zero net energy

California ZNE Watchlist

Zero Energy & Ultra-Low Energy Buildings

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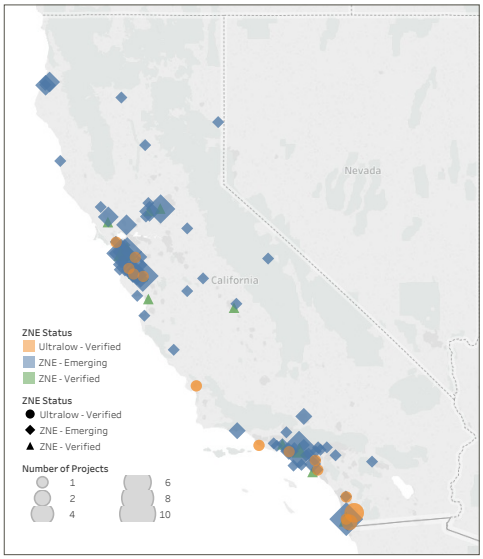

California state agencies have adopted goals for 100% of new and 50% of existing commercial buildings to be ZNE by 2030.

California leads the country in both policy and projects that are laying the path to a zero net energy (ZNE) future. Leading design firms and owners have already recognized the real estate and occupancy advantages of these high performance buildings and today California has 159 commercial buildings either verified (20) as ZNE or emerging (139) toward that target.

This California ZNE Watch List tracks commercial buildings (including multi-family) based on information gathered by New Buildings Institute (NBI) from multiple sources including designers, owners, utility programs, private and public organizations, articles, e-news, research, and commercial real estate professionals. It serves, along with other available ZNE resources, to support the awareness, acceptance and adoption of ZNE goals and outcomes throughout California and the nation. Buildings with ultra-low energy performance comparable to ZNE are also included.

Trends in Zero Net Energy

More and more governments are pursuing zero net energy buildings and policies. Between the ZNE verified and emerging buildings on the California ZNE Watch List, 87 are government owned projects, including 56 local government buildings, 22 State and six Federal owned building projects (see graphic on page 2). Of these verified and emerging projects, more than half are education projects including 23 higher education buildings and 25 K-12 schools. On the local government side, ZNE city halls, libraries, and education centers are some of the most common building types being pursued. Examples include the verified ZNE Berkeley West Branch Library (shown at left) and the emerging ZNE environmental center featured below.

Environmental Innovation Center | San Jose, CA

Completed in 2014, the Environmental Innovation Center (EIC) in San Jose, CA, is a city-owned education and environmental resources center that is targeting ZNE performance. The emerging ZNE project comprises 10,000 square feet of new construction and a 46,000 square foot 1950s warehouse retrofit on over four acres. The multi-tenant space is divided between retail, demonstration facilities, laboratories, and warehouse. Energy reducing features include solar tracking skylights, solar tubes, LED lighting, and a cool roof. The envelope includes structurally insulated panels, with batt insulation above the walls and on the ceiling. In addition to wind turbines, solar panels on the building and parking canopies are designed to produce an estimated 599 kWh on-site annually. The solar installation was added in 2016, so while the project does not have a full year of data, performance over past six months indicates the EIC is on track to achieve ZNE.

[1] **For more resources:** CPUC (http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/Zero+Net+Energy+Buildings.htm) and NBI (www.newbuildings.org/zero-energy)

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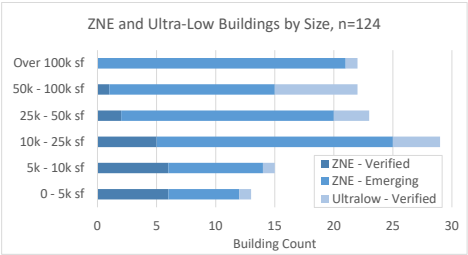
List of Zero Energy & Ultra-Low Energy Buildings in California

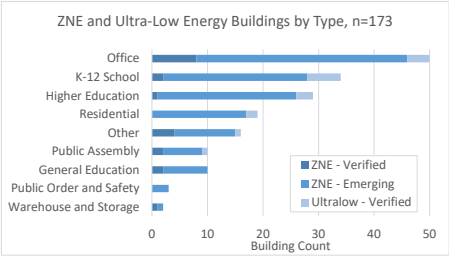
This ZNE Watchlist provides examples of commercial buildings that have verified zero net energy (ZNE) performance, are emerging toward a ZNE goal or reflect comparable ultra-low energy performance. The buildings on the list are categorized at ZNE Verified, ZNE Emerging, and Ultra-low Energy.

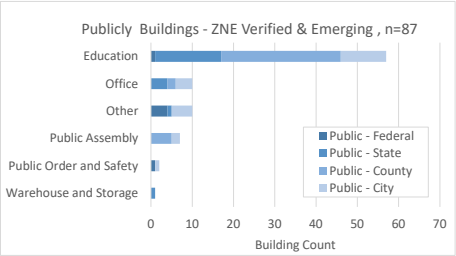
ZNE Verified buildings (or districts) have been documented to have met, over the course of a year, all net energy use through onsite renewables. The energy use of all fuels (electric, natural gas, steam, etc.) is counted and offset by production from onsite renewables.

Building Name	Year Completed	Location	Building Type	Size SF	Total EUI	Site RPI	Net EUI
Verified ZNE							
AP+I Design (M)	**2015**	**Mountain View**	**Office**	**14,300**	**17.9**	**18.4**	**-0.5**
Audubon Center at Debs Park (off grid) (M)	2003	Los Angeles	Other	5,020	17.1	17.1	0.0
Bacon St. Offices (M)	2009	San Diego	Office	4,500	12.7	22.2	-9.5
Bagatelos Architectural Glass Solutions (M)	**2008**	**Sacramento**	**Other**	**63,000**	**17.1**	**17.5**	**-0.4**
Bishop O'Dowd High School, Environmental Science Center (M)	**2015**	**Oakland**	**Education**	**3,275**	**18.0**	**18.6**	**-0.7**
Challengers Tennis Club (M)	2004	Los Angeles	Other	3,500	9.0	9.0	0.0
David and Lucile Packard Foundation [L] (M)	2012	Los Altos	Office	49,161	24.4	29.0	-4.6
Diamond X Ranch Student Intern Center-Malibu (M)	2011	Calabasas	Other	3,500	31.5	35.1	-3.6
DMV Fresno Field Office (M)	**2014**	**Fresno**	**Office**	**19,808**	**23.1**	**43.4**	**-20.4**
DPR Construction San Diego Net Zero Office [L] (M)	2010	San Diego	Office	24,000	14.8	17.1	-2.4
DPR San Francisco Office [L] (M)	2014	San Francisco	Office	24,010	3.8	3.8	-0.1
EcoCenter at Heron's Head Park (off grid) (M)	2011	San Francisco	Education	2,400			
Environmental Nature Center (M)	2008	Newport Beach	Education	8,535	17.6	27.7	-10.1
Environmental Tech. Center Sonoma State (M)	2001	Rohnert Park	Education	2,200	2.3	3.8	-1.5
IBEW Local 595 Zero Net Energy Center (M)	2013	San Leandro	Education	45,001	15.0	21.0	-6.0
IDeAs Z2 Design Facility [L] (M)	2007	San Jose	Office	6,557	22.6	23.2	-0.6
Jess Jackson Sustainable Winery Building (M)	2014	Davis	Warehouse & Storage	8,500	1.4	2.7	-1.3
Sacred Heart Schools Stevens Family Library [L] (M)	2012	Atherton	Education	6,800	13.2	30.8	-17.6
Watsonville Water Resources Center Admin Building (M)	2009	Watsonville	Office	16,000	51.4	117.8	-66.4
West Berkeley Public Library [L] (M)	2013	Berkeley	Public Assembly	9,399	21.7	25.5	-3.8

[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.
Buildings listed in **Bold** are new to the California ZNE Watchlist.
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.







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ZNE Emerging buildings (or districts) have a publically stated goal of ZNE but do not yet meet the definition of ZNE 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 12 months or longer, but their measured energy has either yet to achieve net zero or the measured data to document ZNE verified status was not available.

Building Name	Year Completed	Location	Building Type	Size SF	Total EUI	Site RPI	Net EUI
ZNE Emerging							
380 Pastoria Office	**2016**	**Sunnyvale**	**Office**	**30,000**	**25.7**	**31.0**	**-5.4**
415 Mathilda (M)	2015	Sunnyvale	Office	33,750	7.1	6.6	0.5
435 Indio Way	2013	Sunnyvale	Office	31,800	21.5	18.0	3.5
Aquarium of the Pacific Watershed Addition	2008	Long Beach	Education	2,500			
Arch Nexus SAC Office		**Sacramento**	**Office**	**8,252**	**36.3**	**39.7**	**-3.4**
Aster Place	2012	Eureka	Multifamily				
Atherton City Hall		**Atherton**	**Office**				
Beneficial State Bank		**Oakland**	**Mercantile (Retail Other than Mall)**				
BEST Center at Laney College	2016	Oakland	Education				
Blackford School Multi-Use Building	2013	San Jose	Education				
Broadway High School	2011	San Jose	Education				
Butte Glenn Community College	2011	Oroville	Education	800,000	38.9	27.2	11.7
CA Air Resources Board ZNE Building	2016	Sacramento	Other	300,000	102.9	102.9	0.0
CA Lottery District Office	2015	Santa Fe Springs	Office	12,840	22.1	22.2	-0.1
CA State Poly Tech University	**2018**	**Pomona**	**Education**	**138,000**	**17.0**	**23.6**	**-6.6**
California Department of Motor Vehicles	2014	Sacramento	Office	520,000			
California DOT SFOBB Phase 2 Warehouse	2016	Oakland	Warehouse and Storage				
Camp Parks	2014	Dublin	Other				
Castlemont Elementary School Multipurpose Building		**Campbell**	**Education**				
Church Hill Townhomes	2013	Fortuna	Multifamily				
City of Dublin Public Safety Complex		**Dublin**	**Public Order & Safety**				
City of Hayward 21st Century Library	2015	Hayward	Public Assembly	57,000	35.6	43.2	-7.6
City of Hayward Water Pollution Control Facility		**Hayward**	**Other**				
City of Santa Clara Swim Center		**Santa Clara**	**Public Assembly**				
Claire Lillienthal School	**2018**	**San Francisco**	**Education**				
Clarum Homes Headquarters	**2014**	**Palo Alto**	**Office**				
Clos du Bois Winery	**2012**	**Sonoma**	**Office**				
College of the Desert West Valley Campus - Phase 1	2013	Palm Springs	Education	50,000	22.0	24.0	-2.0
Conrad N. Hilton Foundation	2012	Agoura Hills	Office	22,240	22.0	24.0	-2.0
Cottages at Cypress	**2014**	**Fort Bragg**	**Multifamily**				
Creamery Row	**2016**	**Arcata**	**Multifamily**				
Culver City Library	**2016**	**Los Angeles**	**Public Assembly**				
Delmar High School Science Education Facility		**San Jose**	**Education**				
Delta Americas Headquarters (M)	2015	Fremont	Office	200,000	50.1	36.7	13.4
Dixon Valley Glen	**2014**	**Dixon**	**Multifamily**				
Egan Junior High School	2016	Los Altos	Education	17,000			
Exploratorium Pier 15 (M)	2013	San Francisco	Other	330,000	45.0	37.0	8.0
Fair Oaks Zero Net Energy Office	2016	Pasadena	Office	12,000			
Family Pet Hospital	2014	Clovis	Health Care (Outpatient)	8,700			

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Building Name	Year Completed	Location	Building Type	Size SF	Total EUI	Site RPI	Net EUI
Foothill College Sunnyvale Center	2016	Los Altos	Education	50,000			
Forest Service's Technology and Development Center	2013	San Dimas	Office				
Fort Hunter Liggett	2016	Jolon	Other		23.9		23.9
Fremont High School	2020	Oakland	Education	140,000			
Garfield Elementary School	2016	San Francisco	Education	33,422			
George V Leyva Middle School Admin Bldg - San Jose	2011	San Jose	Office	9,200			
Glumac Office Aon Center Floor 23	2014	Los Angeles	Office	17,500			
Greenway Building		**Arcata**	**Office**	**40,000**			
Half Moon Bay Library	2018	Half Moon Bay	Public Assembly	22,000			
Hanover Page Mill Building (M)	2015	Palo Alto	Office	86,253	30.1	25.8	4.3
Healdsburg City Hall	**2018**	**Healdsburg**	**Office**				
High Tech Middle North County	2012	San Diego	Education	27,058			
Housing and Community Development Office	2017	San Diego	Office	29,408	26.1	30.2	-4.1
Imperial Beach Branch Library	2016	Imperial Beach	Public Assembly	14,000			
Indigo Hammond & Playle Architects Office (M)		**Davis**	**Office**	**4,000**	**4.4**		
Irvine High School Campus Center	2016	Irvine	Education				
Kaiser Permanente Antelope Valley Medical Office Building (M)	2014	Lancaster	Office	136,800	31.0	6.0	25.0
Kaiser Permanente Baldwin Hills Medical Office Building	**2017**	**Los Angeles**	**Office**	**100,000**			
Kaiser Permanente San Jose Medical Office Building	2016	San Jose	Office				
Kaiser Permanente Santa Rosa Medical Office	**2017**	**Santa Rosa**	**Office**	**87,300**	**30.0**	**30.1**	**-0.1**
LA Convention Center	2020	Los Angeles	Public Assembly	1,000,000			
La Escuelita Education Center	2014	Oakland	Education	123,000			
La Valentina North (M)	2012	Sacramento	Multifamily	19,875	31.0	6.0	25.0
Los Angeles Harbor College Sciences Complex	2015	Los Angeles	Education	71,800	5.2	5.8	-0.6
Los Guilicos Correctional Facility (M)	2013	Santa Rosa	Public Order & Safety	149,000	23.9	1.1	22.8
LPL Financial Center at La Jolla Commons	2014	San Diego	Office	415,000			
Lynhaven Elementary School Multipurpose		**Campbell**	**Education**				
Makers Quarter Block D	2017	San Diego	Office	52,974	46.8	28.2	18.6
Mark Day School	**2017**	**San Raphael**	**Education**	**120,000**	**8.2**	**8.2**	**0.0**
McClellan Ranch	**2016**	**Cupertino**	**Other**	**3,265**	**26.8**		
MetroWest High School			**Education**				
Mokelumne Watershed Headquarters (M)	2011	Campo Seco	Office	5,675	10.4	9.8	0.6
Monterey Bay CSU - Academic Building 2	2015	Seaside	Education	57,331			
Morphosis Architecture Studio (M)	2012	Culver City	Office	11,600	24.0	20.0	4.0
Mt. San Antonio College	2016	Walnut	Education	20,610			
Muse School	2015	Calabasas	Education				
Mutual Housing at Spring Lake	2015	Woodland	Multifamily	64,600			
Mutual Housing at the Highlands	**2011**	**Sacramento**	**Multifamily**				
Net Zero Plus Electrical Training Institute	2015	Los Angeles	Education	142,000			
Nueva Middle School Expansion		**Hillsborough**	**Education**	**24,000**			
Oak Park High School	2014	Oak Park	Education	960			
Ohlone Campus Core Replacement Project	2017	Fremont	Education				
Olympic & Olive Apartments		**Los Angeles**	**Multifamily**				
OUSD Downtown Educational Complex		**Oakland**	**Education**				
OUSD Madison High School	**2017**	**Oakland**	**Education**	**35,000**	**14.9**	**17.6**	**-2.7**

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Building Name	Year Completed	Location	Building Type	Size SF	Total EUI	Site RPI	Net EUI
Palomar Community College	2017	San Marcos	Education				
Parkview Place		**Davis**	**Multifamily**	**9,300**			
Perkins + Will Office	**2014**	**San Francisco**	**Office**	**21,170**			
Pierce College Maintenance & Operations Facility and Net-Zero Central Plant (M)	2011	Los Angeles	Other	42,000	16.0	8.0	8.0
Plaza Point	2012	Arcata	Multifamily				
Porter Drive Office Building	**2016**	**Palo Alto**	**Office**	**96,626**	**24.5**	**21.0**	**3.5**
Prospect Sierra Founders Art Center	2006	El Cerrito	Education	5,000			
Redding School for the Arts (M)	2011	Redding	Education	77,091	16.0	8.0	8.0
Resort at Playa Vista		**Santa Monica**	**Public Assembly**	**25,000**			
Rio Hondo Community College District	2018	Whittier	Education	78,201	16	8.0	8.0
Rohner Village	2013	Fortuna	Multifamily				
San Bernardino Community College District	2014	Garden Grove	Education				
San Luis National Wildlife Refuge Complex HQ and Visitor Ctr.	2012	Los Banos	Education	16,500			
San Ysidro Land Port of Entry		**San Diego**	**Other**	**200,000**			
Santa Monica City Hall		**Santa Monica**	**Office**	**92,000**			
Santiago High School Science Building	2017	Garden Grove	Education	8,000	26.0	0.0	26.0
Schmidt Ocean Institute and Schmidt Family Foundation	**2018**	**Palo Alto**	**Office**	**25,000**	**28.0**	**32.0**	**-4.0**
SFO Airfield Operations Terminal - VIP Center	2014	San Mateo	Other	8,300			
SFO Airport Campus	2020	San Mateo	Other				
SFO Firehouse #3	2016	San Mateo	Other	20,000			
SFO Ground Transportation Unit Facility	2017	San Mateo	Other	14,000			
Sherman Oaks Elementary School Multiuse Facility		**Campbell**	**Education**				
Sierra Army Depot	2020	Herlong	Other				
Sierra Nevada Aquatic Research Lab & Multiuse Classrom	2015	Mammoth Lakes	Education	2,696			
SMUD Net Zero Campus - East Campus-Operations Center	2013	Sacramento	Office	350,000			
Solana Ranch Elementary School	2014	San Diego	Education	68,000			
Sol-Lux Alpha (685 Florida Street)	**2016**	**San Francisco**	**Multifamily**	**7,000**			
Solterra EcoLuxury Apartments	2013	San Diego	Multifamily				
Sonoma Academy Grange Building	2017	Santa Rosa	Education	130,000			
Sonoma County Junior College District	2018	Sonoma	Education	26,954			
Southern Distribution Center	2015	Rancho Cucamonga	Office	60,600	12.0	0.0	12.0
Stanford Central Energy Facility Admin Building	2015	Stanford	Office				
Student Services Center at Mesa College	2012	San Diego	Education	85,000			
Student Success and Retention Center at East Los Angeles College	2014	Los Angeles	Education	136,000			
Sweetwater Spectrum Community (M)	**2012**	**Sonoma**	**Multifamily**	**15,990**	**9.4**	**4.4**	**5.1**
The Village at Beechwood	**2014**	**Lancaster**	**Multifamily**	**22,960**			
UC Berkeley Global Campus		**Berkeley**	**Education**				
UC Davis California Avenue Lecture Hall		**Davis**	**Education**				
UC Davis West Village (eco district)	2012	Davis	Education		50.0	0.0	50.0
UC Merced	2020	Merced	Education	6,250,000			
UC San Diego J Craig Venter Institute	2013	La Jolla	Other	40,079	53.2	63.8	-10.6
UC Santa Barbara Recreation Center	2014	Santa Barbara	Education	140,000			
UC Santa Barbara Recreation Center	2014	Santa Barbara	Education	140,000			
UC Santa Barbara Student Services Buildings	2017	Santa Barbara	Education				

Building Name	Year Completed	Location	Building Type	Size SF	Total EUI	Site RPI	Net EUI
UC Santa Cruz Big Creek Research Station		**Santa Cruz**	**Education**				
VF Outdoor HQ	2013	Alameda	Office	160,000			
Vista Grande Elementary School	2016	Rancho Palos Verdes	Education				
West Hollywood City Hall Automated Parking Garage		**West Hollywood**	**Other**				
Westmont High School Science Education Facility (M)	**2004**	**Campbell**	**Education**	**12,362**	**44.4**	**0.0**	**44.4**
Whole Foods		**San Francisco**	**Food Sales**	**25,187**			
William Penn Hotel		**San Francisco**	**Lodging**	**41,836**			
William S Hart High School District	2012	Santa Clarita	Education				
Xilinx HQ Renovation	**2016**	**San Jose**	**Office**	**100,000**	**37.0**	**30.7**	**6.3**
Yarrow Village	**2015**	**Fortuna**	**Multifamily**				
Yosemite Institute		**Yosemite NP**	**Education**				
Yosemite Slough Ed Center		**San Francisco**	**Education**				

Ultra-low Energy Verified buildings have 12 or more months of metered data that documents energy performance comparable to ZNE buildings (typically 60-80% better than the national industry average). They expand the set of building examples with design strategies and technologies that have resulted in ultra-low energy use. They may have limited renewable resources onsite but do not have a known stated goal of ZNE.

Building Name	Year Completed	Location	Building Type	Size SF	Total EUI	Site RPI	Net EUI
Ultra-low Energy Verified							
Alameda County Library (M)	2011	Castro Valley	Public Assembly	34,537	64.0	47.0	17.0
Aventine (M)	2010	La Jolla	Office	253,000	23.0	0.0	23.0
Carlton Hills Modernization (M)	2008	Santee	Education	56,159	26.0	0.0	26.0
Carlton Oaks Modernization (M)	2008	Santee	Education	61,675	24.0	0.0	24.0
Center for Children & Families-CSU San Marcos (M)	2007	San Marcos	Education	20,200	28.0	0.0	28.0
Claiborne & Churchill Winery (M)	1996	San Luis Obispo	Office	2,585	20.0	0.0	20.0
Colorado Court Affordable Housing (M)	2002	Santa Monica	Multifamily	29,900	39.0	2.0	37.0
Georgina Blach Intermediate School (M)	2002	Los Altos	Education	71,741	33.0	0.0	33.0
High Tech High - Chula Vista (M)	2009	Chula Vista	Education	44,370	23.8	0.0	23.8
Jane D'Aza House of Formation (M)	2005	San Raphael	Other	6,200	7.0	0.0	7.0
Jeffrey Trail Middle School (M)	2013	Irvine	Education	74,600	29.0	12.0	17.0
Kirsch Center For Environmental Studies at De Anza College (M)	2005	San Jose	Education	21,600	33.0	10.0	23.0
Leslie Shao-Ming Sun Field Station (M)	**2002**	**Redwood City**	**Education**	**10,036**	**20.2**	**8.6**	**11.6**
Los Vecinos - Multifamily (M)	2009	Chula Vista	Multifamily	51,000	19.0	9.0	10.0
Navy Building 850 (M)	2001	Port Hueneme	Office	17,000	25.0	11.0	14.0
Ridgehaven Office Building (M)	1995	San Diego	Office	78,000	24.0	0.0	24.0
Sycamore Canyon Modernization (M)	2008	Santee	Education	52,000	23.0	0.0	23.0

The ZNE Watch List is produced by New Buildings Institute. For more information, visit www.newbuildings.org. There are, undoubtedly, other projects that belong on this list and/or corrections and updates to this directory. Provide information or add new projects through the NBI Registry located at: newbuildings.org/share or email us at info@newbuildings.org.

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