

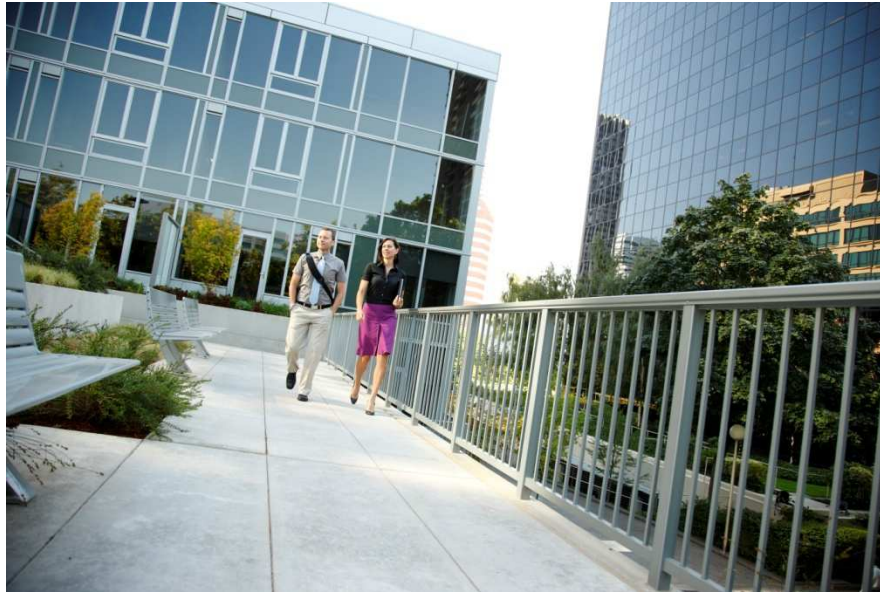


New Buildings

Discover Building Efficiency Solutions



New Buildings



Projects we serve:

Commercial new construction

Major renovations

Tenant improvements

Additions to existing buildings

LEED®

ENERGY STAR®

What we offer:

Financial incentives for energy-efficient equipment and energy studies

www.energytrust.org/newbuildings





Participation process



Early Design Assistance



Early Design Assistance incentive

**\$2,500 Max
per project**

Early Design Assistance

- Helps offset the costs of an integrated design charrette/team meeting
- Encourages a thorough look at energy savings potential from the project
- Available to Standard, Custom and LEED® Track projects.
- Project owner must be committed to achieving at **least 10% energy savings** beyond Oregon Energy Code
- Tenant improvements approved for Early Design Assistance on a case-by-case scenario
- Incentive is paid upon completion of the charrette and program approval of the meeting minutes or report



Charrette requirements

Charrette required attendees:

- Owner
- Architect
- Mechanical engineer
- Energy analyst
- Charrette facilitator

Optional attendees:

- General contractor (if known)
- Commissioning agent
- Solar Program representative
- Operator



Charrette requirements

Charrette required topics:

- Preliminary energy end-use breakdown
- Energy efficiency measures:
 - Building envelope design
 - Daylighting & lighting design
 - HVAC and passive heating and cooling strategies
 - Domestic hot water systems
 - Plug load and miscellaneous load management
- Preliminary energy savings estimate and breakdown of energy savings by measure or design feature

Standard Track

A prescriptive path to energy efficiency



Standard Track

Up to
\$500,000
per project

Prescriptive incentives for purchasing and installing pre-approved energy-efficient equipment.

Natural Gas measures:

- Domestic hot water
- Heating equipment
- Food service equipment

Electrical measures:

- Lighting & controls
- Motors & drives
- HVAC equipment
- Heat pumps
- Chillers
- Air to air heat exchangers
- Demand control ventilation
- Ice machines
- Food service equipment

*If combined with Custom Track, total project maximum is \$500,000.



Standard Track incentive examples

LIGHTING*	
LIGHTING TYPE	UNIT INCENTIVE
Photoluminescent exit signs	
All sizes and types	\$20
Compact fluorescent fixtures	
7 to 26 watts hard-wired	\$25
27 to 55 watts hard-wired	\$35
≥ 56 watts hard-wired	\$45
High-efficiency fluorescent fixtures (T8 or T5)	
<i>Luminaire efficiency: ≥ 72% for parabolic fixtures or open-bottom luminaires and ≥ 80% for prismatic lensed luminaires</i>	
1, 2, 3, or 4 lamp T8 or T5 fixtures	\$10
Fluorescent fixtures with high performance T8 lighting systems	
<i>The fixture will include a high performance 48" T8 lamp with a not-to-exceed nominal wattage of 32W and a ballast system that is listed on the CEE qualifying product list.</i>	
1, 2, 3, or 4 lamp T8 fixture	\$20
High-efficiency pendant and wall mounted indirect fluorescent fixtures	
<i>Luminaire efficiency: ≥ 77%</i>	
Per 4 foot sections of T8 lamps	\$14
Per 4 foot sections of T5 lamps	\$20
High bay T8 or T5 fixtures	
<i>Luminaire efficiency: ≥ 81% for T8 fixture and ≥ 88% for T5 fixture</i>	
T8 or T5	\$35
Bi-level lighting	
<i>Integrated occupancy sensor and dimming ballast capable of ≥ 50% wattage reduction</i>	
T8 or T5 lamps	\$26
Fluorescent controls	
Occupancy sensors (ceiling or wall mounted, control a minimum of 100W)	\$75
Occupancy sensors (wall switch, control a minimum of 100W)	\$25
Daylight controlled dimming (control a minimum of 200W)	\$100
Occupancy controlled hi-low switching (control a minimum of 200W)	\$60
HID controls	
Occupancy controlled hi-low switching (control a minimum of 700W)	\$75
Daylight controlled dimming (control a minimum of 700W)	\$100
LED lighting	
LED refrigeration case lighting	Refer to grocery and food service measures

HEAT PUMPS*			
SIZE (tons)	MINIMUM EFFICIENCY		UNIT INCENTIVE
	EER/SEER	HSPF/COP	
Ground-source			
1	15.0	3.4	\$300
1.5	15.0	3.4	\$450
2	15.0	3.4	\$600
2.5	15.0	3.4	\$750
3	15.0	3.4	\$900
3.5	15.0	3.4	\$1,050
4	15.0	3.4	\$1,200
5	15.0	3.4	\$1,500
6	15.0	3.4	\$1,800
7.5	15.0	3.4	\$2,250
8.5	15.0	3.4	\$2,550
10	15.0	3.4	\$3,000
Air-to-air			
6	10.6	3.5	\$900
7.5	10.6	3.5	\$1,125
8.5	10.6	3.5	\$1,275
10	10.6	3.5	\$1,500
12	10.1	3.5	\$1,800
12.5	10.1	3.5	\$1,875
15	10.1	3.5	\$2,250
17	10.1	3.5	\$2,550
20	10.0	3.5	\$3,000
25	10.0	3.5	\$3,750
Water-source			
1	14.0	4.6	\$200
1.5	14.0	4.6	\$300
2	14.0	4.6	\$400
2.5	14.0	4.6	\$500
3	14.0	4.6	\$600
3.5	14.0	4.6	\$700
4	14.0	4.6	\$800
5	14.0	4.6	\$1,000
6	14.0	4.6	\$1,200
7.5	14.0	4.6	\$1,500
8.5	14.0	4.6	\$1,700
10	14.0	4.6	\$2,000
12	14.0	4.6	\$2,400
12.5	14.0	4.6	\$2,500
15	14.0	4.6	\$3,000
17	14.0	4.6	\$3,400
20	14.0	4.6	\$4,000
25	14.0	4.6	\$5,000

NATURAL GAS MEASURES*	
MEASURES	AMOUNT PER KBTU INPUT
Domestic hot water	
Condensing tank (91% thermal efficiency or AFUE)	\$2.50
Tankless/instantaneous with standing pilot	\$1.50
Tankless/instantaneous with electronic ignition	\$2.00
Heating equipment	
High-efficiency unit heater, non-condensing with electronic ignition (86% AFUE)	\$1.50
High-efficiency condensing furnace (91% AFUE)	\$3.00
Direct-fired radiant heating	\$6.50
Boiler vent damper	\$1,000 per damper
High-efficiency condensing boiler with electronic ignition (small: <300 kBtuh, 90% AFUE)	\$4.00
High-efficiency condensing boiler with electronic ignition (medium: 300 - 2,500 kBtuh, 90% thermal efficiency)	\$4.00
High-efficiency condensing boiler with electronic ignition (large: >2,500 kBtuh, 90% combustion efficiency)	\$4.00



Custom Track

Tailored energy solutions



Custom Track

Up to
\$500,000
per project

Incentives based on estimated savings demonstrated through an energy analysis. Baseline is Oregon Energy Code. If combined with Standard Track, total project maximum is \$500,000.

New construction:

- Incentives are calculated at \$0.10/kWh and \$0.80/therm saved.

Major renovation:

- Lighting incentives - \$0.17/kWh not to exceed 100% of incremental cost
- Mechanical incentives - \$0.20/kWh and \$1/Therm not to exceed 100% of incremental cost



Custom Track additional incentives

\$25,000 Max per project

Technical Assistance

Up to \$25,000 or \$0.05/kWh and \$0.40/therm (based on annual estimated savings) to discuss energy efficiency options with an energy advisor and cover the costs of an energy analysis and application to the New Buildings program. This incentive is available in addition to the \$500,000 base incentive.

\$40,000 Max per project

Commissioning

Provides incentives to commission energy measures approved under the Custom Track. Incentive is \$0.03/kWh and \$0.20/therm. Commissioning incentive is part of the \$500,000 Custom Track incentive cap.

LEED® Track

Incentives for outstanding energy
efficiency in green buildings



New Buildings: LEED® Track

Up to
\$500,000
per project

Incentives for projects that achieve LEED NC or CS certification from the US Green Building Council – Versions 2.0, 2.1, and 2.2 – and LEED V.3

Cannot be combined with other tracks.

Energy savings incentives:

Incentives calculated at \$0.10/kWh and \$0.80/therm for New Construction; \$0.18/kWh and \$1.00/therm for Major Renovations



LEED[®] Track Incentives

Two calculation methods:

1. **Whole Building Simulation** – incentives based on annual energy savings results approved by USGBC
2. **Prescriptive Path** – incentives based on the number of credits achieved
 - ASHRAE Advanced Energy Design Guide for Small Office Buildings 2004 (EAc1)
 - Advanced Buildings Core Performance Guide (EAc1)



Additional incentives for LEED® projects

\$40,000
Combined max
per project

Enhanced Commissioning & Measurement & Verification

Provides incentives to LEED® NC & CS Track projects that receive Energy and Atmosphere Credit points 3 & 5 for Enhanced Commissioning and Measurement and Verification.

Incentive is \$0.03/kWh and \$0.20/therm for the combined credits up to a maximum of \$40,000 in addition to the LEED® NC & CS Track incentives.



New Buildings forms & documents

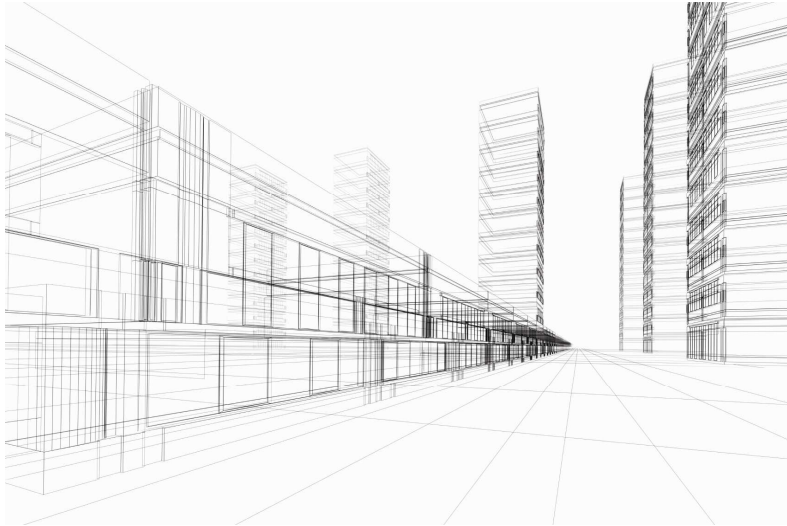
CONSTRUCTION PHASE	PROJECT TIMELINE	TRACK				Form
		STANDARD TRACK	CUSTOM TRACK	LEED® TRACK	ENERGY STAR® TRACK	
SCHEMATIC DESIGN	Prior to construction	■	■	■	■	510E: Project Enrollment
	Prior to design charrette	■	■	■		520ED: Early Design Assistance
	Design charrette complete	■	■	■		540PR: Payment Request
DESIGN DEVELOPEMENT	Prior to energy modeling	■	■			520T: Technical Assistance
	Energy modeling complete	■	■			540PR: Payment Request
CONSTRUCTION DOCUMENTATION	Equipment selected	■	■	■	■	TRACK 520: Incentive Workbook
	Equipment installed	■	■	■	■	540 PR: Payment Request
POST OCCUPANCY	Commissioning complete		■			540PR: Payment Request

KEY **REQUIRED** **OPTIONAL**

Path to Net Zero pilot



Path to Net-Zero Pilot



Overview

Launched May 1, 2009

Provides enhanced incentives for owners who construct buildings with exceptional energy performance and strive for net-zero on-site energy use.

Pilot is currently full, with 15 projects enrolled, including:

- 6 schools or college facilities
- 3 multi-unit residential buildings
- 3 community centers/event spaces
- 2 government/municipal buildings
- 1 office building



PTNZ: How it works

- The project enrolled in the early schematic design phase or earlier.
- The owner committed to saving:
 - At least 60% energy savings beyond Oregon code through **energy efficiency and renewable energy**.
 - At least 50% energy savings beyond Oregon code through **energy efficiency alone**.
- The owner agreed to collaborate with the Program throughout the project, including sharing post-occupancy energy data and participating in case studies.



PTNZ : Incentive structure

- Early Design Assistance: Up to \$10,000 for an integrated design charrette
 - Deliverable: Charrette Report
- Technical Assistance: Up to \$50,000 for energy studies and building simulation modeling
 - Deliverable: Energy Analysis Report
- Installation & Commissioning: Up to \$500,000
 - Deliverable: Commissioning Report and site visit
- Monitoring & Reporting: Incentives for building monitoring and reporting performance up to \$30,000
 - Deliverables: M&R Plan, site visit, monthly data, quarterly meetings



PTNZ : Early Design Assistance

Integrated Design Charrette

Required attendees:

- Owner
- Architect
- Engineer
- Energy analyst
- *General contractor (if known)*
- *Charrette facilitator*
- *Commissioning agent*
- *Operator*



PTNZ: Early Design Assistance

Integrated Design Charrette

Required energy topics:

- Results of studies identifying climate conditions, site potential, building attributes and programmatic assumptions
- Preliminary energy end-use breakdown
- Energy efficiency measures:
 - Building envelope design
 - Daylighting & lighting design
 - HVAC and passive heating and cooling strategies
 - Domestic hot water systems
 - Plug load and miscellaneous load management
- Preliminary energy savings estimate and breakdown of energy savings by measure or design feature
- *On-site renewable energy considerations*
- *Operation and maintenance strategies*
- *Strategy for lifecycle cost analysis of energy measures, including preliminary list of measures to analyze*
- *Monitoring of building performance*

Incentives paid after program reviews and approves meeting report that includes early estimate of energy savings meeting pilot criteria.



PTNZ: Technical Assistance

Energy Analysis

Technical Assistance Incentives can be used for:

- Whole building energy analysis; can include scopes for daylight modeling, CFD analysis, etc.
- Energy efficiency options and/or energy conservation measures (ECMs) being studied

Technical Assistance Incentives paid after the energy studies are complete:

- Energy studies and supporting documentation submitted
- Program reviews reports
- Energy savings estimate approved
- Technical Assistance Incentives are based on the final, program-approved energy savings estimate



PTNZ: Technical Assistance

Technical Assistance Incentive Calculation:

- \$0.10/kWh and \$0.80/therm
- Up to \$50,000
- Capped at the not-to-exceed cost of the energy studies

Cost-Effectiveness Test:

- Measures must be put through the cost-effectiveness test
- Some measures may be bundled in special cases



PTNZ: Installation & Commissioning Incentives

Installing measures as modeled

Installation Incentive Calculation:

- \$0.20/kWh and \$1.60/therm
- Up to \$500,000
- Based on energy savings of approved measures

Commissioning Authority:

- PE registered in Oregon (can be on project team)
- Review construction documents at 50% and 90% complete
- Review all change orders
- Complete equipment testing and provide copies of functional tests and manufacturer's acceptance test documentation
- Submit Commissioning Report identifying any issues



PTNZ: Monitoring & Reporting

Measuring building performance to identify and correct operational issues:

Whole building interval metering required, subsystem metering encouraged.

M&R plan:

- Draft before 50% construction documents, final at 90% construction documents
- *M&R Plan Template* provided

Incentives for incurred costs (up to \$30,000 total):

- Whole building: up to \$5,000 for
 - Whole building interval meters
 - 18-months of Energy Information System (EIS) subscription
- Subsystem: up to \$0.20/sq. ft. for
 - Subsystem interval meters
 - Subsystem EIS costs
 - Controls costs for adding monitoring points



PTNZ: Monitoring & Reporting

M&R period:

- 18 months following certificate of occupancy
- Monthly: report interval data to the Program
- Quarterly: attend check-ins with the program
 - Building owner, facility manager, facility operator
 - Discuss building performance and diagnose and correct operational issues
 - Discuss monitoring and reporting system: is it providing the owner with the information needed to understand building operation and diagnose problems?



PTNZ: Strategies to reach net-zero

Strategies and technologies being discussed:

- Natural ventilation
- Displacement ventilation
- Zonal heating and cooling
- Radiant floors/chilled beams
- Heat recovery and variable refrigerant flow
- Geothermal heat pumps
- Heat recovery from water sources
- Solar walls
- Extensive daylighting with controls
- Highly insulated envelope
- Occupancy controls

Small Commercial Efficiency pilot



Small Commercial Efficiency pilot



What is it?

- A prescriptive, whole-building approach to reduce energy use by 10 – 30% by following the *Core Performance Guide – Oregon Edition*
- Targets 10,000 – 70,000 sq. ft. office, retail, public assembly, or school buildings
- A program that integrates energy efficiency with green building and offers added incentives for achieving Earth Advantage® Commercial certification.



Contact Nicole Hillis, outreach manager,
nhillis@earthadvantage.org or 503.334.7994



SCEP: Incentive Summary

Incentive Summary		All Amounts are additive				
	Early Design Assistance	Design Process Strategies	Package Installation Incentives			
Building Type	Early Design Charrette	Chapter 1	Core Package	Enhanced Package	Earth Advantage Commercial Incentive	Cx Incentive
Office	\$2,500	\$0.10/sf	\$0.40/sf	\$0.40/sf	\$0.10/sf	\$0.10/sf
School			\$0.30/sf	\$0.30/sf		
Retail			\$0.50/sf	\$0.50/sf		

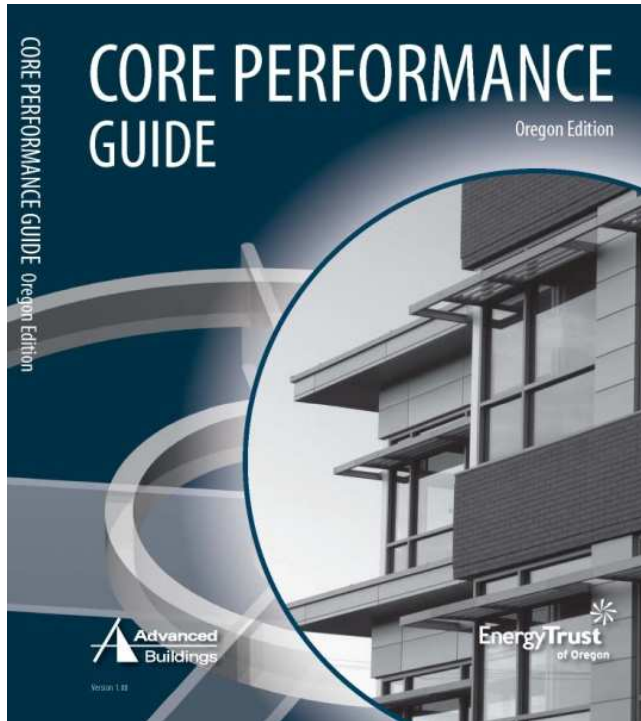


SCEP: Eligible Projects

- In early schematic design phase or earlier
- Be 10,000 to 70,000 square feet
- New Construction or Major Renovation
- Be a school, retail, office, or public assembly building
- Owner must be committed to following the Core Performance Guide – Oregon Edition
- Owner must be willing to collaborate with the Program throughout the project, including sharing post-occupancy energy data and participating in case studies

Projects not meeting these requirements will be considered on a case-by-case basis.

Core Performance Guide-Oregon Edition



- Defines the energy path for Small Commercial Efficiency Pilot projects
- A guide to designing and building a high performance building
- Describes a set of simple, integrated design strategies and building features
- Energy savings of 10-30% beyond Oregon code, depending on building type

Earth Advantage[®] Commercial

Earth Advantage Commercial



What is it?

- Holistic third party green rating and certification system—Energy, Water, Health, Materials, Land
- Utilizes the Energy Trust of Oregon Small Commercial Efficiency Pilot to meet energy savings and systems performance thresholds

Why develop a new system?

- Majority of new commercial buildings are SMALL
- Small percentage of small commercial projects seek certification

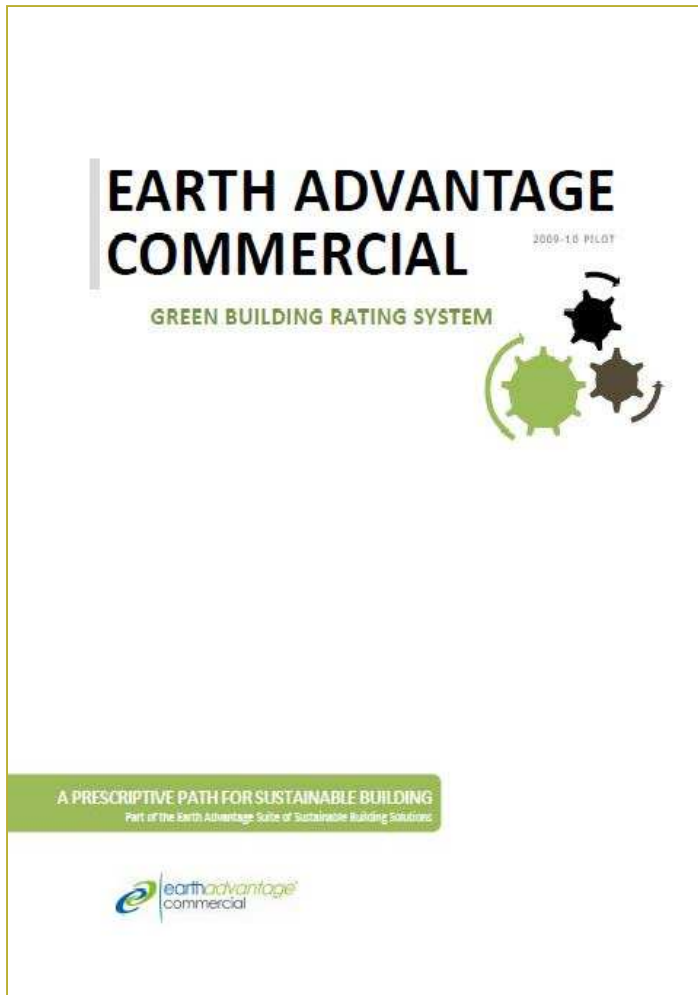
Earth Advantage Commercial Rating System



How does it work?

- Prescriptive requirements that increase in rigor as certification level goes up from Silver to Gold to Platinum
- Paperwork and consultant fees are reduced by eliminating energy modeling and providing plan review and on-site verification of most measures
- 3rd Party Commissioning is only required at Platinum level, acceptance testing is required for all projects

Features and Benefits



- Cost-effective—2 ways
- Major aspects of sustainability addressed
- Market education and feedback loops
- Local expert peer reviewed, homegrown and Oregon based
- Avenue for incentive/grant/tax credit money

Soft Costs of Certification



EAC \$0.70 to \$2.50 per sq. ft.
(includes certification fees of \$0.50 to \$0.90 per sq. ft.)

Smaller projects:

- Most work can be done without additional consultants.
- Might require outside assistance for facilitation, administration and/or verification

Larger projects:

- Third-party assistance may be required, including:
 - Ecologists
 - Lighting Specialists
 - Energy Modeler
 - Commissioning Agent
 - Building Sciences



Contact the New Buildings Program

New Buildings Program 877.467.0930

www.energytrust.org/newbuildings

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