis of energy savings and Seattle City Light funding, following the requirements for Custom Incentives. The Energy Management Analyst provides guidance on analysis methodology and presentation of results. Intermediate checkpoints such as approval of the baseline may be required during the analysis.
- 10) **Measure Selection.** The cost-effectiveness of Energy Conservation Measures is often not known with enough accuracy to identify impractical options prior to the analysis. Therefore, once an initial analysis of the individual measure has been completed, the customer should decide (with assistance from the other members of the project team) which measures are practical to implement. If necessary, this recommended package of measures is then re-analyzed as a whole to account for interactions between the various measures.
- 11) **Energy Analysis Report.** The consultant submits a preliminary draft of the Energy Analysis Report to the customer and the customer forwards a copy to Seattle City Light for review.
- 12) **Review.** Seattle City Light reviews the preliminary draft for accuracy, completeness, compliance with the requirements given below under the “Energy Analysis Report” section, and consistency with the Seattle City Light contract. Seattle City Light makes a list of any changes or additions necessary for acceptance of the Energy Analysis Report.
- 13) **Modification.** The consultant submits to the customer a final draft of the Energy Analysis Report that responds to customer and Seattle City Light review comments. The customer forwards the final draft to Seattle City Light.
- 14) **Final Review.** The Energy Management Analyst reviews the final draft.
- 15) **First Payment.** After approval of the completed report, Seattle City Light mails a check to the customer for the contracted amount.
- 16) **Installation.** The project proceeds to a Financial Incentive contract between the customer and Seattle City Light.
- 17) **Final Payment.** The customer is reimbursed for the second half of the Energy Analysis cost when they install all recommended measures with a payback of less than 2.5 years, so long as the Energy Smart Services contract for their installation is signed within 18 months of payment for the Energy Analysis Report. Payment for the second half of Energy Analysis Assistance funding is made if and when all of the measures are installed and approved for payment.

THE PROPOSAL

In order to obtain a contract with Seattle City Light to cover the cost of the analysis, the consultant submits a proposal to the customer and to Seattle City Light. The proposal should be typed on letterhead, signed, dated, and addressed to the Energy Management Analyst. A sample proposal is provided at the Web site, www.EnergySmartServices.com. At a minimum, the proposal should include:

Description of the project.

- Customer's name
- Facility address and square footage
- Brief description of facility's HVAC and lighting systems, including heating fuel type
- Project description, square footage and total budget
- Project schedule (completion of schematic design, final design, and construction begins)

Description of Proposed Energy Conservation Measures.

Description of the Analysis Methodology. If computer modeling software will be used, include the name and version number of the software.

Other Contents of Report. Description of any other elements to be included in the final report. The project team will agree upon these other elements.

Cost Proposal Breakdown. The consultant's charges for performing the analysis should be broken down to show deliverables and the logical steps in the analysis. An example of a cost breakdown is shown in the table below. At a minimum, each line item should show billable hours, dollars/hour rate, and total dollars per line (hours * \$/hr). If elements in the scope of work are deleted after the contract is signed, the corresponding dollar amount will be deleted from the payment.

Sample Cost Breakdown for Proposal

<i>Elements</i>	<i>Hours</i>	<i>\$/Hour</i>	<i>Total</i>
1. Project management			
2. Site audit to gather data			
3. Baseline calculation (metering data, hand calculation, computer modeling)			
4. Review of baseline with Seattle City Light			
5. Adjusted baseline (unless hand calculation)			
6. Analysis of energy savings for each of the ECMs			
7. Cost Estimates of Installation or Bids			
8. Review costs and savings with customer and Seattle City Light to select modifications for final analysis.			
9. Interactive analysis (for computer modeling)			
10. Prepare performance specifications			
11. Conduct contractor/bidder site visits (optional)			
12. Review bids & make final recommendations (optional)			
13. Prepare Final Report			
14. Presentation of final report to customer			
Total			

THE ENERGY ANALYSIS REPORT

The purpose of the Energy Analysis Report is to calculate the reduction in electrical energy consumption that will result from each of the proposed Energy Conservation Measures, and to document the proposed measures in sufficient detail that the analysis can be reviewed and the project can proceed smoothly to a Custom Incentive funding contract.

The Energy Analysis Report should include the following sections:

- Title page
- Table of Contents
- Description of the project and Energy Conservation Measure recommendations
- Summary table showing energy savings, costs, and estimated Seattle City Light funding

At a minimum, the description of each Energy Conservation Measure should include:

- A generic description and explanation of how it saves energy
- Manufacturer name, model, quantity, etc. of any new equipment or hardware
- Sequence of operations for any new electrical equipment, and a description of the controls to be used
- Estimated costs

- Specifications, and, where appropriate, clarifying sketches or floor plans for the proposed Energy Conservation Measures. Specifications should address critical efficiency ratings and controls sequences assumed in the calculations. They should also show any significant capacity ratings and specification of any parameters the Energy Management Analyst considers critical to achieving the calculated savings
- Analysis methodology and calculations

Other elements such as contractor's bids or copies of manufacturers' literature may be required for some projects.

The introduction to the Energy Analysis Report must include the following statement: "Estimates of Seattle City Light funding presented in this study do not guarantee funding. The funding available will be finalized by Seattle City Light in a contract with the customer, and the amount offered may differ from the amount stated here."

See the Section 2D–*Custom Incentives*, for the minimum level of documentation required for energy savings calculations.

INSTALLATION

Once the Energy Analysis Report has been approved, the selected measures are incorporated into the final design documents and a Seattle City Light Financial Incentives for ECM Installation contract is offered to the customer.

1. For New Construction Projects

The customer confirms that the design consultants have incorporated all of the selected Energy Conservation Measures into the final design documents and checks that the design documents are consistent with Seattle City Light installation contract specifications.

2. For Retrofit of Existing Facility Projects

The owner may choose to hire a design consultant to produce a full set of scaled drawings and a complete set of specifications if it is necessary to define the project scope for competitive bids, or if the selected Energy Conservation Measures affect critical systems.

Design costs (up to 10% of the total measure cost) associated directly with an Energy Conservation Measure may be added to the material and labor costs in calculating the Cost Cap for Financial Incentives.

See Section 2 of this Program Manual for information about how to obtain funding for the measures covered by an Energy Analysis Report. A contract for Financial Incentives must be executed before equipment is ordered.

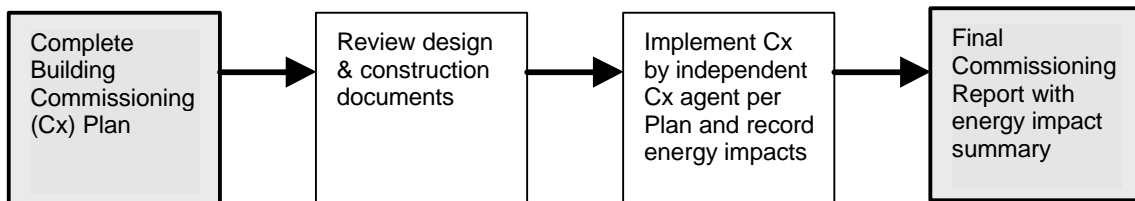
Building Commissioning Assistance

BUILDING COMMISSIONING ASSISTANCE OVERVIEW

Building commissioning is a systematic process for ensuring that the energy systems within a facility perform in accordance with the facility’s design intent, equipment requirements, and the owner’s operational needs. Seattle City Light provides financial and technical support for the building commissioning process in new construction and major remodel projects with construction budgets over \$5 million. Consideration may also be given to campuses or other multiple building facilities that meet the construction cost threshold if considered collectively. There are currently no retro-commissioning or re-commissioning services for existing facilities available.

City Light funds support: (1) development of a commissioning plan early in the building development process and (2) assessment of energy impacts from commissioning activities. City Light does **not** pay the cost of actually performing commissioning work such as the functional performance testing that would otherwise be part of start-up procedures.

In the diagram below, steps in the commissioning process supported by City Light are shaded.



While the Seattle Energy Code requires some commissioning, Seattle City Light’s Building Commissioning Assistance goes beyond Energy Code requirements in an effort to promote greater rigor and standardization in commissioning practices. For example, City Light funding requires the use of independent commissioning agents, best practice commissioning protocols, and an energy impact estimate.

Developers considering a sustainable building project following Leadership in Energy and Environmental Design (LEED™) guidelines may find Commissioning Assistance a good complement to their project. LEED™ credits for best practice commissioning may be earned by using a third party commissioning agent as specified in Seattle City Light’s Building Commissioning Assistance.

FUNDING

Projects with total construction budgets between \$5 million and \$10 million are eligible for up to \$5,000 in funding. Projects with construction budgets over \$10 million are eligible for funding up to \$10,000.

PROGRAM REQUIREMENTS

For City Light funding, commissioning activities must meet the following specific criteria:

- Owner has a separate budget for building commissioning
- Owner contracts with City Light **prior** to the start of commissioning activities
- Owner hires an independent commissioning agent who is a member of the Building Commissioning Association (see detail below)
- Commissioning activities follow established Building Commissioning Association guidelines
- Commissioning activities include functional performance testing for all HVAC systems and controls and automated lighting controls
- City Light receives a Building Commissioning Plan and a Final Commissioning Report, including an Energy Impact Summary (see below)

1. Independent Commissioning Agent

The independent commissioning agent should be employed early in the process, prior to completion of design documents. This ensures that they will become familiar with the design intent and have an opportunity to provide peer review before final design. The commissioning agent should have a direct line of communication with the building owner or owner's representative throughout the construction process and into the period of building occupancy.

2. Building Commissioning Plan

Building commissioning planning should begin early in the design stage of a project. An effective commissioning plan includes:

- Roles, responsibilities and lines of communication for all commissioning activities
- Scope of work, schedule and budget
- Review of design documents
- Commissioning requirements in specification language for incorporation into design and construction documents
- Installation checklists, functional performance test procedures and forms
- Review of training and documentation plans for building occupancy

3. Final Commissioning Report

The Final Commissioning Report includes: (1) completed functional performance test reports with deficiencies and resolutions identified and (2) an Energy Impacts Summary describing significant energy use changes based on commissioning procedures. Seattle City Light requires documentation of the energy impacts from commissioning activities because energy efficiency is the justification for offering building commissioning incentives.

Detailed engineering analysis is not necessary to calculate energy impacts; however, engineering estimates of significant energy use reductions or increases are required. Realizing that some discrepancies discovered in commissioning will result in increased energy use instead of savings, the summary should report both impacts in the final report. The summary should include: a list of equipment affected; the power requirements of the equipment; the estimated hours of operation that was saved or lost; and the calculated impact in annualized kWh. The summary should be broken into the following three categories:

- 1) Discrepancies attributed to the commissioning process that were resolved with some action taken prior to the final commissioning report
- 2) Discrepancies currently being acted on that were not resolved prior to the final commissioning report
- 3) Discrepancies that were resolved with no action currently being taken but that have an opportunity for action at some future date.

To keep this requirement manageable and cost-effective to customers, Seattle City Light strongly recommends that the commissioning agent track all discrepancies that have a significant energy impact **during actual commissioning** so they can be easily reported at the end of the commissioning process.

Free commissioning information, sample forms and procedures for HVAC and lighting controls are available from City Light's Web site: www.EnergySmartServices.com. The site also has links to the Building Commissioning Association (www.bcxa.org) and the Seattle Department of Design, Construction and Land Use (www.cityofseattle.net/dclu/energy). For additional information, contact the Energy Smart Services Program line at (206) 684-3254.

The Lighting Design Lab

The Lighting Design Lab offers training and technical support for designers of lighting systems in commercial and industrial buildings through its consultation services, lighting mock-up facilities, and classroom training opportunities. The Lighting Design Lab works to transform the Northwest lighting market by promoting quality design and energy efficient technologies.

Seattle City Light was instrumental in setting up the Lighting Design Lab, and still supports it to provide a source of reliable and unbiased information and education on the use of energy-efficient lighting practices. Based in Seattle, the Lab's services are offered across the region either for free or at a minimal cost to the user.

INFORMATION AND DISPLAYS

The Lab has a large number of interactive displays on site, allowing visitors to see first-hand the effect lighting design can have on a space. The Lab also operates a Library containing a large number of catalogs, reference materials, instructional videos, periodicals, and manufacturers' literature. The Library and most displays are available without appointment during regular business hours, 8 a.m. to 5 p.m. Monday through Friday. The Lab also offers tours of new lighting technologies and can assist the specifier in developing strategies to meet lighting code requirements. Customers should call ahead if they are interested in a tour of the Lab.

CLASSES AND WORKSHOPS

The Lab provides technical assistance, training and education to commercial customers and lighting designers seeking information on high quality, energy efficient lighting technologies. Examples of subjects offered include Daylighting, New Lighting Products, Lighting Design Considerations, Luminaires, and Controls. The Lighting Design Lab also offers training and technical assistance opportunities throughout Washington, Idaho, Oregon, Montana and British Columbia. Current class offerings, locations and fees can be viewed on the Lighting Design Lab Web site, www.lightingdesignlab.org. Customers can be added to the Lab mailing list by calling (206) 325-9711.

The Lab also hosts professional meetings where architects, lighting specifiers and designers can discuss advances in lighting equipment and electric and daylighting designs. The Lab periodically invites manufacturers and industry associations to share their organization's latest product and technical information.

CONSULTATIONS

Consultations are available for commercial, industrial and daylighting projects. Lighting Specialists will review plans and recommend efficient lighting and control strategies and products. Any interior or exterior project will be handled, and the consultation can be in person, over the phone or fax, or even by e-mail. In-person consultations are typically held at the Lighting Design Lab, but field visits may be possible with advance notice. Lighting consultations usually result in two or three energy efficient design options. A typical interior project consultation requires floor plans showing furniture placement, reflected ceiling plans, and

sections showing ceiling heights. Exterior projects should have a site plan showing building height, light fixtures (including existing street lighting) and landscaping.

The Lighting Design Lab does not specify final designs or manage projects. The Lighting Design Lab may access a national directory of lighting professionals, but does not endorse the work of any specific lighting professionals or manufacturers.

FULL SCALE DESIGN MOCK-UPS

A 1,200 square foot mock-up facility is available where life-sized models can be created to see how a proposed lighting design would look. This allows the design team to view and make necessary changes before actual construction begins. Actual light fixtures, fixture placement, ceiling height, room dimensions, surface finishes and furniture layout can all be evaluated in a mock-up. Lab staff handles all fixture installation, room construction, and painting. The client is responsible for providing fixtures, paint and any props needed for the mock-up. Simple mock-ups can be done free of charge. More complex mock-ups, and those that require extended viewing times, will incur charges.

DAYLIGHTING LAB

Customers can bring a model of a building and meet with a daylighting specialist to simulate the effects of two artificial skies, sunny and overcast. Daylight modeling on the sun simulator table and in the artificial sky room can accurately predict the daylighting effects of siting and architectural features, and predict savings from various control strategies.

FOR MORE INFORMATION

The Lighting Design Lab is in Seattle's Capitol Hill neighborhood. It is open to the public weekdays from 8:00 a.m. to 5:00 p.m. The Lab operates its own Web site offering a virtual tour of the facility, case studies, lighting design information, and other links and resources.

Address: 400 E. Pine St. Suite 100, Seattle, WA 98122

Phone: (206) 325-9711 or (800) 354-3864

Web: www.lightingdesignlab.org

Assistance with LEED™ Certification for Sustainable New Buildings

SUSTAINABLE BUILDING

Sustainable building is a holistic approach to building design and construction that helps minimize the adverse impacts the design, construction and maintenance of structures can have on people and the environment, and instead create healthful and responsible buildings. Seattle City Light values environmental stewardship and energy efficiency, and is partnering with other City departments, local businesses and institutions committed to sustainable new construction and the resulting long-term benefits to the community.

Sustainable building goes beyond energy and water conservation to include environmentally sensitive site planning, resource efficient building materials, and indoor environmental quality. Some of the key benefits are:

- Reduced electric and water utility costs
- Environmentally effective use of building materials
- Enhanced occupant health and productivity
- Economic life cycle efficiency

SUSTAINABLE BUILDING SUPPORT FROM SEATTLE CITY LIGHT

Seattle City Light encourages building owners and developers to set meaningful sustainable building goals early in building programming and design. City Light has adopted the United States Green Building Council's LEED™ (Leadership in Energy and Environmental Design) scoring system because it offers an excellent framework for designing and constructing buildings with superior environmental performance. Further, the LEED™ system provides a rating structure that allows developers and owners to “brand” and market their superior buildings.

Project teams making a commitment to LEED™ sustainable building may qualify for financial incentives from the City of Seattle through the LEED™ Incentive Program. In addition, Seattle City Light and members of the City's Green Building Team can bring significant technical resources to bear to help customers formulate their ideas and work through the LEED™ process.

The LEED™ framework has six categories offering points for higher levels of sustainable building commitment. The categories and some sample strategies are:

- **Sustainable Sites.** Urban redevelopment, alternative transportation, reduced site disturbance, storm water runoff control
- **Water Efficiency.** Landscaping, reduced water use, innovative wastewater technologies
- **Energy and Atmosphere.** Building commissioning, CFC reductions, energy efficiency, renewable energy

- **Materials and Resources.** Building reuse, construction waste management, use of recycled content materials, use of certified wood
- **Indoor Environmental Quality.** Increased ventilation effectiveness, low-emitting materials, increased daylight and views
- **Innovation Credits and Design/Build Process.** Opportunity for points for exceptional performance beyond LEED™ requirements

THE LEED™ INCENTIVE PROGRAM

The LEED™ Incentive Program is funded by Seattle City Light and Seattle Public Utilities, and provides financial assistance to building owners and developers who incorporate meaningful sustainable building ideas into their projects. Potential projects can be either new construction or a major remodel of an existing building. The minimum grant amount is \$15,000 for projects that commit to achieving a LEED™ “Certified” rating or \$20,000 for projects that commit to a LEED™ “Silver,” “Gold,” or “Platinum” rating. Incentive monies can be used for “soft” costs that contribute to a higher level of environmental performance, like professional services for energy, daylighting and life cycle analysis. The incentive is paid when a Letter of Agreement is signed, with the applicant agreeing to reimburse Seattle City Light should the project fail to meet LEED™ certification. Funding is limited. Projects selected for funding will be those that most aggressively comply with the criteria detailed in the *LEED™ Incentive Pre-Application* (attached).

As part of this program, the City will be an active observer, helping to identify those sustainable building services the City can most effectively offer to the private sector. Seattle City Light will offer technical assistance itself, and work with other organizations to provide support for the project. City Light can also help facilitate and direct activities and discussions relating to the project, such as the required Design Charettes (see below).

1. LEED™ Incentive Eligibility Criteria

LEED™ Incentives target projects with the following characteristics:

- Commercial building projects within the Seattle City Light service area. Commercial occupancies include, but are not limited to: offices, retail and service establishments, institutional buildings (libraries, schools, museums, churches, etc.), hotels, and residential buildings of four or more habitable stories
- New construction and major renovations involving complete structural upgrades and replacement of mechanical systems (not solely tenant improvements)
- Project owner or developer commitment
- Projects considering new LEED pilot programs going beyond LEED™ 2.0, such as LEED for Existing Buildings, LEED Commercial Interiors and/or LEED Core and Shell

2. LEED™ Incentive Program Requirements

- Identify all individuals who have input into or who will ultimately be affected by building design decisions: financing officials, architects, consultants (civil, landscape, mechanical/indoor environmental quality, electrical, structural and commissioning), tenants or tenant representatives, facility/property managers, and building operators. These are the “Building Design Decision Participants”
- Hold at least one Design Charette which involves all Building Design Decision Participants
- Enter into a LEED™ Incentive Program participation agreement within three months of submitting a *Pre-Application*
- Have funding or a funding commitment in place at time of signing the Assistance Participation Agreement
- Commit to achieving a minimum LEED™ “Certified” rating for the project

3. The LEED™ Incentive Program—Steps to Participate

The application process begins with the submittal of a *Pre-Application Form* (which follows). City Light’s Sustainable Building Coordinator and the City of Seattle’s Green Building Team review this form to identify potential candidates for incentive funding. If selected, City Light and Seattle Public Utilities will work with the building design team throughout the process to promote sustainable building principles and the involvement of all affected stakeholders in the process. Besides LEED™ Incentives, many projects may also be eligible for additional financial incentives from Seattle City Light’s Energy Smart Services Program and Seattle Public Utilities’ Water Smart Technology Program.

For more information, potential applicants can call the Seattle City Light Sustainable Building Coordinator at (206) 615-1094, or get information online at www.cityofseattle.net/light/conserve/sustainability/.

LEED™ Incentive Pre-Application

(No items below are mandatory – Completeness will be used to select potential participants. Use additional sheets as necessary to describe any items.)

Project Information

Project name: _____

Project address: _____

Project is: new construction renovation/remodel combination

Building type: commercial type _____
 institutional type _____
 high rise residential type _____
 mixed use type _____

Project Scale

Budget: _____

Square footage: _____

Height & number of stories: _____

Project Status

If new construction, has the site been purchased? yes no

If renovation/remodel, has the building been purchased yes no

What phase of programming and design is the project in:
 programming pre-design schematic design design development

Are any building permits secured? yes no type _____

Is financing secured? yes no committed? yes no

Estimated start date: _____ estimated completion date: _____

Applicant

Owner/authorized agent name(s): _____

Company name: _____

Mailing address: _____

Phone: _____ FAX: _____ email: _____

Building Design Decision Participants

Firm	Primary Contact	Phone	email
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Financing:

_____	_____	_____	_____
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Architect

_____	_____	_____	_____
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Civil Engineer/Landscape Architect

_____	_____	_____	_____
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Mechanical Engineer

_____	_____	_____	_____
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Electrical Engineer

_____	_____	_____	_____
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Tenant or tenant representative

_____	_____	_____	_____
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Property/Facility Manager/Building Operator

_____	_____	_____	_____
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Other (Green Building Consultant, Commissioning Consultant, Environmental Consultants, etc.)

_____	_____	_____	_____
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Proposed Number of **Charettes** involving Building Decision Participants _____

I, _____, owner/authorized agent of the property at _____

Seattle, Washington, am applying to participate in the LEED™ INCENTIVE PROGRAM. I agree that, if my project is selected, I will execute a LEED™ INCENTIVE PROGRAM ASSISTANCE PARTICIPATION AGREEMENT with Seattle City Light within three months of the date of this Pre-Application and will abide by the City of Seattle's rules and the LEED™ INCENTIVE ASSISTANCE PARTICIPATION AGREEMENT.

_____ Signature of Owner/Authorized Agent	_____ Date
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Seattle Public Utilities

Climate Wise Greenhouse Gas Reduction Assistance

The City of Seattle and Seattle City Light are committed to a goal of zero net greenhouse gas emissions from power resources. To help highlight and augment that goal, Climate Wise provides an opportunity for Seattle City Light's commercial, industrial and institutional customers to manage and improve their environmental performance and reduce greenhouse emissions. Participating businesses join the City of Seattle and regional leaders in developing effective strategies for responding to climate change.

Seattle City Light's Energy Management Services Division supports Climate Wise through existing energy efficiency services, specific Climate Wise tools, customer recognition, and referrals to other sources of assistance. Companies and organizations participating in the program identify and promote themselves as "Climate Wise Partners", demonstrating their leadership in environmental stewardship. Current Climate Wise Partners represent a diverse group of private companies and public institutions.

STEPS TO PARTICIPATE

To become involved, the prospective participant signs a Climate Wise Partnership Agreement, formalizing the voluntary partnership with City Light and laying out general roles and responsibilities of each party. Next, the Climate Wise Partners work together with City Light, Seattle Public Utilities, The Business and Industry Resource Venture, and other organizations to formulate a specific plan to improve performance in areas such as:

- Energy and water efficiency
- Waste reduction and recycling
- Hazardous waste management
- Transportation efficiency
- Environmental management

In order to participate, Partners agree to:

- Establish a process to identify and implement measures that meet business needs and contribute to greenhouse gas emission reductions
- Establish a strategy through a Climate Wise Action Plan describing commitments and implementation timelines
- Track, report and inform staff and the public about Climate Wise activities

TECHNICAL ASSISTANCE AND BENEFITS OFFERED

Program staff provide technical assistance in identifying strategies appropriate to the business needs of each Climate Wise Partner. They can help write the Action Plan, assist Partners in accessing local programs, and help report greenhouse emissions. Company-wide environmental initiatives are supported through local agencies with related technical expertise.

Benefits of the Climate Wise Program:

- Offers a coordinated, multi-resource management approach to improving business environmental performance
- Provides technical assistance such as greenhouse gas emissions tracking and reporting
- Results in lower utility bills through referrals to services provided by local resource efficiency programs
- Supports opportunities for public recognition and peer exchanges with other organizations and companies

For more information, visit the Climate Wise homepage at:

www.cityofseattle.net/light/consERVE/business/climatewise/ or call City Light at (206) 684-3254.

A checklist of Climate Wise energy actions and management strategies is attached.



Turning Energy
Efficiency and Environmental
Performance Into a
Corporate Asset

Action Plan “First Tier” Checklist

Boilers

- Optimize boiler size and boiler loading
- Analyze flue gas and optimize air-to-fuel ratio
- Install over-fire draft control
- Convert to atomizing burners
- Install characterizable fuel valve
- Clean boiler tube
- Establish burner maintenance schedule
- Install stack dampers
- Recover waste heat from flue gas or blowdown to pre-heat combustion air or pre-heat feedwater
- Minimize boiler blowdown with better feedwater treatment
- Automate blowdown control
- Turn off hot water circulation pump when boilers are not in use
- Fuel-switch to less carbon-intensive fuel

Steam Systems

- Implement steam trap maintenance program
- Shut off steam traps on super-heated steam lines when not in use
- Install correctly sized steam traps
- Repair steam leaks in lines, valves and reducing stations
- Improve insulation of steam lines, condensate lines, and condensate tanks
- Recover and recompress vented steam for low-pressure applications
- Flash condensate to produce lower pressure steam
- Increase condensate return to boiler
- Install de-aerator in place of condensate tank
- Replace barometric condensers with surface condensers
- Clean steam coils in process tanks
- Close off unused steam lines
- Use minimum steam operating pressure

Furnaces, Ovens, and Kilns

- Minimize warm-up time and temperature
Use optimum temperature and minimum safe ventilation
- Automate controls
- Recover waste heat for use in other applications
- Optimize combustion and heat transfer conditions
- Improve insulation, seals, and refractories
- Implement direct firing or direct electric heating in place of indirect heating

Waste Heat Recovery and Heat Containment

- Recover waste heat for use in other applications
- Clean fouled heat-exchanger surfaces (filter contaminated streams if fouling is heavy)
- Install or improve insulation of process equipment, tanks
- Isolate hot equipment from air-conditioned areas

Cogeneration and Renewables

- Install cogeneration equipment
- Generate electricity with waste heat
- Generate electricity with renewable resources (e.g., biomass, photovoltaics, wind turbines)

Process Cooling

- Use cooling tower water instead of refrigeration or chiller
- Use outside air when possible
- Reduce refrigeration system operating pressure
- Raise cooling water temperature
- Use waste heat for absorption refrigeration
- Clean condensers and coils
- Improve insulation

Compressed Air Systems

- Use cooler air for compressor intakes
- Install, upgrade or adjust compressor controls
- Right-size compressors/optimize loading
- Reduce pressure
- Eliminate compressed air use
- Repair air leaks
- Recover waste heat
- Change dryer filters
- Clean intercoolers
- Adjust operating schedules to minimize equipment idle time
- Remove or close off unused compressed air lines

Process Controls

- Optimize temperature, pressure, flow, and material movement

Other Technologies

- Next generation technologies:

The Climate Wise Opportunity Assessment ‘Quick Scan’

EFFICIENCY OPPORTUNITY	IMPORTANCE FACTOR 1=Not Very 2=Somewhat 3=Very	PERFORMANCE RATING 1=High 2=Average 3=Needs Work	PRIORITY SCORE Column 1 x Column 2	ACTION ITEM? Yes, if Priority Score ≥ 4
Energy Efficiency <input type="checkbox"/> Furnaces/Boilers <input type="checkbox"/> Steam Systems <input type="checkbox"/> Process Equipment <input type="checkbox"/> Motors/Drives <input type="checkbox"/> Compressed Air Systems <input type="checkbox"/> Lighting <input type="checkbox"/> HVAC/Building Shell				
Hazardous Waste Prevention <input type="checkbox"/> Cleaning Processes <input type="checkbox"/> Operating and Production Practices <input type="checkbox"/> Inventory Control <input type="checkbox"/> Painting/Coating Operations <input type="checkbox"/> Landscaping				
Transportation Efficiency <input type="checkbox"/> Alternative Work Schedules <input type="checkbox"/> Public Transportation <input type="checkbox"/> Car Pools/Van Pools/Clean Fuel Vehicles <input type="checkbox"/> Telecommuting <input type="checkbox"/> Biking/Walking				
Water Efficiency <input type="checkbox"/> Building/Plant Maintenance <input type="checkbox"/> Sanitary Use <input type="checkbox"/> Cooling and Heating Systems <input type="checkbox"/> Process Operations <input type="checkbox"/> Landscaping				
Solid Waste Reduction (Reduce, Reuse, Recycle) <input type="checkbox"/> Production Operations <input type="checkbox"/> Packaging <input type="checkbox"/> Equipment <input type="checkbox"/> Office Paper <input type="checkbox"/> Organic Waste				
Green Product Design <input type="checkbox"/> Suppliers are environmentally sound <input type="checkbox"/> Products are designed to minimize waste and pollution <input type="checkbox"/> Products can be reused/recycled after use <input type="checkbox"/> Environmental factors are incorporated in product design				
Green Management Practices <input type="checkbox"/> Interdepartmental environmental team <input type="checkbox"/> Environmental goal setting process <input type="checkbox"/> Environmental impacts considered in investment decisions, accounting, and personnel policy <input type="checkbox"/> Adopts “best environmental practices” used in industry				