

2019 Zero Energy Schools Watchlist

for K-12 Schools, Colleges, and Educational Projects

The *2019 Zero Energy Schools Watchlist* tracks education buildings, including K-12 schools, higher education, and general education facilities. The *Watchlist* documents the status of 219 zero energy and ultra-low energy school projects across North America and raises public awareness of districts that are getting to zero. One hundred ninety-one of these innovative projects listed here are aiming to consume only as much energy as they can produce over the course of the year, helping move the needle toward zero energy and zero carbon building performance.

High performance and zero energy schools shape the educational landscape dramatically for the better. For example, students in classrooms with natural light showed a 20-26% improvement on test scores compared to artificially lit environments¹. With students spending approximately 1,000 hours per year in a school,² transforming classrooms into healthy and productive spaces is of the utmost importance, especially when short-term and long-term health of students and staff is at risk.

Student engagement in zero energy schools creates hands-on opportunities for teaching Next Generation Science Standards and Common Core. These zero energy facilities can be used as a tool to develop important skills like teamwork, research, time management, and the use of technology.

Zero energy schools have been built for little to no additional cost and demonstrate lower operating costs over time. The money saved on energy bills can be put back into the school. Patterns and trends uncovered in the approaches used by these districts and teams can be shared with others, whether they are aiming for ultra-low or zero energy performance.

A zero energy building produces as much energy through clean, renewable resources as it consumes over the course of a year.

1 Heshong Mahone Group (1999). Daylighting in Schools: An Investigation into the Relationship Between Daylighting and Human Performance. <http://h-m-g.com/downloads/Daylighting/schoolc.pdf>

2 Center for Public Education (2011). Time in school: How does the U.S. compare? <http://www.centerforpubliceducation.org/Main-Menu/Organizing-a-school/Time-in-school-How-does-theUS-compare>

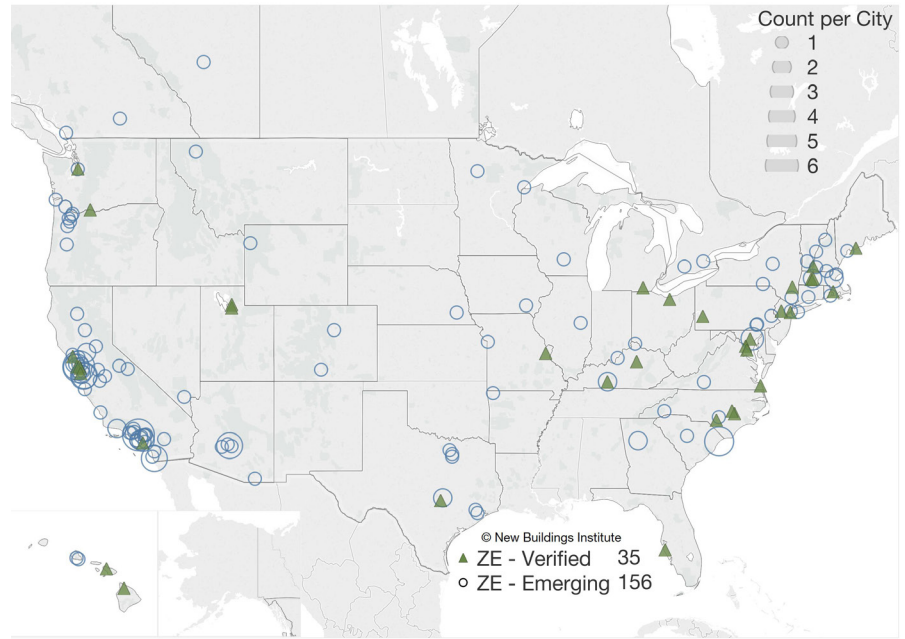


Sandy High School | Sandy, OR
Photo: Josh Partee

Since 2010, when NBI began tracking zero energy buildings, educational facilities have been a leading market sector.³ The number of zero energy educational buildings has increased more than 110% since 2014 due to early adopter school districts and stakeholders that recognized the long- and short-term benefits of these buildings.

A total of 35 verified and 156 emerging zero energy educational buildings in North America are located across 37 states and three Canadian provinces. The top five states for zero energy schools are California, Kentucky, Massachusetts, Oregon and Texas. Followed closely behind by Arizona, New York, and South Carolina. Fueled by aggressive public policies and Proposition 39 funding, California has six educational buildings with verified zero energy performance and 72 more with a publicly stated zero energy goal.

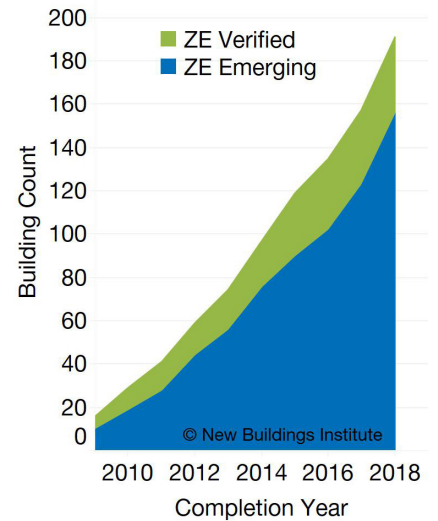
Locations of Zero Energy School Buildings



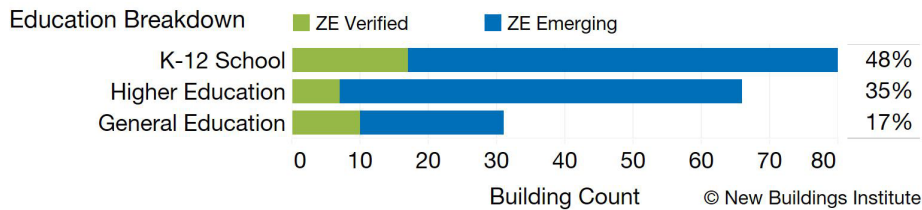
	Ultra-low Verified	Emerging	Verified	Total
California	10	72	6	88
Kentucky	4	4	2	10
Massachusetts	1	5	3	9
Oregon	0	8	1	9
Texas	1	7	1	9

Within the education market, 48% of the buildings are K-12 schools. However, a variety of educational building types are pursuing a zero energy goal. Thirty five percent of the list is composed of community college and higher education buildings. The remainder is general education buildings such as libraries, science centers and individual classrooms.

Count of Zero Energy School Buildings



Zero Energy Educational Building Types



3 New Buildings Institute (2018). Getting to Zero Status Update and List of Zero Energy Projects. https://newbuildings.org/wp-content/uploads/2018/01/2018_GtZStatusUpdate_201808.pdf

While the data shown in this *Watchlist* proves that zero energy is a realistic goal, getting to zero is a process that will take time to accomplish. Research suggests **eight common steps** to success. Learn more about these steps in the Zero Energy Project Guide at newbuildings.org/resource/ze-project-guide/:



Eight Common Steps To Success In Zero Energy Projects

1. Gain stakeholder support
2. Make a firm commitment to ZE
3. Benchmark and set Energy Use Intensity (EUI) targets
4. Integrate energy targets into policies and contracts
5. Use an integrated design process
6. Design and construct to the target
7. Optimize operations, including occupant engagement and student STEAM education
8. Measuring and verifying for ZE

Energy Targets

Absolute Energy Use Intensity (EUI) targets are crucial in the zero energy building process. They define both a design goal and an operating standard. Most zero energy projects take an efficiency-first approach before renewables to deliver an ultra-low energy school where the remaining load can be serviced by renewables.

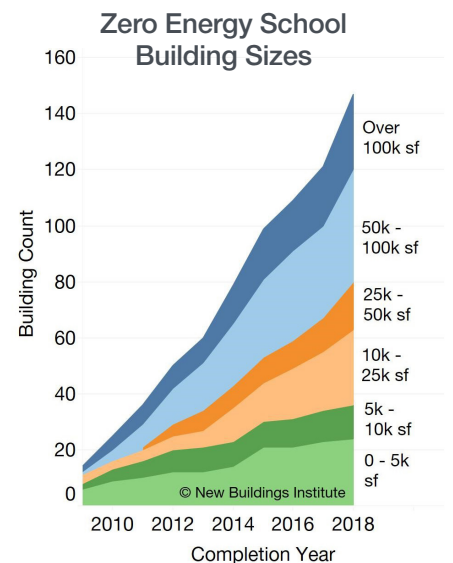
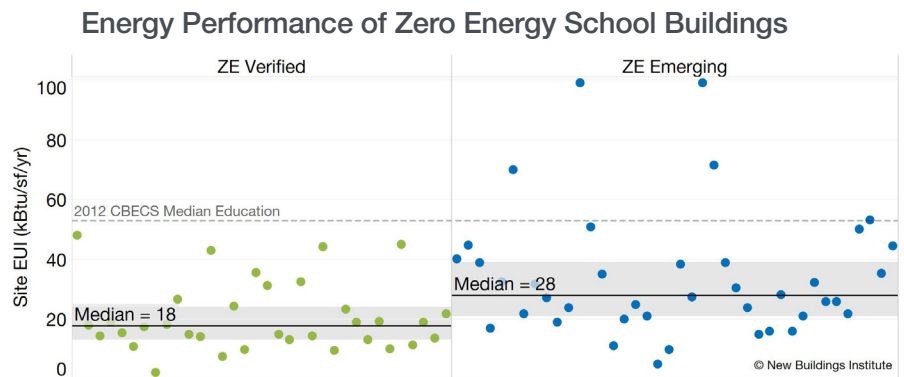
While the national average for site EUI is 58.2 kBtu/sf/yr⁴, the median site energy use intensity of zero energy verified education projects tracked by NBI is just 18 kBtu/sf/yr (before renewables). EUI targets can vary based on climate zone but both our database and the EUI targets established in the ASHRAE K-12 Zero

Energy School Design Guide⁵ show a site EUI of less than 25 kBtu/sf/yr is an appropriate target for educational buildings.

While smaller, pilot projects were among the early adopters getting to zero, the trend is shifting rapidly towards facilities of all sizes. This includes some of the largest educational buildings on the list including the entire Cal State Northridge Campus in Los Angeles, CA (6,000,000 sf), the Butte Glenn Community College in Oroville, CA (800,000 sf), and the North Kansas City High School in North Kansas City, MO (240,000 sf). Note that building size is shown only for a handful of projects, either due to lack of data or because building size doesn't tell the whole story. For example, the Ralston Intermediate School Multipurpose building and kitchen in Garden Grove, CA serves 5,000 meals per day across the district while also providing a community space. Although the EUI for this building may not achieve the common zero energy target, it serves as an example of lessons learned for challenging process loads for projects to come.

4 U.S. Energy Information Association (EIA). 2012 Commercial Benchmarking Energy Consumption Survey. <https://www.eia.gov/consumption/commercial/>

5 ASHRAE (2018). Achieving Zero Energy: Advanced Energy Design Guide for K-12 Schools. <https://www.ashrae.org/technical-resources/aedgs/zero-energy-aedg-free-download>



California's Proposition 39 and Proposition 39 ZNE Pilot Program

According to the 2017 Infrastructure Report Card, the American Society for Civil Engineers reports that schools nationwide have an estimated capital expenditure gap of \$380 billion and in California alone, this gap is estimated to be \$3.2 billion⁶. In 2012, voters passed Proposition 39: The Clean Energy and Job Creation Act which, in part, helped to address this problem. "Prop 39," as it is known locally, brought forward an innovative proposal to blend funding for school infrastructure improvements with energy efficiency upgrades and job creation. This fund directed California business tax revenues to school districts and community colleges to improve energy efficiency and create clean energy jobs. Passed by voters with 61% of the vote, Prop 39 has allocated \$1.4 billion to the California Clean Energy Job Creation Fund since the 2013-2014 fiscal year.

When applying for Prop 39 funds, districts must collect utility information and benchmark their school buildings' energy performance. When considering upgrades, districts are advised to prioritize energy projects with appropriate sequencing of energy conservation measures. For example, with Prop 39 funding, LAUSD instituted a comprehensive energy planning effort and will implement upgrades at more than 60 sites by 2020. Annual electricity and gas savings is expected to be approximately \$6 million – money that stays in the general fund for educational purposes.

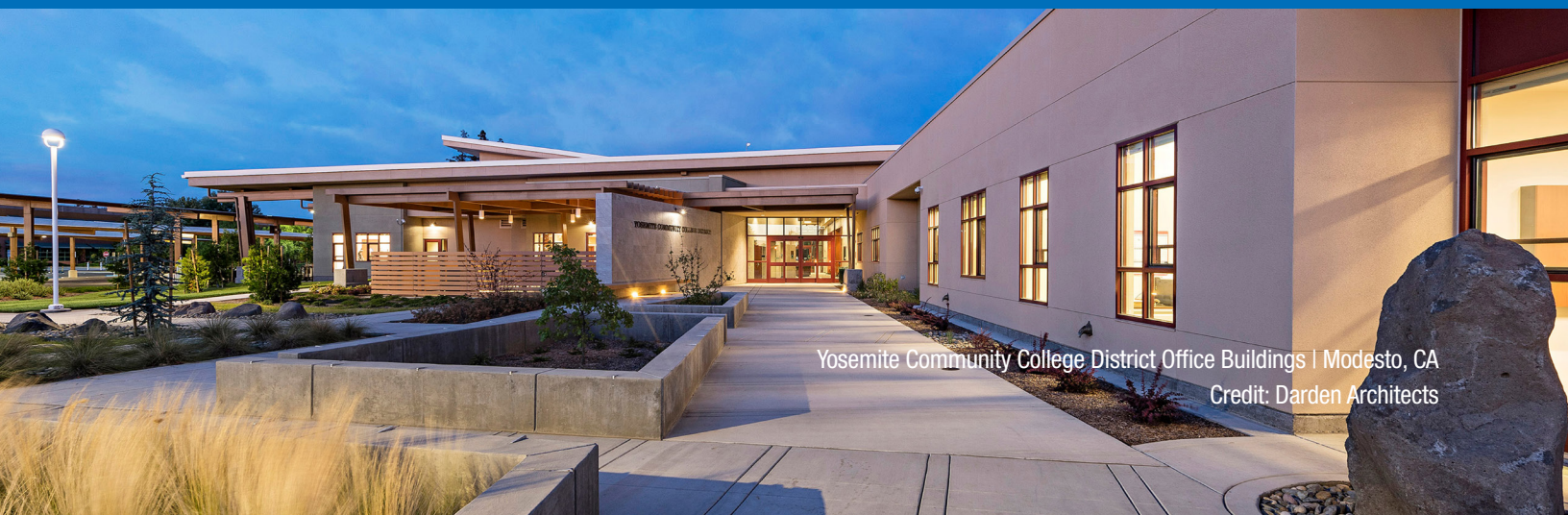
In addition to the Prop 39 program, California's Investor Owned Utilities developed the Prop 39 Zero Net Energy Schools Pilot Program to provide their own separate funding and support for K-12 schools and community colleges retrofitting existing facilities to zero. Twelve projects currently underway or completed are demonstrating the technical feasibility of zero energy in public school retrofits. These projects aim for a site EUI of 20 kBtu/sf/yr and have uncovered common measures and technologies to showcase replicability. The lessons learned from these projects have been disseminated via training, outreach, recognition and communication programs to encourage other districts to aim for similar results.



Playa Vista Elementary | Playa Vista, CA
Credit: Edmund Barr



Los Osos Middle School | Los Osos, CA
Credit: Integral Group



Yosemite Community College District Office Buildings | Modesto, CA
Credit: Darden Architects

CASE STUDY

Wilde Lake Middle School Zero Energy | Columbia, MD



Wilde Lake Middle School Zero Energy | Columbia, MD
Credit: CMTA

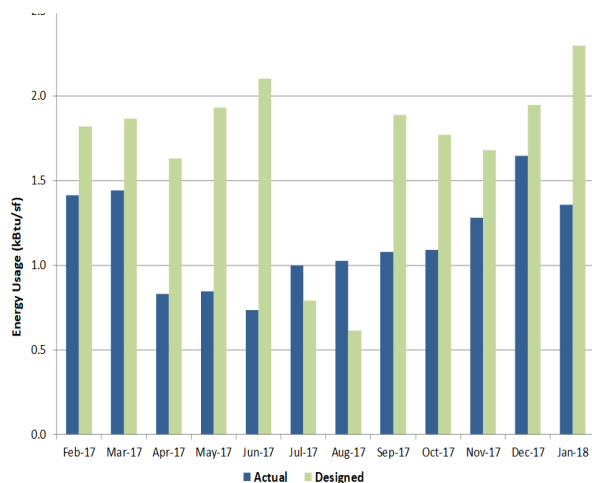
Wilde Lake Middle Schools Maryland's first zero energy school. This LEED Platinum facility is a 106,221 square foot replacement middle school that is constructed on a 15-acre lot directly behind the existing Wilde Lake Middle School. The new school is built to house 752 students, 49% more than before, but uses less than half the energy of the old facility.

To achieve an Energy Use Intensity of 13.8 kBtu/sf/year, the school realized significant energy savings through the use of multiple strategies, including: optimum solar orientation, a tight building envelope, appropriate use of glazing, occupancy sensors and high-performance HVAC systems. To achieve zero energy use, the school installed solar photovoltaic panels totaling 635 kW PV array comprised of 1450 rooftop and 450 ground mounted panels that produce approximately 829,000 kWh of electricity per year. In addition to being powered by solar energy, the mechanical system is a geothermal system with reduced HVAC usage.

Wilde Lake Middle School was a prototype replacement school which was redesigned to be a zero energy school through the Maryland Zero Energy School Initiative Grant Program.

Details

Project Size:	106,221 sf
Construction year:	2017
Project cost:	\$35,000,000
Building type:	Public, Primary School
ASHRAE Climate Zone:	Climate 4A
Owner:	Howard County Public School System
Zero Energy Engineer/Commissioning:	CMTA
Zero Energy Architect:	VMDO Architects
Architect of Record:	TCA architects
Engineer of Record:	James Posey Associates
Site consumption:	13.8 kBtu/sf/year
Renewable production:	25 kBtu/sf/year
Net energy consumption	-11 kBtu/sf/year



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ZERO ENERGY projects are buildings, or groups of buildings, with greatly reduced energy loads such that, totaled over a year, 100% or more of the energy use can be met with renewable energy generation. In this List, projects are categorized as ZE Certified, ZE Verified, or ZE Emerging. For simplicity, projects that have set a zero carbon goal are listed as zero energy.

The 2019 Zero Energy Schools Watch List provides examples of the combined education market, which includes K-12 schools, higher education, and general education buildings and projects that have verified ZE performance or are emerging toward a ZE goal. Undoubtedly, other projects belong on this list. Add new projects or provide corrections and updates through the New Buildings Institute Registry at: <https://newbuildings.org/share> or email us at info@newbuildings.org.

ZERO ENERGY CERTIFIED projects have been awarded Net Zero Energy, Living Building, or Energy Petal certification by ILFI. ILFI has thoroughly reviewed one continuous year of energy consumption and generation data to certify zero energy performance.

ZERO ENERGY VERIFIED projects have achieved ZE for at least one full year and NBI has verified the performance data.

ZERO ENERGY EMERGING buildings have publicly stated a goal of reaching ZE but have not yet demonstrated achievement of that goal. These buildings may be in the planning or design phase, under construction, or have been in operation for less than twelve months. Others may have been operating for at least a year, but their measured energy use data either has yet to achieve ZE, or the data to document ZE performance was not available.

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 on-site renewables. The annual energy consumption must be lower than certain targets. See our Getting to Zero FAQs⁶ for more information on these targets.

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 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: <https://newbuildings.org/zero-energy-performance-index-zepi>

(L) after the project name indicates a project has achieved USGBC LEED certification (at any level).

(M) after the project name indicates a project that has provided measured energy use data.

Site EUI stands for the total gross site-level Energy Use Intensity, a metric used to measure annual energy use per square foot (sf) of building floor area. Energy use includes consumption from all fuels (grid-delivered and onsite-generated electricity, natural gas, district energy, and delivered fuels) in thousands of British Thermal Units (kBtu) per year (yr). That sum is divided by the building's gross size, thus the units are kBtu/sf/yr.

Source EUI accounts for the upstream generation, transmission, and distribution losses associated with delivering consumable energy to the site. Site to Source EUI conversions in this list follow the 2018 US Energy Star Portfolio Manager guidelines.⁷

Net EUI is annual energy use minus annual onsite renewable generation, divided by the building's floor area in sf. A building with a measured net EUI (site or source) less than zero has achieved ZE. Some buildings in the ZE Emerging category show a negative net EUI based on modeled or estimated data.

⁶ See the 2018 US Energy Star Portfolio Manager Source Energy Technical Reference Document: <https://www.energystar.gov/buildings/tools-and-resources/portfolio-manager-technical-reference-source-energy>

⁷ NBI Getting to Zero FAQs: <https://newbuildings.org/resource/getting-to-zero-database-faqs/>

Zero Energy Certified

Year Completed	Project Name	City	State	Building Type	Size (sf)	Site EUI	Net Site EUI	Source EUI	Net Source EUI	zEPI Score
2009	Living Learning Center at Tyson Research Center (M)	Eureka	MO	Higher Education	2,968	24.5	-1.9	68.5	-5.5	-2
2009	Omega Center for Sustainable Living (M) (L)	Rhinebeck	NY	General Education	6,200	13.2	-8.3	37.0	-23.1	-8
2009	Putney Field House (M) (L)	Putney	VT	K-12 School; Secondary	16,800	9.7	-0.7	27.2	-2.0	-1
2010	Bertschi School Science Wing (M) (L)	Seattle	WA	K-12 School; Primary	1,425	48.0	-0.4	134.4	-1.1	0
2010	Energy Lab at Hawaii Preparatory Academy (M) (L)	Kamuela	HI	Higher Education	5,902	11.0	-17.0	30.9	-47.5	-15
2010	Hood River Middle School Net-Zero Addition (M) (L)	Hood River	OR	K-12 School; Primary	5,331	26.8	-0.4	74.9	-1.0	0
2010	Richardsville Elementary School (M) (L)	Bowling Green	KY	K-12 School; Primary	72,285	19.0	-2.6	53.2	-7.2	-3
2011	Coastal Maine Botanical Gardens Bosarge Family Education Center (M) (L)	Boothbay	ME	General Education	8,200	19.2	-4.3	53.6	-12.1	-4
2011	Locust Trace AgriScience Campus (High School) (M)	Lexington	KY	K-12 School; Secondary	70,000	9.9	-0.7	27.6	-2.0	-1
2012	Sacred Heart Schools Stevens Family Library (M) (L)	Atherton	CA	K-12 School; Primary	6,800	13.2	-17.6	37.0	-49.2	-22
2012	Smith College Bechtel Environmental Classroom (M)	Northampton	MA	Higher Education	2,500	11.5	-6.2	32.1	-17.3	-6
2013	Sandy Grove Middle School (M) (L)	Lumber Bridge	NC	K-12 School; Primary	74,000	19.3	-14.5	54.0	-40.6	-14
2014	Brock Environmental Center (M) (L)	Virginia Beach	VA	General Education	10,500	14.6	-14.0	40.8	-39.3	-14
2014	Willow School (M) (L)	Gladstone	NJ	K-12 School; Primary	20,000	21.8	-13.1	61.1	-36.8	-12
2015	Phipps Conservatory SEED Classroom (M) (L)	Pittsburgh	PA	General Education	950	14.5	-6.3	40.7	-17.6	-6

Zero Energy Verified

Year Completed	Project Name	City	State	Building Type	Size (sf)	Site EUI	Net Site EUI	Source EUI	Net Source EUI	zEPI Score
2000	Oberlin College Lewis Center (M)	Oberlin	OH	Higher Education	13,600	31.4	-1.9	87.8	-15.5	-5
2001	Environmental Tech. Center Sonoma State (M)	Rohnert Park	CA	Higher Education	2,200	2.3	-8.3	6.5	-4.1	-2
2008	Environmental Nature Center (M) (L)	Newport Beach	CA	General Education	8,535	17.6	-0.7	49.3	-28.3	-12
2011	EcoCenter at Heron's Head Park (off grid) (M) (L)	San Francisco	CA	General Education	2,400		-0.4			
2013	IBEW Local 595 Zero Net Energy Center (M)	San Leandro	CA	General Education	45,001	15.0	-17.0	42.0	-16.8	-7
2013	Lenawee Intermediate School District Center for a Sustainable Future (M)	Adrian	MI	K-12 School; Primary	8,750	7.7	-0.4	21.6	-6.7	-2
2014	Odyssey Elementary School (M)	Woods Cross	UT	K-12 School; Primary	84,785	15.0	-2.6	42.0	-5.0	-2
2015	Bishop O'Dowd High School, Environmental Science Center (M) (L)	Oakland	CA	K-12 School; Secondary	3,275	18.0	-4.3	50.3	-1.9	-1
2015	Discovery Elementary School	Arlington	VA	K-12 School; Primary	98,000	15.5	-0.7	43.4	-10.1	-4
2015	Grantham Middle School (M)	Goldsboro	NC	K-12 School; Primary	86,400	18.2	-17.6	51.0	-22.0	-8
2015	P.S. 62 (Kathleen Grimm School of Leadership and Sustainability) (M)	Staten Island	NY	K-12 School; Primary	68,680	32.7	-6.2	88.2	-6.1	-1
2015	Potomac Watershed Center (M)	Accokeek	MD	General Education	3,971	44.2	-14.5	123.9	-4.8	-2
2015	R W Kern Center at Hampshire College	Amherst	MA	Higher Education	16,950	23.4	-14.0	65.6	-8.4	-3
2015	Sarasota Audubon Nature Center (M) (L)	Sarasota	FL	General Education	2,500	10.3	-13.1	28.8	-14.9	-5
2016	Kay's Creek Elementary School (M)	Kaysville	UT	K-12 School; Primary	84,785	14.2	-6.3	39.8	-5.4	#N/A
2016	Maui Army Reserve Center (M)	Wailuku	HI	Training Center	15,361	35.5		99.5	-0.1	#N/A
2016	Sbrega Technology and Learning Center - Bristol Community College (M)	Fall River	MA	Higher Education	50,679	45.0		104.3	-66.2	-15
2016	Spring Creek Middle School (M)	Seven Springs	NC	K-12 School; Primary	96,000	19.2		53.7	-9.6	-3
2018	Lakeline Learning Center	Austin	TX	General Education	6,000					

Zero Energy Emerging

Year Completed	Project Name	City	State	Building Type	Size (sf)	Site EUI	Net Site EUI	Source EUI	Net Source EUI	zEPI Score
2004	Westmont High School Science Education Facility (M)	Campbell	CA	K-12 School; Secondary	12,362	44.4	44.4	124.4	124.4	55
2005	Delmar High School Science Education Facility	San Jose	CA	K-12 School; Secondary						
2006	Prospect Sierra Founders Art Center	El Cerrito	CA	General Education	5,000					
2007	Prairie Hill Learning Center	Roca	NE	General Education	2,940					
2008	Aquarium of the Pacific Watershed Addition (L)	Long Beach	CA	General Education	2,500					
2008	Mills River Elementary School (M) (L)	Mills River	NC	K-12 School; Primary	80,820	30.4	30.4	85.2	85.2	30
2009	da Vinci School High Performance Classroom (M) (L)	Portland	OR	K-12 School; Secondary	1,485	27.1	2.1	75.9	5.9	2
2010	Bagley Classroom University of Minnesota Duluth (L)	Duluth	MN	Higher Education	2,000					
2010	Center for Energy Efficient Design (L)	Rocky Mount	VA	General Education	3,600					
2010	Evie Garrett Dennis E12 Campus (Denver Schools) (M)	Denver	CO	K-12 School; Secondary	184,769	99.0	28.0	277.2	78.4	29
2010	Green Phoenix Learning Center	Phoenix	AZ	K-12 School; Secondary						
2010	MEC Aviation Campus (M)	Glendale	AZ	Higher Education	85,000	99.0	30.0	277.2	84.0	31
2010	New Bristow Elementary School (M)	Bowling Green	KY	K-12 School; Primary	79,817	23.8	23.8	66.7	66.7	23
2010	New Century Elementary School	Fayetteville	NC	K-12 School; Primary	109,758					
2010	Turkey Foot Middle school (M)	Edgewood	KY	K-12 School; Primary	133,000	22.0	11.0	61.5	30.7	11
2011	Broadway High School	San Jose	CA	K-12 School; Secondary						
2011	Butte Glenn Community College	Oroville	CA	Higher Education	800,000	38.9	11.7	109.0	32.8	13
2011	Centre for Interactive Research on Sustainability (CIRS) (L)	Vancouver	BC	General Education	76,223					
2011	Glenn York Elementary School	Pearland	TX	K-12 School; Primary	96,297					
2011	Lady Bird Johnson Middle School	Irving	TX	K-12 School; Primary	152,000					
2011	Pierce College Maintenance & Operations Facility and Net-Zero Central Plant (M) (L)	Los Angeles	CA	Higher Education	42,000	16.0	8.0	44.8	22.4	9
2011	Portland Community College Newberg Center (L)	Newberg	OR	Higher Education	13,000					
2011	Redding School for the Arts (M) (L)	Redding	CA	K-12 School; Primary	77,091	16.0	8.0	44.8	22.4	9
2011	Sangre de Cristo PK-12 School (M) (L)	Mosca	CO	K-12 School; Secondary	8,000	26.0	26.0	72.8	72.8	25
2012	Carbon-Neutral Energy Solutions Laboratory at Georgia Tech	Atlanta	GA	Higher Education	42,000	70.0	70.0	196.0	196.0	68

Zero Energy Emerging

Year Completed	Project Name	City	State	Building Type	Size (sf)	Site EUI	Net Site EUI	Source EUI	Net Source EUI	zEPI Score
2012	Colonel Smith Middle School	Fort Huachuca	AZ	K-12 School; Primary	88,693					
2012	Fireside Elementary (M)	Phoenix	AZ	K-12 School; Primary	88,664	51.0	9.9	142.8	27.7	10
2012	High Tech Middle North County (L)	San Diego	CA	Higher Education	27,058					
2012	Jody Richards Elementary School (M)	Bowling Green	KY	K-12 School; Primary	80,904	20.0	20.0	56.0	56.0	20
2012	Kohler Environmental Center (L)	Wallingford	CT	Higher Education	31,325					
2012	Maharishi University of Management Sustainable Living Center	Fairfield	IA	Higher Education	6,900	9.9	-0.5	27.7	-1.4	0
2012	North Shore Community College Health and Student Services Building (L)	Danvers	MA	Higher Education	58,000					
2012	Orangewood Middle School and Studio Project	Phoenix	AZ	K-12 School; Primary						
2012	Playa Vista Elementary (M)	Los Angeles	CA	K-12 School; Primary		28.3	7.4	79.2	20.7	9
2012	San Luis National Wildlife Refuge Complex HQ and Visitor Ctr. (L)	Los Banos	CA	General Education	16,500					
2012	Student Services Center at Mesa College (L)	San Diego	CA	Higher Education	85,000					
2012	UC Davis West Village (eco district)	Davis	CA	Higher Education		50.0	50.0	140.0	140.0	58
2012	Vernonia School	Vernonia	OR	K-12 School; Secondary	135,000	35.4		99.2		
2012	William S Hart High School District	Santa Clarita	CA	K-12 School; Secondary						
2012	Zero Energy Research Lab at University of North Texas	Denton	TX	Higher Education	1,200					
2013	Blackford School Multi-Use Building	San Jose	CA	K-12 School; Primary						
2013	Burr and Burton Academy Mountain Campus (L)	Peru	VT	Higher Education						
2013	Castlemont Elementary School Multipurpose Building	Campbell	CA	K-12 School; Primary						
2013	Centre of Excellence at Okanagan College	Kelowna	BC	Higher Education	61,100					
2013	College of the Desert West Valley Campus - Phase 1	Palm Springs	CA	Higher Education	50,000	22.0	-2.0	61.6	-5.6	-2
2013	Hollis Montessori School (M)	Hollis	NH	K-12 School; Primary	19,100	11.3		31.6		
2013	Keene State College Technology, Design and Safety Building	Keene	NH	Higher Education	53,000					
2013	Lane Community College, Downtown Academic Center (M) (L)	Eugene	OR	Higher Education	90,000	25.0	25.0	70.0	70.0	27
2013	MetWest High School	Oakland	CA	K-12 School; Secondary						
2013	Sherman Oaks Elementary School Multiuse Facility	Campbell	CA	K-12 School; Primary						

Zero Energy Emerging

Year Completed	Project Name	City	State	Building Type	Size (sf)	Site EUI	Net Site EUI	Source EUI	Net Source EUI	zEPI Score
2013	UC San Diego J Craig Venter Institute (L)	La Jolla	CA	Higher Education	40,079	53.2	-10.6	149.0	-29.8	-12
2013	University of South Carolina Darla Moore School of Business (L)	Columbia	SC	Higher Education	250,000					
2014	Catherine Houghton Arts Center	Bethlehem	NH	K-12 School; Secondary						
2014	Chatham University Eden Hall Campus	Richlandtown	PA	Higher Education						
2014	Chemeketa Community College Health Science Complex	Salem	OR	Higher Education	70,000					
2014	East Bay MET School	Newport	RI	K-12 School; Secondary	16,800					
2014	Electrical and Computer Engineering Building and University of Illinois	Champaign	IL	Higher Education	250,000					
2014	Environmental Innovation Center (L)	San Jose	CA	General Education	46,000	23.8		66.7		
2014	Ewa Elementary School Portable Classroom - Oahu	Aiea	HI	K-12 School; Primary	13,000					
2014	La Escuelita Education Center	Oakland	CA	K-12 School; Secondary	123,000					
2014	MEC Northeast Campus (M)	Phoenix	AZ	Higher Education	101,081	71.5	23.4	200.2	65.5	24
2014	Monarch School Classroom (L)	Houston	TX	K-12 School; Secondary	1,120					
2014	Oak Park High School	Oak Park	CA	K-12 School; Secondary	960					
2014	Pflugerville Elementary School	Pflugerville	TX	K-12 School; Primary	93,000					
2014	Richard J. Lee Elementary School (M) (L)	Coppell	TX	K-12 School; Primary	95,633	21.2	2.3	55.1	2.4	2
2014	San Bernardino Community College District	Garden Grove	CA	Higher Education						
2014	Solana Ranch Elementary School	San Diego	CA	K-12 School; Primary	68,000					
2014	Student Success and Retention Center at East Los Angeles College (L)	Los Angeles	CA	Higher Education	136,000					
2014	UC Santa Barbara Recreation Center (L)	Santa Barbara	CA	Higher Education	140,000					
2014	University of Minnesota Itasca Biological Station and Laboratories	South Clearwater	MN	Higher Education	10,900					
2015	Binghamton CSD MacArthur School	Binghamton	NY		128,231	44.7	44.7	125.2		41
2015	Dearing Elementary School	Pflugerville	TX	K-12 School; Primary	93,000					
2015	Dr. Martin Luther King, Jr. School	Cambridge	MA	K-12 School; Primary	140,000					
2015	Friends School of Portland	Cumberland Foreside	ME	K-12 School; Primary	15,000					
2015	Grass Education Center	Washington DC	MD	General Education	3,800					

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Year Completed	Project Name	City	State	Building Type	Size (sf)	Site EUI	Net Site EUI	Source EUI	Net Source EUI	zEPI Score
2015	Los Angeles Harbor College Sciences Complex (L)	Los Angeles	CA	Higher Education	71,800	5.2	-0.6	14.5	-1.7	-1
2015	Monterey Bay CSU - Academic Building 2	Seaside	CA	Higher Education	57,331					
2015	Muse School	Calabasas	CA	K-12 School; Secondary						
2015	Net Zero Plus Electrical Training Institute (L)	Los Angeles	CA	General Education	142,000					
2015	SAAS Stream (L)	Seattle	WA	K-12 School; Secondary	32,156	32.3	30.9	90.4	86.5	33
2015	Sierra Nevada Aquatic Research Lab & Multiuse Classrom (L)	Mammoth Lakes	CA	Higher Education	2,696					
2015	University of Hawaii at Manoa Net Zero Classrooms	Honolulu	HI	Higher Education	1,500					
2015	Zero Energy Nanotechnology Building at SUNY Poly	Utica	NY	Higher Education	356,000					
2016	BEST Center at Laney College	Oakland	CA	Higher Education						
2016	Egan Junior High School	Los Altos	CA	K-12 School; Secondary	17,000					
2016	Foothill College Sunnyvale Center (L)	Los Altos	CA	Higher Education	50,000					
2016	Hitchcock Center for the Environment	Amherst	MA	General Education	9,000					
2016	Irvine High School Campus Center	Irvine	CA	K-12 School; Secondary						
2016	MEC SW Campus Phase I & II (M)	Buckeye	AZ	K-12 School; Secondary	77,565	39.0	13.8	109.2	38.6	14
2016	Mt. San Antonio College (L)	Walnut	CA	Higher Education	20,610					
2016	Newcastle Elementary	Newcastle	CA	K-12 School; Primary						
2016	Socastee Elementary School	Myrtle Beach	SC	K-12 School; Primary						
2016	Socastee Middle School	Myrtle Beach	SC	K-12 School; Primary						
2016	Vista Grande Elementary School	Rancho Palos Verdes	CA	K-12 School; Primary						
2016	Woodside Priory School	Portola Valley	CA	K-12 School; Secondary	13,000					
2017	Arizona State University Student Pavilion	Tempe	AZ	Higher Education	74,653	40.2	23.8	112.5	66.7	25
2017	Clatsop Community College - Patriot Hall	Astoria	OR	Higher Education	36,000					
2017	Cornell Tech NYC Academic Building - Roosevelt Island	New York City	NY	Higher Education	158,000	31.9	31.9	89.3	89.3	31
2017	Crotty Hall - Umass	Amherst	MA	Higher Education	16,800					
2017	CSU Northridge Sustainability Center	Northridge	CA	Higher Education	4,000					

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Year Completed	Project Name	City	State	Building Type	Size (sf)	Site EUI	Net Site EUI	Source EUI	Net Source EUI	zEPI Score
2017	Los Osos Middle School	Los Osos	CA	K-12 School; Primary						
2017	Marin Academy Science & Innovation Center	San Raphael	CA	K-12 School; Secondary	20,040	38.4	-23.3	107.6	-65.4	-29
2017	Mark Day School	San Raphael	CA	K-12 School; Primary	11,917	27.6	-28.0	77.3	-78.4	-35
2017	Myrtle Beach Middle School	Myrtle Beach	SC	K-12 School; Primary						
2017	Ocean Discovery Institute	San Diego	CA	General Education						
2017	Ohlone Campus Core Replacement Project	Fremont	CA	Higher Education						
2017	OUSD Madison Middle School	Oakland	CA	K-12 School; Primary	35,000	14.9	-2.7	41.7	-7.6	-3
2017	Oxford County Waste Management Administration Building	London	ON	General Education	4,000					
2017	Palomar Community College	San Marcos	CA	General Education						
2017	Pitzer College Redford Conservancy	Claremont	CA	Higher Education						
2017	Ralston Intermediate Multipurpose Building	Garden Grove	CA	K-12 School; Primary						
2017	Santiago High School Science Building	Garden Grove	CA	K-12 School; Secondary	8,000	26.0	26.0	72.8	72.8	30
2017	Sonoma Academy Grange Building	Santa Rosa	CA	General Education	130,000					
2017	St. James Intermediate School	Myrtle Beach	SC	K-12 School; Primary						
2017	UC Davis California Avenue Lecture Hall	Davis	CA	Higher Education						
2017	UC Santa Barbara Student Services Buildings	Santa Barbara	CA	Higher Education						
2017	Wilde Lake Middle School	Ellicott City	MD	K-12 School; Primary	106,221					
2017	Yosemite Community College District	Modesto	CA	Higher Education						
2018	CA State Poly Tech University	Pomona	CA	Higher Education	138,000	17.0	-6.6	47.5	-18.4	-8
2018	College of Continuing & Professional Education (CCPE)	Long Beach	CA	Higher Education	35,000					
2018	Durham Education Center	Tigard	OR	K-12 School; Secondary	17,000	19.0	-9.7	53.2	-27.2	-10
2018	Lick Wilmerding New Classroom Building	San Francisco	CA	K-12 School; Secondary	55,140	21.1	-3.8	59.0	-10.7	-5
2018	Lombardo Welcome Center	Millersville	PA	Higher Education	14,627					
2018	Mohawk College Centre for Partnership and Innovation	Hamilton	ON	Higher Education	90,000					
2018	OUSD Glenview Elementary School Replacement	Oakland	CA	K-12 School; Primary	53,700					

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2018	Red Deer College	Red Deer	AB	Higher Education						
2018	Rio Hondo Community College District	Whittier	CA	Higher Education	78,201					
2018	Sonoma County Junior College District	Sonoma	CA	Higher Education	26,954					
2018	Ten Oaks Middle School	Myrtle Beach	SC	K-12 School; Primary						
2018	Whitefish Center for Sustainability and Entrepreneurship	Whitefish	MT	School	4,200					
2018	Woodburn Success High School (L)	Woodburn	OR	K-12 School; Secondary	11,000					
2018	Yosemite Institute	Yosemite National Park	CA	General Education						
2019	Botanica Educational Center	Louisville	KY	General Education	10,500					
2019	Garfield Elementary School	San Francisco	CA	K-12 School; Primary	33,800					
2019	Georgia Tech - Living Building Challenge	Atlanta	GA	Higher Education	34,258	35.0		98.0		
2019	Graceland K-8 School	Baltimore	MD	K-12 School; Primary	94,330					
2019	Holabird K-8 School	Baltimore	MD	K-12 School; Primary	94,330					
2019	King Open / Cambridge St Upper School & Community Complex	Cambridge	MA	K-12 School; Secondary	270,000					
2019	Lilienthal Elementary School	San Francisco	CA	K-12 School; Primary	21,995					
2019	Marin County Day School	Corte Madera	CA	K-12 School; Primary						
2019	North Kansas City High School	North Kansas City	MO	K-12 School; Secondary	240,000					
2019	Nueva Middle School Expansion	Hillsborough	CA	K-12 School; Primary	24,000					
2019	Yosemite Slough Ed Center	San Francisco	CA	General Education						
2020	Cal State Northridge (L)	Los Angeles	CA	Higher Education	6,000,000	32.6	26.7	91.2	74.8	31
2020	Dartmouth College Faculty and Student Center	Hanover	NH	Higher Education	33,000					
2020	Energy and Nature Education Center	Wantagh	NY	General Education						
2020	Fremont High School	Oakland	CA	K-12 School; Secondary	140,000					
2020	UC Merced Campus	Merced	CA	Higher Education	6,250,000					
2020	West Point USMA	West Point	NY	Military Academy						
2023	CCCCD Diablo Valley College Kinesiology Complex	Pleasant Hill	CA	Higher Education						

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Year Completed	Project Name	City	State	Building Type	Size (sf)	Site EUI	Net Site EUI	Source EUI	Net Source EUI	zEPI Score
	Lancaster Urban Forest Center	Lancaster	PA	General Education	21,000					
	Lynhaven Elementary School Multipurpose	Campbell	CA	K-12 School; Primary						
	Ruffin Organic Food and Learning Center	Las Vegas	NV	General Education						
	Thaden School	Bentonville	AR	K-12 School; Secondary	125,000					
	Thomas Jefferson Elementary School	Baltimore	MD	K-12 School; Primary	105,000					
	University of Wisconsin Arlington Agricultural Research Station	Arlington	WI	Higher Education						
	Yellowstone National Park Youth Campus	Yellowstone National Park	WY	General Education	52,000					

Ultra-Low Energy Verified

Year Completed	Project Name	City	State	Building Type	Size (sf)	Site EUI	Net Site EUI	Source EUI	Net Source EUI	zEPI Score
1995	Durant Road Middle School (M)	Raleigh	NC	K-12 School; Primary	148,500	25.0	25.0	70.0	70.0	24
1998	Vermont Law School Oakes Hall (M)	South Royalton	VT	Higher Education	23,500	37.0	37.0	103.6	103.6	34
2002	Georgina Blach Intermediate School (M)	Los Altos	CA	K-12 School; Primary	71,741	33.0	33.0	92.4	92.4	41
2002	Leslie Shao-Ming Sun Field Station (M)	Redwood City	CA	Higher Education	10,036	20.2	11.6	56.5	32.4	14
2003	Rinker Hall (M)	Gainesville	FL	Higher Education	47,470	30.0	30.0	84.0	84.0	29
2004	Escalante Science Center (M)	Escalante	UT	General Education	21,101	31.0	31.0	86.8	86.8	32
2005	Kirsch Center For Environmental Studies at De Anza College (M)	San Jose	CA	Higher Education	21,600	33.0	23.0	92.4	64.4	28
2006	Kinard Junior High (M)	Fort Collins	CO	K-12 School; Primary	112,735	25.0	25.0	70.0	70.0	26
2007	Center for Children & Families-CSU San Marcos (M)	San Marcos	CA	Higher Education	20,200	28.0	28.0	78.4	78.4	32
2007	Garthwaite Center for Science & Art (M)	Weston	MA	K-12 School	22,000	27.0	27.0	75.6	75.6	25
2007	Plano Elementary School (M)	Bowling Green	KY	K-12 School; Primary	73,602	29.5	29.5	82.7	82.7	29
2008	Carlton Hills Modernization (M)	Santee	CA	K-12 School	56,159	26.0	26.0	72.8	72.8	30

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Year Completed	Project Name	City	State	Building Type	Size (sf)	Site EUI	Net Site EUI	Source EUI	Net Source EUI	zEPI Score
2008	Carlton Oaks Modernization (M)	Santee	CA	K-12 School; Primary	61,675	24.0	24.0	67.2	67.2	28
2008	Crockett & Gateway Elementary School (M)	Borger	TX	K-12 School; Primary	115,312	31.9	31.9	89.3	89.3	35
2008	Sycamore Canyon Modernization (M)	Santee	CA	K-12 School	52,000	23.0	23.0	64.4	64.4	27
2009	High Tech High - Chula Vista (M) (L)	Chula Vista	CA	K-12 School; Secondary	44,370	23.8	23.8	66.6	66.6	27
2009	Hillandale Elementary School (M) (L)	East Flat Rock	NC	K-12 School; Primary	80,820	29.8	29.8	83.3		29
2009	Valhalla Elementary School (M)	Auburn	WA	K-12 School; Primary	56,079	40.0	36.6	112.0	102.5	39
2010	Greensburg Kansas K-12 School (Kiowa County Schools) (M)	Greensburg	KS	K-12 School; Secondary	123,405	29.0	27.0	81.2	75.6	26
2010	South Warren Middle School / High School (M)	Bowling Green	KY	K-12 School; Secondary	333,000	24.3	24.3	68.1	68.1	24
2010	Suzuki Public School (M)	Windsor	ON	K-12 School	58,482	25.0	22.0	49.0	43.1	20
2013	Bell Elementary School (M)	Kirkland	WA	K-12 School; Primary	65,306	32.4	32.4	60.0	60.0	35
2013	Jeffrey Trail Middle School (M)	Irvine	CA	K-12 School; Primary	74,600	29.0	17.0	81.2	47.6	20
2014	Zellwood Elementary School (M)	Zellwood	FL	K-12 School; Primary	90,000	62.0	29.5	173.6	82.6	28
2015	Jacobs Institute for Design Innovation	Berkeley	CA	Higher Education	24,000	12.4	5.2	34.7	14.6	6
2015	Westside Elementary School (M)	Seattle	WA	K-12 School; Primary	52,826	14.3	14.3	40.1	40.1	15
	Alvaton Elementary School (M)	Alvaton	KY	K-12 School; Primary	79,518	39.4	39.4	110.2	110.2	38
	Bowling Green School District Transportation Building (M)	Bowling Green	KY	K-12 School	22,020	25.0	25.0	69.9	69.9	24

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