



Multifamily Weatherization Rebate Program

CONTRACTOR SPECIFICATIONS

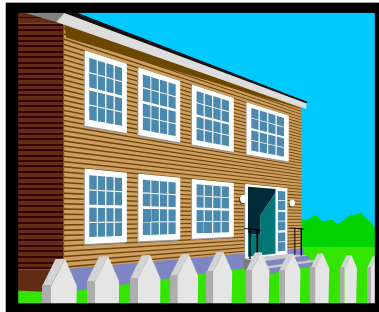
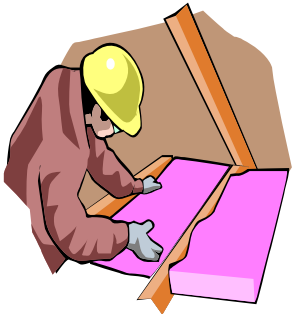


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GENERAL REQUIREMENTS

Scope. These field specifications apply to projects that are part of Seattle City Light's Multifamily Weatherization Rebate Program, which provides rebates to retrofit existing electrically heated buildings of 5 or more units to improve their energy performance.

Applicable codes. Weatherization measures shall be installed in accordance with these specifications, all applicable State and local codes, and Federal regulations, including the Americans with Disabilities Act. All applicable permits must be obtained prior to installation of measures. The Utility does not assume responsibility for enforcing or determining compliance with local or federal codes, regulations or interpretations. However, the Utility will reject any work that is found to be not in compliance with current codes.

A number of these specifications refer to or reflect federal, state, or City laws, which may be changed or subject to changes in interpretation in the future. References to related codes are supplied for informational purposes only and should not be considered the relevant or only code for the specific situation or jurisdiction – the contractor is responsible for determining the appropriate code for a given situation.

Where code and specification requirements differ, the most stringent of the requirements shall apply. In case of any conflict between this manual and any applicable law, regulation or ordinance now or hereafter in effect, the law, regulation or ordinance shall be followed.

Materials and workmanship. All weatherization shall be completed according to manufacturer's instructions by workers skilled in the appropriate trades in a manner that will provide a safe, permanent, effective, and quality installation.

All materials used shall be approved by the appropriate testing agency. The Utility reserves the right to identify and disapprove for use any weatherization product when it deems the product not satisfactory for the Multifamily Weatherization Rebate Program. All materials used shall be resistant to corrosion, degradation from ultraviolet light, and be compatible with other elements and materials so as to enhance life expectancy of installed measures.

Installers shall provide all materials, labor, tools, and equipment necessary to install weatherization measures in the building. Costs associated with customer-requested esthetic or special features as part of the weatherization project will not be eligible for the rebate. These costs shall be identified separately from eligible project costs.

Existing building condition. Before the weatherization measures are installed, the installer shall insure that the existing structural members and building components are sound enough to accept weatherization materials, and that they are free of excess moisture, decay or insect infestation. Wet areas of supporting wood members shall have the source of moisture eliminated and areas dried before insulation is installed. Associated expenses shall be borne by the building owner and shall not be eligible for the rebate.

Certification. Where loose fill insulation is installed in ceilings, walls, or floors, the installer shall supply the owner with a copy of an installer certificate containing the following information:

1. Address of the residence
2. Date of installation
3. Name and address of installer
4. Amount, R-value, depth and type (including product name) of insulation installed
5. Final R-value of insulation, including existing insulation values
6. Area of the space (in square feet) insulated

(See WSEC Section 502.1.4.1 for details.)

Exceptions. This program allows flexibility for specific unique architectural details. Any exception from program requirements must be reviewed and approved by City Light.

SAFETY AND CLEARANCES

Fire safety. The contractor is responsible for making sure thermal insulation has appropriate fire retardant qualities and is installed in a safe manner so as not to come into contact with heated surfaces, entrap heat, or otherwise create or exacerbate potential fire hazards. (See WSEC Section 502.1.4.2 and 502.1.4.3 for details.)

Heat producing devices. Proper protection is required for all miscellaneous electrical devices (e.g. door bell transformers, recessed lights, ventilating fans) in accordance with state and local codes and the requirements of the specific device.

Recessed light fixtures. Thermal insulation shall not be installed above a recessed fixture or within 3 inches of the recessed fixture enclosure, wiring compartment, or ballast, unless it is identified for contact with insulation, Type IC.

Chimneys. All combustible insulation materials, including existing insulation, shall be kept a minimum of 2 inches from metal flues and masonry chimneys. Non-combustible insulation may be installed in contact with masonry chimneys.

Electric wall heaters. Insulation shall not be installed in wall cavities which contain electric space heaters unless fire stops are present which isolate the heater from all contact by the insulation material.

Knob and tube wiring. Knob and tube wiring shall be treated with special care. Insulation may be installed directly around and over knob and tube wiring provided all of the following conditions are met:

1. The wiring must be inspected by an appropriately licensed and bonded electrical contractor who shall certify that the wiring is in good condition with no evidence of improper connections or splices.
2. An inspection certificate signed by the electrician must be present prior to installing insulation and shall remain attached to the electrical services panel until the job has been verified by City Light.
3. Insulation must meet ASTM E84 Class I specifications with a flame-spread factor of 25 or less. Batts shall be unfaced. Foam insulation shall not be used.

Hazardous materials. In cases where hazardous materials such as lead, asbestos mercury, or PCBs are found to be present, the contractor shall follow all applicable State, local, and Federal regulations. City Light rebates will not be offered for areas where hazard abatement is required until after such abatement occurs (at the owner's full expense).

Exhaust ventilation. Bath and kitchen exhaust fans must terminate outside of the building. Those that terminate within attics or crawl spaces shall be extended through to the outside of the building and sealed/dampened to prevent any exhaust air from entering back into the space.

Clothes dryers vented directly into attics or crawl spaces shall be vented outside of the structure, terminating in a non-screened vent cap with a damper. Ducting over 3 feet in length shall be insulated to at least R-3 to prevent condensation.

INSULATION

ATTICS

Insulation technique. Ceilings and attic spaces with floors shall be insulated to a minimum of R-38 or the highest R-value approaching R-38 practical.

Knee walls adjoining attic spaces shall be insulated to a minimum of R-11 or R-19 depending on framing depth, to fill the wall cavity. Insulation shall be supported in place with twine or equivalent to form a sturdy and long-lasting assembly.

Attic access doors that open to a heated space shall be weatherstripped and insulated to at least R-30 for horizontal openings and to at least R-11 for vertical openings. Access openings shall be framed or batted so as to prevent loose-fill insulation from falling through the opening. The building owner must provide access openings; costs associated with creating access are not eligible for the rebate. (See WSEC Section 502.1.4.4. for details.)

Ventilation. Enclosed attics and rafter spaces should have cross ventilation for each separate space with approximately half the vents high and half are low. Ventilating openings shall be protected against the entrance of animals, rain and snow. The net free-ventilating area should not be less than 1 square foot for each 150 square feet of underfloor area (1/150). If there is a 3-foot vertical distance from low to high vents, or if a vapor barrier is present, venting can be reduced to 1/300. The contractor and homeowner are responsible for determining the adequacy of the existing ventilation and for ensuring that additional insulation does not cause moisture problems or exacerbate existing conditions. (See the International Building Code [IBC] Section 1203.2 for details.)

CRAWL SPACES

Insulation technique. Floor insulation shall be a minimum of R-30 or that depth needed to fully fill the joist cavity. Underfloor insulation support systems shall be installed so that the insulation remains in contact with the sub-floor, flat and in place for the life of the residence. Support of the insulation may be provided by wood lath, twine, wire, or other suitable material. (See WSEC Section 502.1.4.7 for details.)

Enclosed floor cavities, such as a finished ceiling over a garage, may be insulated by drilling holes into the floor cavity from underneath and blowing the cavities full, then plugging the holes and spackling flush. Insulation should not be blown more than 3 feet in any direction unless the insert-tube method is used.

Access doors adjacent to a conditioned space shall be weatherstripped and insulated to at least R-19 for horizontal openings and R-11 for vertical openings. The customer must provide crawl space access openings; costs associated with the creation of access are not eligible for the rebate. (See WSEC Section 502.1.4.4 for details.)

Moisture barrier. Upon completion of the underfloor insulation, a 6 mil black polyethylene ground-cover moisture barrier shall be installed where none exists. All joints shall be overlapped 12" minimum so that all ground surface area is covered. Ground cover shall not contact wood members of the structure. Existing ground cover may be left in place to satisfy this requirement if not damaged upon job completion. (See WSEC Section 502.1.6.7 for details.)

Ventilation. If crawl spaces exhibit signs of moisture problems, the homeowner must repair the situation prior to the weatherization measures being installed. Crawl space ventilation should generally be not less than 1 square foot for each 150 square feet of underfloor area (1/150) unless the crawl space is dry and an approved ground cover is installed, in which case 1/300 is acceptable. Underfloor crawl space areas shall be ventilated by openings in exterior foundation walls covered with ¼ inch mesh. The contractor and homeowner are responsible for determining the adequacy of the existing ventilation, and for ensuring that the addition of crawl space insulation does not cause moisture problems or exacerbate existing conditions. (See IBC Section 1203.3 for details.)

WALLS

Insulation technique. Normal application of insulation materials in walls assumes drilling through the siding and sheathing material, although installing through the interior is also acceptable. Resulting holes on the exterior shall be plugged with recessed wooden plugs that have been finished flush with a suitable spackling compound and primed to provide a tight weatherproof seal. If the customer wants the siding removed before drilling, the customer must pay the cost of the work over that amount covered by the utility for a standard drill method. Exception: costs for removal and reinstallation of siding that cannot be easily drilled and patched (cedar shake, vinyl siding, aluminum siding), may be included in utility rebate calculations. The installer should indicate in the bid whether final painting of plugs is included.

Manufacturer's instructions shall be followed when blowing insulation into enclosed wall cavities. Loose-fill insulation (fiberglass, rockwool, and cellulose) is acceptable for use in walls. Insulation shall not be installed in wall cavities that are partially insulated. See the Safety and Clearances section above, particularly regarding knob and tube wiring, chimneys and electric wall heaters. (See WSEC Section 502.1.4.2 for details.)

PIPE INSULATION

If supply water pipes are located in the attic space or crawl space and extend beyond the level of the finished insulation, pipe insulation shall be included for freeze protection and energy savings. Hot and cold water pipes shall be insulated with material providing a minimum R-value of 3.0, either with pre-formed material specifically designed for water pipes or flat fiberglass batts of at least R-7. The insulation shall be permanently secured to the piping system using adhesive, tape, or plastic or galvanized wire ties. Water shut-off valves that are covered by insulation shall be marked so as to be readily located by the customer. (See WSEC Table 5-12 for details.)

WINDOWS AND GLASS DOORS

City Light rebates are available for the replacement of existing single pane windows and certain early generation double pane aluminum-frame windows. Only window types that comply with the provisions below shall be eligible for rebates. Windows and doors shall be installed in accordance with manufacturer's specifications and applicable code requirements so as to provide a tight, long-lasting, weatherproof installation. When completed, interior and exterior surfaces should have a neat, finished appearance.

Thermal and structural performance. All materials shall be of sufficient strength and durability so as to resist damage or distortion from wind loads, thermal stress (including from solar gain), or stresses induced during installation.

- Windows and glass doors must have an overall building average NFRC thermal certification of Class .35 or better.
- Windows must be in compliance with ANSI/AAMA requirements.
- Windows shall not be installed where underlying framing material has deteriorated or does not possess adequate strength, support or anchorage.

Operation. After installation, units shall operate smoothly and properly and access to latches shall not be impaired. Hardware shall be durable, function properly, and not create interference. When closed, the entire assembly shall provide a complete weather-barrier to the entire opening. Vertically hung sliders shall effectively prevent "free fall."

Sizing. The Installer shall assure the correct size, shape, and type of windows for the openings. Each window shall be measured for appropriate clearances to match the prime window or prime opening. Care should be taken to follow window egress requirements of the local building code authority. The installer should not reduce the net free opening area of existing egress windows, and if the existing window's net free opening area is smaller than the current code requires, it should be increased through window reconfiguration if possible. (See IBC Section 1025 for details.)

Documentation. The installer must supply the customer with manufacturer's technical product data including:

- the number of windows
- configuration by size and style (e.g.; 2'x4' horizontal slider)
- area for each window configuration
- NFRC rating of each window configuration
- manufacturer name, window series, and model number
- window manufacturer's warranty
- contractor installation warranty (if offered)

Water intrusion. Windows should be flashed and sealed in accordance with code and manufacturer's specifications to prevent water intrusion into the wall cavity. Gaps and cracks exposed to the elements shall be caulked on both existing and added framing members so as to provide a weather-tight installation. Sources of existing water penetration through prime openings shall be located and corrected before installation. Necessary repairs shall be accomplished at the building owners full expense prior to installation of windows. (See IBC Section 1405.3 for details.)

Safety glazing. Shall be used as required by code. (See IBC Section 2406 for details.)

LIGHTING

Incandescent and T-12 fluorescent lighting systems in common areas are to be replaced with efficient fixtures and controls that meet the specifications below. Common areas include halls, stairs, entryways, exterior building lights, parking lots and garages.

Certification. All lighting products must be of current manufacture and certified by an approved testing laboratory (UL, ETL, etc.).

Licensing. Licensed electrical contractors must perform all lighting retrofit work unless otherwise allowed by local code regulations.

Light levels. Appropriate illumination levels must be provided. The contractor must offer the owner the correct lamp brightness for the area to be illuminated, based on Illuminating Engineer Society (IES) recommended illumination levels. City Light reserves the right to refuse the project for unacceptable light levels.

Documentation. The installer must provide the building owner with manufacturer's technical product data on the light fixtures, ballasts, luminaries and controls as a part of their lighting bid. All applicable permits must be obtained prior to installation of lighting measures. Costs for permits can be included as part of the overall bid.

Warranty. City Light does not warrant the quality of the installed measures. The installing contractor may provide materials and labor warranties and may pass through a manufacturer's warranty.

Disposal. Old fluorescent lamps and ballasts must be removed from the project site and disposed of or recycled as mandated by Federal, State, and local regulations. Costs for lamp and ballast disposal may be included in the overall bid.

Specifications:

1. Eligible lighting technologies include T-5 & T-8 linear (electronically ballasted), 2-piece compact fluorescent, metal halide, high-pressure sodium, LED exit signs, 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.

2. All lamps must have a CRI of 70 or better (except high-pressure sodium).
3. All fixtures/ballasts must be high power factor (.9 or better).
4. All fixtures and controls must be hardwired. Screw-in bulbs are not allowed.
5. Where fluorescent lamps are used, low mercury content is strongly urged.
6. LED exit signs must meet UL 924. See local fire codes for requirements.
7. Health and safety requirements must be met on all light fixtures located over areas such as gyms, daycare, food preparation, hazardous vapor locations, etc.
8. All exterior fixtures must be suitable for damp or wet locations.
9. All exterior fixtures must be operated by a control or have an integrated photo sensor that automatically prevents operation during daylight hours. The control must automatically reactivate within 24 hours of manual override or testing operation. (Existing clock-timer controls may satisfy this requirement.)