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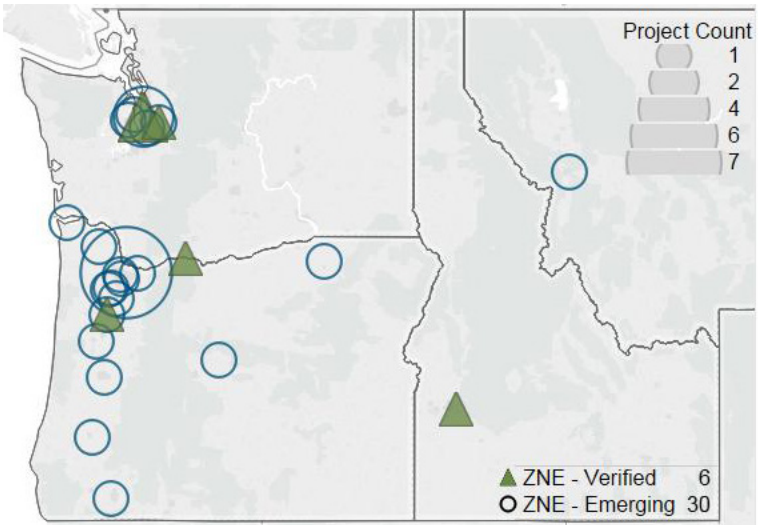
Northwest Zero Energy Watchlist

Zero Energy & Ultra-Low Energy Buildings

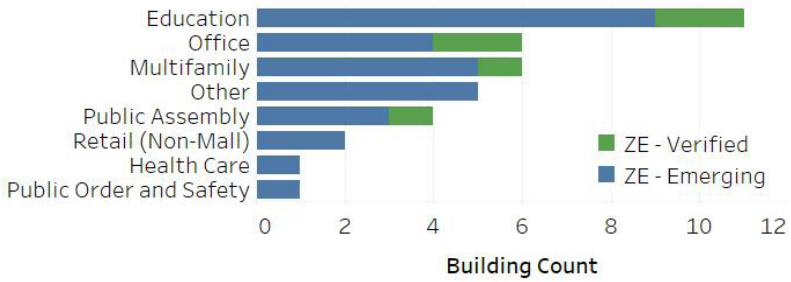
This *Northwest Zero Energy Watchlist* tracks commercial and multifamily buildings based on information gathered by New Buildings Institute (NBI) from multiple sources including the International Living Future Institute, designers, owners, private and public organizations, articles, and other research. This, along with other available resources about zero energy, serves to increase the awareness, acceptance and adoption of zero energy buildings in the Northwest. The watch list also shares information about known buildings with ultra-low energy performance that are comparable to zero energy but may not have renewables sufficient to cover annual energy consumption.

Location of Zero Energy Buildings in the Northwest

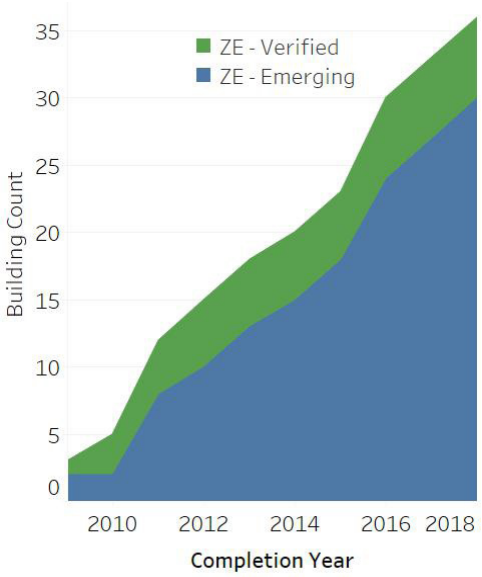


The Northwest has seen a consistent increase in interest regarding zero energy buildings. Since 2009, six buildings in Oregon, Washington, Idaho and Montana have demonstrated zero energy performance. Twenty seven more have a publically stated goal of zero energy performance. The education sector is leading with two zero energy projects in operation and eight more on the way—representing 30% of all zero energy projects. The multifamily and office building types are close behind, each representing 17% of all zero energy verified and emerging projects..

Zero Energy Building Types



Count of Zero Energy Buildings



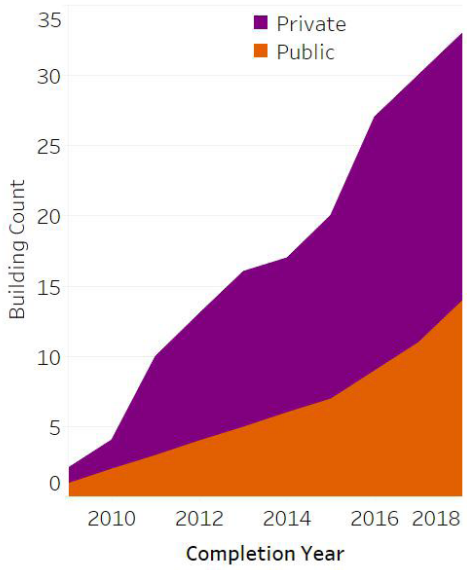
The **Energy Trust of Oregon's Path to Net Zero (PTNZ)** program supports project teams pursuing zero and ultra-low energy projects in Oregon with technical assistance and financial incentives. PTNZ supports the entire design and construction process from project kick-off through completion to occupancy. It provides financial incentives for a project kick off, early design assistance, renewable energy, equipment installation, functional testing and energy metering. Energy Trust even covers 50% of the cost of certification from the International Living Future Institute (ILFI). Learn more at Path to Net Zero

ILFI's **Net Zero Energy Building Certification**™ is based on 12 months of actual performance data and not an energy model, so it verifies that the building is performing as expected. ILFI NZE certification amplifies the story of exemplary projects and ensures that the building is meant to last.

Zero energy buildings in the Northwest represent a mix of public and private ownership. Of the buildings on the Zero Energy Watchlist, more than half (57%) are in private ownership, while the remaining are public buildings. Interestingly, in Oregon, the public/private split is similar, with twelve buildings in public ownership and eleven in private ownership. In Washington, private owners have seven buildings while only one public building is pursuing zero energy. Idaho has one public zero energy verified building, while the emerging zero energy building in Montana is privately owned.

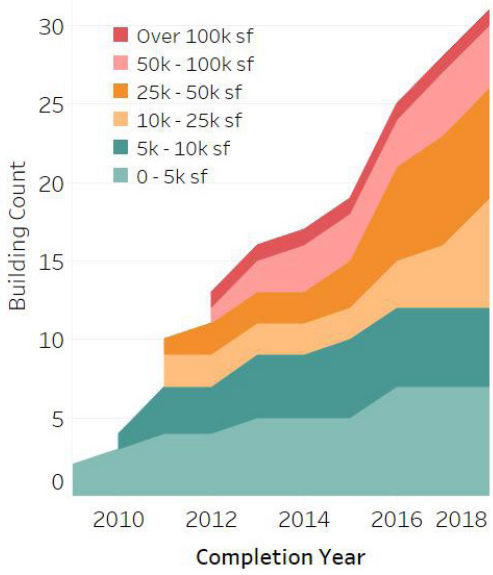
Analysis of data available for buildings on the list suggests that zero energy buildings in the Northwest are not all small buildings. In fact, 12 of the 31 zero energy buildings with building size data are over 25,000 square feet. This includes the six story Bullitt Foundation building in Seattle.

Zero Energy Buildings by Ownership



Note: Ownership data is not available for three buildings

Zero Energy Buildings by Size



Note: Building size data is not available for five buildings.

Westside School | Seattle, WA
Photo: Benjamin Benschneider

Westside School | Seattle, WA

The Westside School in Seattle is the adaptive reuse of a former church into a school for 360 pre-K through 8th grade students. The integrated design team of Sundberg Kennedy Ly-Au Young Architects and Ecotope consulted with Seattle's Integrated Design Lab to appropriately orient and size skylights and reduce energy associated with the LED lighting system. The HVAC design followed the Design for Off™ philosophy and carefully zoned and sized equipment to reduce consumption. Space conditioning is provided with a variable refrigerant flow heat pumps with ductless indoor fan coil units while fresh air is provided with a dedicated outdoor air system (DOAS) with a small energy recovery ventilator. Overall the building has achieved a remarkable measured energy use intensity (EUI) of 14.3 kBtu/ft^2-yr and is pre-wired to achieve zero energy when photovoltaics are added in the future.

Westside School | Seattle, WA
Photo: Benjamin Benschneider

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Zero Energy & Ultra-Low Energy Buildings

This Northwest Zero Energy Watch List provides examples of commercial buildings that have verified zero energy performance, are emerging toward a zero energy goal or reflect comparable ultra-low energy performance. Undoubtedly, other projects belong on this list. Add new projects or provide corrections and updates through the NBI Registry at: newbuildings.org/share or email us at info@newbuildings.org.

zEPI provides a scale for ranking commercial building energy performance and on a scale from 100 to 0 with 100 being the average energy usage from the 2003 Commercial Buildings Energy Consumption Survey and 0 representing net zero energy. A lower zEPI score indicates lower energy consumption and negative means the building produces more than it uses. For more information on zEPI, including how to calculate scores, see: http://newbuildings.org/zero-energy-performance-index-zepi

Zero Energy Verified buildings have been documented to have met, over the course of a year, all net energy use through renewables. The annual energy use of all fuels (electric, natural gas, steam, etc.) is counted and offset by this renewable energy generation on a site basis.

Year	Project Name	City	State	Building Type	Size (sq ft)	Owner	Architect	Engineer	Base (Gross) Energy Use (kBtu/sf-yr)		Onsite Renewable Production (kBtu/sf-yr)		Net Grid Energy Use (kBtu/sf-yr)		zEPI Score
									Site	Source	Site	Source	Site	Source	
	Zero Energy Verified														
2016	Twenty Mile Farm Administration and Maintenance Building (M)	Boise	ID	Office	15,222	City of Boise	Insight	SPF Water	11.3	35.6	18.6	58.6	-7.3	-23.0	-9.8
2012	Bullitt Foundation Cascadia Center for Sustainable Design and Construction [L] (M)	Seattle	WA	Office	51,800	The Bullitt Foundation	Miller Hull	PAE	9.7	30.6	16.6	52.4	-6.9	-21.8	-9.8
2011	zHome - Issaquah [L] (M)	Issaquah	WA	Multifamily	5,813	City of Issaquah	David Vandervort	Stantec	21.0	66.2	22.0	69.3	-1.0	-3.1	-1.5
2010	Bertschi School Science Wing [L] (M)	Seattle	WA	Education	1,425	Bertschi School	KMD	Rushing	48.0	151.2	48.4	152.5	-0.4	-1.3	-0.4
2010	Hood River Middle School Net-Zero Addition [L] (M)	Hood River	OR	Education	5,331	Hood River County SD	Opsis	Interface	26.8	84.3	27.1	85.4	-0.4	-1.1	-0.4
2009	Pringle Creek Painter's Hall [L] (M)	Salem	OR	Public Assembly	3,595	Pringle Creek Community	Opsis	PAE	11.1	35	15.4	48.4	-4.3	-13.4	-4.6

[L] Building is Net Zero Energy Building Certified by the International Living Future Institute.
(M) after the name indicates measured energy use. All others are estimated / modeled.
Energy Use Intensity (EUI) is the (total or net) building use of site energy in kBtus/sf/yr. Buildings that have been verified as ZNE have either a zero net building EUI or a negative net building EUI meaning the renewable production exceeded the energy use.
Renewable Production Intensity (RPI) is the energy generation onsite per year in kBtus/sf/yr. This term was created by NBI for use in this context.

Zero Energy Emerging buildings have a publically stated goal of zero energy but do not yet meet the definition of zero energy verified. These may be in the planning or design phase, under construction or have been in operation for less than a year. Others may have been operating for twelve months or longer, but their measured energy has either yet to achieve zero or the measured data to document zero energy verified status was not available.

Year	Project Name	City	State	Building Type	Size (sq ft)	Owner	Architect	Engineer	Base (Gross) Energy Use (kBtu/sf-yr)		Onsite Renewable Production (kBtu/sf-yr)		Net Grid Energy Use (kBtu/sf-yr)		zEPI Score
									Site	Source	Site	Source	Site	Source	
	Zero Energy Emerging														
2020	OR National Guard	Roseburg	OR	Other	20,000	OR Army Natl. Guard	MWN	Solarc							
2018	Durham Education Center	Tigard	OR	Education	17,000	Tigard-Tualatin SD	Boora	Glumac	19.0	59.9	28.7	90.4	-9.7	-30.5	-10.3
2018	Woodburn Success High School	Woodburn	OR	Education	11,000	Woodburn SD	Opsis	Interface							
2017	Clatsup Community College - Patriot Hall	Astoria	OR	Education	36,000	Clatsop CC	SRG, Kent Duffy	Catena							
2017	Oregon Zoo Ed Center	Portland	OR	Public Assembly	20,000	Oregon Zoo	Opsis	KPFF, PAE							
2017	Yellowhawk Tribal Health Center	Pendleton	OR	Health Care		PSI	NBBJ	KPFF							
2016	Cowhorn Vineyard	Jacksonville	OR	Other	2,200	Cowhorn Vineyard	Green Hammer	Structural Dept.							
2016	Grow community	Bainbridge Island	WA	Multifamily		Grow Community	Davis Studio, Cutler Anderson, Hartman	Browne							
2016	Ironhorse Lodge	Prineville	OR	Multifamily	27,000	Pacific Crest Affordable Housing	BLRB	Eclipse, Solarc							
2016	King County Housing Authority Administration Building	Tukwila	WA	Office	36,000	King County Housing Authority	Rice Fergus Miller	Ecotope	28.0	88.2	0.0	0.0	28.0	88.2	39.5
2016	King Street (M)	Seattle	WA	Office	3,680	1257 King, LLC	Julian Weber								
2016	Toyota Dealership Corvallis	Corvallis	OR	Other	38,000	S. & B. Jackson	Gensler	CMTA							
2015	Ankeny Row Townhomes	Portland	OR	Multifamily	8,500	M. & F. Royce, R. Benner, L. Gordon	Green Hammer	Structural Dept.							
2015	Gresham Wastewater Plant	Gresham	OR	Other		City of Gresham		Veolia NA							
2015	Seattle Academy of Arts and Sciences (SAAS) Stream	Seattle	WA	Education	32,156	SAAS	Miller Hull		32.3	101.7	1.4	4.4	30.9	97.3	32.9
2014	Chemeketa Community College Health Science Complex	Salem	OR	Education	70,000	Chemeketa Community College	SRG	PAE							
2014	Zenger Farms Community Building	Portland	OR	Public Assembly	8,500	Friends of Zenger Farm, City of Portland	DECA	PAE							
2013	Lane Community College, Downtown Academic Center (M)	Eugene	OR	Education	90,000	Lane CC	Robertson Sherwood, SRG	PAE	25.0	78.8	0.0	0.0	25.0	78.8	26.6
2013	Park Place	Missoula	MT	Other	4,295	Missoula Parking Commission	MacArthur, Means & Wells	DC							
2013	Sokol Blosser Winery Tasting Room	Dundee	OR	Retail (non-Mall)	5,000	Sokol Blosser Winery	Rice Fergus Miller	KPFF, Glumac	24.0	75.6	0.0	0.0	24.0	75.6	26.8
2012	Blanchet House of Hospitality	Portland	OR	Multifamily	35,000	Blanchet House	SERA	PAE	22.0	69.3					
2012	Vernonia School	Vernonia	OR	Education	135,000	Vernonia SD	Boora	Integral Group	35.4	111.6					
2011	Eastside Fire & Rescue Station 72	Issaquah	WA	Public Order & Safety	11,400	City of Issaquah	TCA	Ecotope							

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Renewable Production Intensity (RPI) is the energy generation onsite per year in kBtus/sf/yr. This term was created by NBI for use in this context.

Year	Project Name	City	State	Building Type	Size (sq ft)	Owner	Architect	Engineer	Base (Gross) Energy Use (kBtu/sf-yr)		Onsite Renewable Production (kBtu/sf-yr)		Net Grid Energy Use (kBtu/sf-yr)		zEPI Score
									Site	Source	Site	Source	Site	Source	
2011	EcoFlats Building	Portland	OR	Multifamily	19,860	Siteworks, 3935 N Williams LLC	Works Partnership	Imagine Energy							
2011	Highland Chevron ExtraMile Gas Station	Beaverton	OR	Retail (non-Mall)	6,000	B. Barman		Emerio Design							
2011	June Key Delta Community Center	Portland	OR	Public Assembly	2,700	Portland Alumnae ΔΣΘ Sorority, Piedmont Rose Connection	Sienna								
2011	Portland Community College Newberg Center	Newberg	OR	Education	13,000	Portland CC	Hennebery Eddy	KPFF							
2011	Rice Fergus Miller Office & Studio (M)	Bremerton	WA	Office	39,000	Fifth Street Hilltop Partners	Rice Fergus Miller	Ecotope	21.0	66.2	3.0	9.5	18.0	56.7	25.4
2009	da Vinci School High Performance Classroom (M)	Portland	OR	Education	1,485	Portland Public Schools	SRG Partnership	KPFF	27.1	85.4	25.0	78.8	2.1	6.6	2.2

Ultra-low Energy Verified buildings have demonstrated significant technical progress toward goals of energy use reduction, even though they may not have pursued a zero energy path by investing in onsite renewables. The annual site energy consumption must be lower than the Zero Energy Performance Index (zEPI) target of 39. The corresponding target EUI values vary by building type and climate zone.

Year	Project Name	City	State	Building Type	Size (sq ft)	Owner	Architect	Engineer	Base (Gross) Energy Use (kBtu/sf-yr)		Onsite Renewable Production (kBtu/sf-yr)		Net Grid Energy Use (kBtu/sf-yr)		zEPI Score
									Site	Source	Site	Source	Site	Source	
	Ultra-low Verified														
2015	The Woodlawn	Portland	OR	Multifamily	18,476		SolTerra		29.8	93.8	0.1	0.4	29.7	93.4	45.0
2015	Westside Elementary School (M)	Seattle	WA	Education	52,826	Westside School	SKL	Ecotope	14.3	45.1	0.0	0.0	14.3	45.1	15.3
2013	Bell Elementary School (M)	Kirkland	WA	Education	65,306	Lake Washington SD	DLR Group	DLR Group	32.4	65.9	0.0	0.0	32.4	65.9	34.5
2013	Edith Green-Wendell Wyatt Federal Building (M)	Portland	OR	Office	512,474	GSA Region 10	SERA	KPFF	28.0	94.5	2.0	6.3	26.0	88.2	39.5
2011	Ramona Apartments (M)	Portland	OR	Multifamily	230,760	Nurture 247	Ankrom Moisan	PAE, Miyamoto, HHPR	18.0	59.9	0.0	3.2	18.0	56.7	27.4
2011	Stone34 (M)	Seattle	WA	Other	132,293	Laird Norton Prop.	LMN	DCI Engineers	27.7	87.3	0.0	0.0	27.7	87.3	30.2
2010	Northwest Maritime Center (M)	Port Townsend	WA	Other	26,550	Northwest Maritime Center	Miller Hull	Quantum	30.0	94.5	0.0	0.0	30.0	94.5	32.7
2006	Stoller Winery (M)	Dayton	OR	Retail (non-Mall)	23,000	Stoller Family Estate	EMA	Jacobs	30.0	94.5	1.0	0.0	29.0	94.5	33.5

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