



**B U I L T
S M A R TSM**

Lighting & Options

TECHNICAL SPECIFICATIONS

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**www.seattle.gov/light/conserves/resident
(206) 684-3800**



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SELECTED CHAPTERS FROM THE BUILT SMART TECHNICAL SPECIFICATIONS MANUAL.

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INTRODUCTION

The BUILT SMART Program from Seattle City Light encourages developers of new low and mid-rise multi-family buildings to reach beyond standard practice in incorporating electricity-saving features into their new buildings. Financial incentives help pay the additional cost of higher efficiency options, and City Light staff provide technical assistance to help meet efficiency goals.

This document is intended for builders who are not participating in BUILT SMART’s full measure package, whether because they simply choose not to pursue shell measures (window and insulation upgrades) or because they are using a heat source other than electricity. In these situations, incentives are still available for electricity saving features in the building. Unlike the full measure BUILT SMART program, where certain minimum packages must be installed in order for a building to be BUILT SMART qualified, the Lighting & Options path allows flexibility to choose among measures.

This Lighting & Options Technical Specifications document is an abridged version of the larger BUILT SMART Technical Specifications manual. You will notice that it begins with Chapter 6, and this is because chapter is numbering carried over from the larger BUILT SMART Technical Specifications for easy cross-reference. If you have questions or need more detail please call 206-684-3800, or find these documents at the BUILT SMART home page: www.seattle.gov/light/consERVE/resident.

CHAPTER 6 –LIGHTING

6.1 Lighting Incentives Available

Efficiency incentives are available for:

- Common area light fixture upgrades
- Common area lighting controls
- Exterior light fixture upgrades
- Light fixtures dedicated to the individual living unit and connected to its meter. Includes both in-unit fixtures and exterior entry fixtures

Common areas are those areas outside the living units that have electrical components connected to the common house meter, and can include: lobbies; entryways; halls; stairwells; lounges; community rooms; exercise rooms; and laundry rooms.

6.2 Submittal Requirements for Lighting

All fixture and control specifications must be reviewed and approved prior to installation. The following lighting information should be submitted for review at the time of building application and will be required before final incentive payment:

- 6.2.1** A fixture schedule itemized by location (common area, exterior, in-unit, etc). If exact fixture numbers are not known at time of application, a detailed estimate will be accepted as a placeholder. Actual incentives will be based on the number of fixtures verified at final inspection.
- 6.2.2** Manufacturers' specification sheets for all fixture types. If fixture models have not yet been selected, these can be submitted after initial application, but must be submitted before final inspection and payment.
- 6.2.3** Common area lighting incentives are based on estimated energy savings. To determine the incentive amount, please also submit for common areas:
 - a set of architectural drawings, including a reflective ceiling plan
 - common area square footage measurements, by floor
 - estimated annual operation hours for each distinct area
 - Total common area installed watts (excluding exit lights of 5 watts or less).
- 6.2.4** Any details unavailable at time of initial application must be submitted as soon as possible afterwards, and before final inspection and payment.

6.3 General Lighting Specifications Applicable to All Lighting

- 6.3.1 Eligible technologies include fluorescent (T-8 or smaller), 2-piece compact fluorescent, metal halide, high-pressure sodium, and central lighting controls.
Ineligible technologies include T-10 and T-12 fluorescent, one-piece screw-in compact fluorescent, incandescent (including halogen), mercury vapor, neon, and low voltage.
- 6.3.2 All lamps must have a CRI of 70 or better (except high-pressure sodium lamps).
- 6.3.3 All fixtures and controls must be hardwired.
- 6.3.4 Linear fixtures (tubes) must have high power factor ballasts.
- 6.3.5 All exterior fixtures must be suitable for damp or wet location, where required.
- 6.3.6 Where required, recessed lighting must be air-sealed. See Seattle Energy Code section 502.4.4.
- 6.3.7 Where fixtures are switched on and off more than once a day, they must switch on without flicker. The time needed between switching the lamp on and it starting continuously and remaining illuminated must be one second or less. Fixtures may use “rapid start”, “programmed start”, or “instant on” technologies.
- 6.3.8 Where fluorescent lamps are used, low mercury content is strongly urged.

6.4 Interior Common Area Lighting

All interior common area lighting must meet the BUILT SMART General Lighting Specifications above. Common area fixtures may have electronic or magnetic ballasts, although City Light prefers electronic.

Interior common area lighting incentives are based on efficiency improvements over the Energy Code’s Lighting Power Allowances of 1.0 watt per square foot for multifamily buildings and 1.5 watts for nursing homes and senior housing (Washington Energy Code, Table 15-1). BUILT SMART requires lighting power densities of 0.8 watts per square foot or less for standard multifamily housing, and 1.3 watts per square foot or less for nursing homes and senior housing. The lighting power density is calculated by dividing the total input watts in the common areas by the common area square footage. Consistent with the Washington State Energy Code (Section 1530), exit signs of 5 watts or less are not included in the calculation. The incentive is calculated using the actual installed lighting, and is based on the wattage reduction below the energy code.

Seattle City Light recommends that all common areas in multifamily buildings have a minimum of 5 foot-candles over the entire interior common area spaces being considered. Reference the most recent edition of the IESNA Lighting Handbook for details.

6.5 Exterior Lighting

Residential exterior building and landscape lighting connected to the common house meter must meet the BUILT SMART General Lighting Specifications, and must be controlled by a photocell that prevents operation during daylight hours. Incentives are offered as flat per-fixture rebates. See “BUILT SMART Incentives – Lighting & Options”.

Exterior areas that must meet Washington State Energy Code efficiency requirements, such as garages and parking areas, are not eligible for the flat rebate.

6.6 In-unit Lighting and Porch Lights

Light fixtures connected to the individual living unit's meter are eligible for a flat per-fixture rebate. All fixtures must meet the requirements of the General Lighting Specifications, and are additionally required to utilize electronic ballasts.

Rebates may be installed in the following spaces:

kitchens	entryways (interior)
dining rooms	entry porches (exterior)
stairwells	bedrooms
bathrooms	hallways

Incentives are not paid on fixtures installed in closets or laundry rooms. Incentives are also not paid on fixtures on porches, decks or lanais that do not also serve as entries.

BUILT Smart representatives reserve the right to deny incentives to lighting locations that are not appropriate for the technology, or where excessive numbers of light fixtures are installed.

6.7 Lighting Controls for Common Areas

Lighting controls that sense occupancy or light levels in common areas are eligible for a flat per-control rebate. All control specifications must be reviewed and approved by the BUILT SMART representative prior to installation. Ceiling-mounted controls must regulate multiple fixtures – ceiling fixtures that have their own individual control do not qualify for the ceiling-mounted control incentive. Occupancy sensors shall automatically reset to sensing mode after manual override or testing operation.

6.8 Lighting for Commercial Areas within the Building

Interior and exterior lighting that is dedicated to commercial space is not eligible for BUILT SMART incentives. Commercial incentives may be available through City Light's Energy Smart Services Program (206) 684-3254. Buildings with a combination of commercial and residential spaces will be evaluated on a case by case basis.

6.9 Exceptions

This program allows flexibility for specific and unique architectural details. Any exception from these lighting requirements must be reviewed and approved the BUILT SMART Program representative and be part of the BUILT SMART Agreement.

CHAPTER 7 –RESIDENTIAL APPLIANCES

7.1 Clothes Washers

Incentives vary between \$25 and \$100 depending on clothes washer efficiency. For qualifying models and financial incentives, please check Seattle City Light's WashWise Web site at www.seattle.gov/light/conserves/resident/washwise or call the WashWise hotline at 1-866-632-4636.

CHAPTER 8 – HVAC UPGRADES

8.1 Energy Efficient Whole House Fan Specifications

- 8.1.1 Fan must meet the Uniform Mechanical Code, Chapter 4 requirements.
- 8.1.2 Fan must draw less than 30 watts. Whole-house fans serving multiple living units may be served on a case by case basis. These must meet all BUILT SMART requirements and draw less than 30 watts per living unit.
- 8.1.3 Fan must have a noise rating of 1.5 sones or less, unless mounted remotely and acoustically isolated from the living space.
- 8.1.4 Intermittently operating, whole-house exhaust fans shall have both automatic and manual controls. Automatic controls shall include time clock or cycle timers with a minimum of three on/off periods per day and be set to provide at least 8 hours of mechanical ventilation per day. Control pins shall not be removable.
- 8.1.5 Whole house fan motors shall be rated for continuous use.

8.2 Thermostats (limited to buildings with electric resistance heat).

- 8.2.1 To qualify for the optional BUILT SMART thermostat incentive, each thermostat shall have numerical degree settings and shall have accuracy of +/- 2 degrees F. or less.
- 8.2.2 Both electronic and vapor diaphragm thermostat types are allowed. Bi-metal thermostats do not qualify for the incentive.

8.3 In-Unit Heat Pump/Air Conditioning Specifications

- 8.3.1 All heat pump/air conditioning upgrade incentives shall be calculated using Seattle City Light's Heat Pump Calculation Worksheets available from a BUILT SMART representative or at:
http://www.seattle.gov/light/Conserve/Resident/bsbinder/cv5_bs44.html.
- 8.3.2 Components and installation shall meet all applicable state and local codes and standards including the Washington State Energy Code/Seattle Energy Code Chapter 14, table 14-1D.
- 8.3.3 A set of product specification sheets must be submitted to a BUILT SMART representative that includes equipment capacity, efficiency ratings (SEER, EER, COP and IPLV). Steady State values are not acceptable. All equipment shall have a permanently affixed nameplate that shows the manufacturer, model number and equipment load ratings.

8.4 Common Area Heat Pump/Air Conditioning Specifications

- 8.4.1 Components and installation shall meet all applicable state and local codes and standards including the Washington State Energy Code/Seattle Energy Code Chapter 14, tables 14-1A or 14-1D.
- 8.4.2 A set of product specification sheets must be submitted to a BUILT SMART representative that includes equipment capacity, efficiency ratings (SEER, EER, COP and IPLV). Steady State values are not acceptable.
- 8.4.3 All equipment shall have a permanently affixed nameplate that shows the manufacturer, model number and equipment load ratings.

8.5 Equipment Verification and Inspection

- 8.5.1 A BUILT SMART representative must review all documentation and approve calculations prior to installation.
- 8.5.2 After the equipment is installed, a BUILT SMART representative must inspect the installation to insure program compliance.

CHAPTER 9 – EFFICIENT ELEVATORS

The BUILT SMART Program offers incentives for the installation of energy efficient elevators. To qualify, elevators shall be alternating current (AC) gearless systems with synchronous permanent-magnet motors. The motor and bedplate structures of these elevators are an integral part of the hoisting devise.

The BUILT SMART incentive will be based on this formula:

Elevator horsepower x 800 kWh (savings per horsepower) x \$0.23 per kWh saved.

BUILT SMART INCENTIVES – LIGHTING & OPTIONS

1. Incentives for Lighting

A. Interior Common Area Lighting Incentives

- Incentives are based on wattage reduction below current multifamily common area lighting code.
- Requirement is maximum of .80 watt per square foot (maximum of 1.3 watts in Nursing Homes/Senior Housing) at \$0.15 per first year kWh saved.

B. Interior Common Area Lighting Controls

- \$30.00 per wall switch-mounted lighting control
- \$90.00 per ceiling-mounted lighting control

C. In-unit Lighting and Porch Lights

- \$25.00 per light fixture connected to the living unit's meter

D. Exterior Common Area Lighting Incentives

- \$30.00 per exterior fixture connected to the house meter and controlled by a photocell

2. Other Optional Measures

A. Clothes Washers

Incentive of \$25 to \$100 available depending on washer efficiency. Contact a BUILT SMART representative or visit the WashWise Web site (www.savingwater.org) for details. Joint project with Seattle Public Utilities (SPU) - paid by rebate coupon from SPU

B. HVAC Measures

- Whole house fans: \$25.00 per energy efficient fan. Eligible whole-house fans serving multiple units may receive \$25 per living unit served.
- Electronic or vapor filled diaphragm thermostats: \$5 per thermostat (limited to buildings with electric resistance heat.)
- Heat pumps and air conditioners (air to air, PTAC, and PTHP): \$0.23 per calculated kWh saved
- Other HVAC upgrades: incentive based on calculated kWh savings

C. Efficient Elevators

23 cents per kWh saved (as calculated by your BUILT SMART representative)