

# Oregon Housing and Community Services

## LIWP Program Manual

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# LOW INCOME WEATHERIZATION

## PROGRAM (LIWP) MANUAL

### Introduction

LIWP Funds support energy conservation measures in affordable housing projects. Applicants may apply to LIWP Funds to upgrade existing eligible areas of rehabilitation projects or to exceed energy codes on new construction.

The purpose of the LIWP funds is to reduce energy use and heating costs for low and lower-income (sixty percent (60%) of area median income and below) Oregonians through energy conservation measures. Energy-efficient appliances and Energy Star Compact Fluorescent Light fixtures are eligible conservation measures for these funds

### Restricted Availability of Low Income Weatherization Program Funds

Projects located in PGE and PPL service areas will be eligible. Other restrictions apply depending on the type of fuel used for heating and the weatherization activities planned.

### “Will Serve” Letter

All applications for LIWP funds must include a “will serve” letter from the electric utility showing that the proposed site is in PGE or PPL territory. The letter must be on PGE or PPL letterhead, identify the project address and clearly state the utility will provide electrical service to that site/project.

Applications missing the “will serve” letter in the LIWP section of the application will not be eligible for LIWP funds.

### Terms

Applicants may request one (1) dollar of LIWP funds for every projected kilowatt-hour saved during the first year. OHCS will award the LIWP funds as grants unless the applicant requests a loan.

The maximum award is the lesser of the cost to complete eligible weatherization work or the total first year energy savings. OHCS may award grants or loans in excess of \$200,000 on an as-needed basis and when the applicant can demonstrate maximum energy savings. All awards are subject to funds availability and approval of the State Housing Council.

The LIWP program targets households with low- or very-low incomes. At least half of the units in the project must serve households with incomes at or below sixty percent (60%) of the area median income (adjusted by family size) as defined by HUD. Applicants must keep the units affordable to the target households for a minimum of ten (10) years, or the proposed affordability term at time of application. OHCS will disburse funds only after the county records an executed Project Use Agreement.

## Eligible Applicants

Eligible applicants include for-profit businesses, local government entities and nonprofit organizations including, but not limited to, cities, counties, housing authorities, nonprofit community organizations, regional or statewide nonprofit entities and private individuals or corporations.

## Eligible Projects

Projects must meet all of the following requirements as well as the requirements of the NOFA process.

### OHCS will consider the following kinds of applications

New construction projects that exceed energy code minimums for insulation, lighting and windows and/or include new energy efficient appliances and fixtures.

Acquisition/rehabilitation projects specifying upgrades from original levels of insulation, windows, and lighting, and/or include new energy efficient appliances and fixtures. Measures must meet all current codes.

## Ineligible Projects

OHCS will not award LIWP Funds when the only planned rehabilitation activities are weatherization measures. Applicants of such projects should instead contact the local community action agency for weatherization assistance.

## Demonstrated Energy Savings

Eligible activities for these funds must demonstrate measurable cost-effective energy conservation. Energy-efficient applications must show first-year savings equal to or greater than one (1) kilowatt-hour saved for each LIWP dollar spent on the measure. The cost-effective calculation will be determined for each project. Measures within a project can be considered individually or as a total project package.

## Eligible Activities for Rehabilitation Construction

Rehabilitation Projects: Funds may pay for labor and materials on all or part of the following activities for existing projects that involve rehabilitation and repair work:

- Only if the development is electrically heated can LIW funds pay for:
  - installation of attic, floor and wall insulation on existing structures (shell measures).
  - repair of air leakage or air flow through the dwelling (including chase ways) that may cause structural damage.
  - upgrading windows from single pane to double pane. (Windows are generally not sufficiently cost effective to justify their entire expense unless packaged with other weatherization measures on a project.)
- Installation of electric heating systems, including dual heat pumps.
- Installation of Energy Star-rated LED's and/or Compact Fluorescent Light (CFL) fixtures. \* **see Lighting Allowances below.**

- The cost of energy audits and pre- and post-rehabilitation energy inspections.
- Upgrades, including some appliances (refrigerators, clothes washers, commercial water heaters and common-area lighting) above OHCS minimum base-load measures including some appliances such as. To determine energy savings, use the OHCS Wx calculator and the manufacturer's calculations or an U. S. Department of Energy approved energy savings calculation tool.
- Cost of new energy-efficient appliances. To determine energy savings, use the OHCS Wx calculator and the manufacturer's calculations or an U.S. Department of Energy approved energy savings calculation tool. **Please keep all Energy Guide information and/or appliance stickers, as these documents will be requested for verification of energy savings.**
- Installation of electric heating systems.
- Green building technology such as solar additions and heat recovery systems with verifiable energy savings.
- **Up to 15% of the total project cost can be used towards energy-related repairs and/or health and safety work for existing buildings. Not to exceed \$200 per unit**
- A health and safety repair is defined as those actions necessary to maintain the physical well-being of both the occupants where: Costs are reasonable and do not exceed 15% of the projects total awarded project dollars ; AND the actions must be taken to effectively perform weatherization work; OR the actions are necessary as a result of weatherization work.

### **Ineligible activities**

OHCS does not allow the use of LIW for the purchase and installation of oil or gas-fired devices (or for work related to those devices).

New Construction Projects: Funds may pay only for the cost involved in energy conservation measures that exceed those required under building and energy codes for new construction. Based on first-year kilowatt-hour savings, a new construction project can use LIW funds to pay for all or part of the difference in cost between energy conservation measures required by the Oregon Residential Energy Code and the cost of the above-code upgrade.

- Cost difference for upgraded attic, floor and wall insulation.
- Cost difference for upgraded electric heating systems.
- Cost difference for upgraded windows.
- Cost of new energy-efficient appliances. To determine energy savings, use the OHCS Wx calculator and the manufacturer's calculations or an U.S. Department of Energy approved energy savings calculation tool. **Please keep all Energy Guide information and/or appliance stickers, as OHCS will require these documents to verify energy savings.**
- Green building technology such as solar additions and heat recovery systems may be eligible if savings can be verified.

- Installation of Energy Star Compact Fluorescent Light fixtures. Currently the residential code requires 50% of all lighting shall be compact fluorescent lighting.(CFL) The NOFA applicants must use that 50% as the base in its calculations for determining estimated savings and possible awards. \* **see *Lighting Allowances below.***
- Solid state lighting, also known as **light emitting diodes (LED) fixtures**, must be ENERGY STAR qualified. \* **see *Lighting Allowances below.***

## Lighting Allowances

Compact Fluorescent Lamps (CFLs) and fixtures must be more than 5 watts, ENERGY STAR qualified; installed in a residential building and claimed only once (e.g., CFLs in ENERGY STAR fixtures cannot be claimed as documented direct install CFLs if the ENERGY STAR fixture was already claimed under that measure). General purpose and specialty CFLs are both eligible. Specialty CFLs are defined as the following screw-base bulbs: decorative and minibase; threeway; reflector; and outdoor CFLs. CFLs distributed via direct Install must replace incandescent or halogen bulbs. *Note: T-2s, A-lamps and dimmable CFLs are general purpose, not specialty.*

- *CFL fixtures will no longer be offered as incentives in 2017.*

Light emitting diodes (LED) bulbs and fixtures(new construction), must be ENERGY STAR qualified or listed on the Lighting Design Lab (LDL) Qualified LED Lamp List as integral omnidirectional, directional or decorative.

Qualifying units are found here:

[https://www.energystar.gov/index.cfm?fuseaction=ssl.display\\_products\\_com\\_html](https://www.energystar.gov/index.cfm?fuseaction=ssl.display_products_com_html)

[https://www.lightingdesignlab.com/sites/default/files/LDL\\_LED\\_lamp\\_list\\_2.pdf](https://www.lightingdesignlab.com/sites/default/files/LDL_LED_lamp_list_2.pdf)

## Application Submittal, Energy Analysis and Inspection Requirements

Applicants **must** submit the following with the NOFA application:

- A copy of the new construction or rehabilitation Energy Efficiency Plan Worksheet.
- A copy of the OHCS Wx Calculator demonstrating energy savings if the proposed weatherization work includes envelope measurements and appliances.
- Use an approved DOE evaluation tool to evaluate weatherization measures not listed on the OHCS Wx Calculator. **Applications must include the energy analysis with the NOFA application to be eligible for the funding.** The energy analysis must identify each planned energy conservation measure and the annual energy savings that it will generate measures. An independent third party trained to use the evaluation tool must complete the energy analysis. This may include energy consultants, engineers, architects, HVAC specialists or a weatherization representative of the local community action agency. Include the name and organization of the individual who completed the analysis.
- For rehabilitation projects, analyze a representative number of units to develop the proposed scope of weatherization work and conducting the energy analysis.

OHCS requires a post-rehabilitation or new construction inspection and certification by an independent third party to verify satisfactory completion of the proposed energy measures. (The independent third party can be an energy consultant, or a weatherization representative of the local community action agency, architect or engineer. The person or organization that performed the work cannot conduct this inspection/certification). **However, the Department is now allowing the project architect and/or engineer signature to verify work is completed and installed.** OHCS will only disburse full LIW funds after it receives the inspection report and certification.

Low Income Weatherization funds may pay the cost of obtaining an energy analysis and inspections as long as adequate energy savings are demonstrated. A grant or loan award may be reduced if the amount of LIW funds requested exceeds the actual energy savings identified by the energy savings analysis.

### **Energy Analysts**

OHCS keeps a list of qualified Energy Analysts who can help applicant's complete LIWP worksheets and calculators. Please check with the agency on the most updated qualified Energy Analysts here: [http://www.oregon.gov/ohcs/APMD/PCS/pdf/Approved\\_UA\\_Calculator\\_Contacts.pdf](http://www.oregon.gov/ohcs/APMD/PCS/pdf/Approved_UA_Calculator_Contacts.pdf)

The compilation of this list does not imply that the State of Oregon or OHCS endorses or recommends any particular contractor, nor does it imply the selection of any contractor is any guarantee of project feasibility or receipt of funding. This list is NOT an all-inclusive list of qualified energy analysts or energy technicians. OHCS can review any analysis in the LIWP application as well as the qualifications of the preparer.

### **Recommended Inspections**

OHCS suggests applicants conduct an infiltration / air leakage test before and after rehabilitation. This test identifies areas of air infiltration / leakage to correct during the rehabilitation to maximize energy savings of conservation measures performed. A post-rehabilitation infiltration test would measure the reduction in air leakage.

### **Energy Efficiency Plans**

LIW Program funds are available for energy efficiency improvements on projects submitted for funding through the NOFA. For new construction projects, all work must exceed the minimum required by the local or Oregon Residential Energy Code. For existing housing, funds may be used to bring current conditions up to code. Energy efficient appliances and energy saving lighting may also be eligible uses of the funds. The current energy code in Oregon can be found here. <http://www.cbs.state.or.us/bcd/programs/energy.html>

[http://ecodes.biz/ecodes\\_support/free\\_resources/Oregon/14\\_Energy/14\\_OREnergy\\_main.html](http://ecodes.biz/ecodes_support/free_resources/Oregon/14_Energy/14_OREnergy_main.html)

It is also highly recommended all applicants refer to the Oregon DOE website for accurate code requirements and qualifying appliances and applications:

<http://www.oregon.gov/ENERGY/CONS/pages/index.aspx>

## Calculating Energy Savings

To assist in completing the Energy Efficiency Plan worksheets, OHCS has developed two (2) spreadsheets (calculators) for calculating energy savings for new construction and rehabilitation. These calculators are located on-line with the NOFA application.

Applicants may choose to use this tool or any other U.S. Department of Energy (DOE) approved tool. The calculator in this application is designed for most weatherization activities. It reflects general estimated kWh savings for the first year.

Other tools that the Department has reviewed and approved for multi-family use are – EnergyPro (mid-rises only), TREAT, DOE-2, TRACE, HAP, REM/Rate™, REM/Design™ and EQuest. Some of these have limitations regarding scope of project so applicants must make sure the project scope matches the tool.

Analysts may also use REM/Rate™, REM/Design™ or TREAT.

The guidelines for TREAT and REM are as follows:

### TREAT Dwelling Criteria

As defined in the Department policy, a TREAT audit is to be used for the following building types:

- Multi-Family residential buildings 4 stories and above.
- Multi-Family residential buildings 3 stories or fewer with shared HVAC Systems.
- Multi-family residential buildings containing 5 or more units with shared HVAC systems.
- Multi-Family residential buildings containing 26 or more units.
- Multi-Family residential buildings not meeting the REM/Design™ criteria listed below.

For residential buildings meeting the above criteria, a “whole-building” energy audit and TREAT software based energy simulation must be conducted to determine the feasibility and cost effectiveness of all available measures and overall energy usage.

### REM/Design™ and REM/Rate™ criteria

As defined in the policy, REM/Design™ and REM/Rate™ audit is to be used for the following building types:

- Single-family dwellings up to 4-plexes,
- Mobile homes, and
- Low-rise multifamily buildings:
  - Containing five to 25 dwelling units,
  - Having 3 stories or fewer,

- Individually metered, where the unit is heated and cooled independently.

It is HIGHLY recommended applicants contact an **energy consultant** if they are unsure of weatherization measures that need to take place in the proposed project construction or rehabilitation.

OHCS has a list of approved utility allowance consultants that also provide energy auditing assistance with the application process: [http://www.oregon.gov/ohcs/APMD/PCS/pdf/Approved\\_UA\\_Calculator\\_Contacts.pdf](http://www.oregon.gov/ohcs/APMD/PCS/pdf/Approved_UA_Calculator_Contacts.pdf)

The State of Oregon or OHCS does not endorse or recommends any particular contractor, nor does it imply the selection of any contractor is any guarantee of project feasibility or receipt of funding. OHCS reserves the right to review any analysis submitted with the Weatherization application as well as the qualifications of the preparer, when application forms have been completed by an outside independent third party.

### **Rehabilitation Worksheet Instructions**

Proposed R/U Value:	Refer to the Manufacturer's Info Tag
Increased R/U Value:	Difference between existing and proposed R/U Values
Square Feet:	Square footage (footprint) of the total conditioned area to be weatherized.
Cost:	Labor and materials for weatherization activities only. For appliances, the cost of the appliance only. For CFLs, cost of installed Energy Star approved pin-based fixtures and lamps.
Energy saved:	From Excel "OHCS WX Calculator Spreadsheet" provided on the website or U.S DOE approved energy analysis tool
Analysis:	The OHCS goal is to allow Weatherization funding of one (1) dollar for every kilowatt hour (kWh) saved the first year or the cost of installation, whichever is less.

**Appliances :** <http://energy.gov/eere/buildings/standards-and-test-procedures>

For refrigerators, clothes washers and **commercial water heaters**.

- 1) Must provide a metered sample (10% )required of each type in a multi-family complex) OR provide the manufacturer annual energy usage rating.
- 2) Supply usage value (see hyperlinks) from refrigerator usage reference (USDOE) available in the OHCS WX spreadsheet of each type of appliance within the units.
- 3) Replacements must be Energy Star qualified.

A list of Energy Star qualified models are found here:

<http://library.cee1.org/content/qualifying-product-lists-residential-refrigerators>

<http://library.cee1.org/content/qualifying-product-lists-residential-clothes-washers>

<http://library.cee1.org/content/qualifying-product-lists-residential-dishwashers>

## **New Construction Worksheet Instructions**

Code or Minimum Standard:	On windows, insulation, etc., self-explanatory. On appliances and Energy Star Compact Fluorescent Lighting fixtures (CFLs), applicants should use normal rating from the yellow tag (energy guide) on the appliance or manufacturer's information and subtract the baseline KWh usage to determine savings.
Proposed R or U-Value	On anything rated in U-values, a lower number is better. R-values must exceed code to increase energy savings. U / R values are the reciprocal of each other.
Square Footage	Total only the conditioned area that is improved. Square footage is not applicable for appliance calculations.
Increased Cost:	Includes the labor and materials for weatherization activities only. For appliances, it is the cost of the appliance only. , It is the cost of installed Energy Star approved pin-based fixtures and lamps.
Kilowatts Saved:	Applicants should use the OHCS WX spreadsheet or any DOE approved tool to forecast the energy savings.

### Appliances:

REFRIGERATORS must be Energy Star qualified. The kWh can be found on the energy guide for the appliance. Qualified models found at this link:

<http://library.cee1.org/content/qualifying-product-lists-residential-refrigerators>

CLOTHES WASHERS must Energy Star qualified. Effective January 1, 2016, select ENERGY STAR certified front-load clothes washers (2.5 cu ft or larger) with an Integrated Modified Energy Factor, IMEF, of 2.38 are eligible.

Qualified models found at this link:

<http://library.cee1.org/content/qualifying-product-lists-residential-clothes-washers>

## WX Worksheet Instructions (Excel spreadsheet)

For electrically heated units, shell measures must be calculated in kWh savings.

Insert information into the colored cells only, when entering data into the OHCS WX calculator.

OHCS WX Calculator:

Project Name:                      Insert name of project.

Location:                              Insert street address and city.

Degree Days/  
Design Temp:                      These are the heating degree days for the climate location of the project. By selecting the geographic region from the drop down box, the degree days and design temperature will automatically change to coincide with that area.

Salem area =                      4740 degree days/design temp 22

Redmond area =                      6746 degree days/design temp 6

Portland area =                      4693 degree days/design temp 22

North Bend area =                      4664 degree days/design temp 32

Medford =                              4803 degree days/design temp 23

Astoria =                                5250 degree days/design temp 29

Pick an area closest to your located project and apply.

Air Heat Capacity:                      Leave as is. Worksheet will not allow changes.

Project Volume:                      Remember, volume is square foot time's height. Applicants can do the entire complex or one (1) unit of each type depending on design differences, as long as each unit is represented and modeled.

If the entire complex has units that are all the same, then applicants can do one (1) unit in the calculator and multiply the savings by the amount of total units OR do the whole facility as one (1) unit. If there are multiple buildings and each one is different design, the applicant will need to run the calculations on each building.

Heat Pump:                              Please insert one ("1") if a heat pump exists (rehab) or is being proposed. Zero ("0") is the default.

Component:	These are the measures this tool can consider. If there are other measures, i.e. GFX systems, solar systems or heating recovery systems, etc., another DOE approved tool will need to be used.
Area:	Total square footage of project.
U-Values:	Existing and Proposed values must be indicated in U-values. U-values and R-values are related in that they are a reciprocal of one another. R-Values can be added together. U-values are numbers needed for the calculator. Applicants can convert R-values to U-values by $1/R$ (1 divided by R). Example: The R-value of the batt of insulation is R-19. The U-value of this would be one (1) divided by nineteen (19)=.052. Therefore the U-value is .052. When entering the U-values, only round to the thousandth position.
Table of Values:	Worksheet will not allow the numbers or formulas to be altered.
Totals:	Will be displayed via category and total in KWH's at the bottom.

**Helpful USDOE/BPA analysis tools:**

- **Older Refrigerator Database(Rehab only)**

[http://www.waptac.org/data/files/technical\\_tools/refrigdata-excel2000.zip](http://www.waptac.org/data/files/technical_tools/refrigdata-excel2000.zip)

- **Lighting spreadsheet**

<http://www.oregon.gov/ENERGY/cons/bus/docs/lightingspreadsheet.xls>