
nbi new buildings institute

GETTING TO zero

# 2018 Getting to Zero Status Update and List of Zero Energy Projects

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The Entrance Hall features a solar chimney which helps regulate the temperature and distributes natural light throughout the space. Kohler Environmental Center, Choate Rosemary Hall | Wallingford, CT
*Photo Credit: Peter Aaron / OTTO*



Digital copies and report graphics are available at newbuildings.org

Cover: North entrance of the Kohler Environmental Center, Choate Rosemary Hall | Wallingford, CT
*Photo Credit: Peter Aaron / OTTO*

# THE PATH TO ZERO ENERGY BUILDINGS

*Since 2010, New Buildings Institute has tracked the developing market for zero energy buildings. We are pleased to share this latest* 2018 Getting to Zero Status Update and Zero Energy Buildings List, *which summarizes the growth and trends from nearly 500 certified, verified and emerging zero energy projects across the United States and Canada.*

As NBI celebrates its 20th anniversary, we reflect on the past to help put the present and the future in context. In our early years there were only a handful of government or academic buildings to reference as low-energy, sustainable or green. Design and technologies for indoor comfort were predominantly the same as the preceding decades—buildings were sealed boxes filled with mechanical methods to deliver light, heating, cooling and ventilation. Energy policies were cautiously making small incremental changes: the leading national energy code (ASHRAE Standard 90.1) moved the bar by only 4% between the 1989 and 1999 versions. The building sector surpassed industrial as the number one energy-consuming sector. Real estate value and tenant attention rarely considered energy or green factors. There were no LEED buildings, no ENERGY STAR® buildings, no Living Buildings, and renewable energy had no measureable market adoption. Reducing energy use was almost exclusively driven by utility efficiency programs focusing largely on fluorescent lighting upgrades.

So in 1997, NBI and others began working to create a low-energy future for buildings for the benefit of people and the planet. Rocky Mountain Institute was 15 years old and shaking things up with the "Soft Energy Path" and Amory Lovins' extensive intellect and economic arguments. The U.S. Green Building Council was working on the 2000 release of the first edition of LEED and GreenBuild was founded two years later. In 1999, ENERGY STAR moved from appliance standards into buildings with the first ENERGY STAR office. The 2001 'Packard Matrix' showed the long-term economic viability of a "Living Building" leading to the formation of the International Living Future Institute in 2009. Ed Mazria turned up the heat on carbon and buildings in 2002 with the formation of Architecture 2030 turned up the heat with the article "Architects Pollute" in 2003. The first utility public benefits charges were collected and with them an infusion of funds for efficiency programs, regional groups, and longer-term research on energy technologies and renewables. The foundation for zero energy (ZE) buildings was underway.

The Gallery of the Kohler Environmental Center wraps around the courtyard that insulates the program areas from temperature variations

Kohler Environmental Center, Choate Rosemary Hall | Wallingford, CT *Photo Credit: Peter Aaron / OTTO*

Two decades later, these efforts are reflected in NBI's *2018 Getting to Zero Status Update and Zero Energy Project List*. Like many new efforts, ZE buildings counts are still small in relation to the total market—in the single-digit percentage of total buildings and floor space. But a multitude of factors are accelerating ZE buildings and communities such as emerging technologies, sensors and LEDs, dramatic price drops of solar generation, energy storage, energy tracking and transparency, integrated and passive design, climate concerns, and interest in ZE codes and resilient buildings.

Buildings and Projects are used interchangeably in this report. The *Getting to Zero Buildings List* consists of both individual buildings and some aggregated projects such as a campus ZE project, neighborhood development, or corporate portfolio. Each is counted as a single 'project' in the List.


Suncoast Credit Union-Bushnell Service Center
Bushnell, FL

This convergence, combined with other rapid advancements, foretells of a built environment that will look very different when we share our story 20 years from now.

A generation ahead, we believe the majority of workers, students, and families will spend their indoor hours in buildings that provide natural light and ventilation; have superior thermal comfort through mixed-modes with occupant-level control; vary design and windows by orientation; utilize shading and optimize views; have DC power; dynamically respond to occupancy, weather, and workhours; automate plug load management; produce renewable energy onsite; and use energy storage and electric vehicles interactively with the electricity grid. They will do all this with fewer materials and toxins, at a quarter or less of today's energy and water, and with little to no carbon emissions. We believe this because this report indicates it is all possible today—and shows an encouragingly steep growth curve. From policies to practitioners to specific-projects, the proof is in this report. The future of the built environment is ZE buildings.

In the Buildings List, nearly 500 ZE commercial building projects[1] of all sizes, types and in all climates are presented. Projects owned by for-profit companies now make up 26% of the List—greater than K-12 schools (18%) which are leaders in ZE building adoption. Privately-held buildings[2] overall account for 46% of ZE buildings approaching that of public buildings which were early adopters (see Fig 8).

The highest growth in new projects is in multifamily, with an increase of 40 buildings: effectively doubling the count since 2016. Public assembly, schools, and offices are next with strong increases in their number of projects. Education facilities continue to be in the ZE spotlight, leading the List with 37% (178) of all projects. California is paving the way for all schools to get to zero through its zero energy school retrofit demonstrations. Community approaches are critical to scale ZE buildings and this List includes community, district, and/or campus examples that are bringing groups of buildings together on the path to zero.

We also have some newcomers in the 'other' building type category with four new light manufacturing projects, a car dealership, and a ski area joining the Getting to Zero early adopter corps. Healthcare, lodging, and retail are yet to have much representation, likely due to their higher energy intensity and more complex occupancy conditions, making the few we know of even more valuable as exemplars. Warehouse/storage shares the low-end of adoption yet are in the opposite position regarding ease to get to zero energy and should therefore be a priority for accelerating adoption[3].

We also share policy rankings for states working to realize energy and climate action goals through stringency in energy codes, updates on residential ZE buildings from the Net Zero Energy Coalition, tell about our two exciting new alliances on ZE certification, discuss our efforts to provide extensive resource references that support the collective good work to make progress in Getting to Zero.

1 Buildings and Projects are used interchangeably in this report. The Getting to Zero List consists of both individual buildings and some aggregated projects such as a campus ZE project, neighborhood development, or corporate portfolio. Each is counted as a single 'project' in the List.

2 Privately owned includes corporations, small companies, individuals and non-profits.

3 Warehouse and storage make up 14% of floorspace and 6% of total energy use of US non-mall commercial buildings. US Energy Information Administration, Commercial Buildings Energy Consumption Survey, 2012

# Santiago High School Science Classroom | Garden Grove, CA

**Project Size:** 8,069 SF
**Construction Type:** Retrofit
**Construction Year:** 2017
**Building Type:** K-12 Education
**ASHRAE Climate Zone:** 3B


Garden Grove Unified School District (GGUSD) is a large, low-income school district that has recently become a regional leader in zero energy. Historically the district has prioritized investment of scarce resources into its students, rather than into its facilities. While the district is ranked in the lowest 20% for household income in California, its students' test scores are in the top 20% in the state.

The school district is bringing facilities and student needs together with its new science building at Santiago High School. When the deep energy retrofit is complete in fall 2018, it will be a living laboratory for students and will serve as a hub for the school's environmental student groups. Students, teachers and staff will be provided with all the energy use and system data for hands-on learning opportunities and STEM educational practices. The project is aiming for an energy use intensity (EUI) of 24.7 kBtu/sf/year and onsite renewable generation of 24.9 kBtu/sf/year, resulting in a projected net EUI of -0.2 kBtu/sf/year.

The ZE project team meets weekly with key stakeholders to foster cultural change regarding energy efficiency. GGUSD believes that fostering this cultural shift among students, teachers and staff may turn out to be the most cost-effective investment of funds toward achieving ZE across the district in the long term. Many energy conservation measures including daylighting devices, lighting controls and automatic dimming will further reduce the lighting load to almost zero during daytime hours, which account for most operating hours annually. Additionally, natural ventilation and updates to the envelope, HVAC system, and controls are being implemented. A dashboard will track and display real-time energy data to educate students, teachers, and staff and encourage behavioral change.

GGUSD is a low-income district with a culture of frugality. It did not change its values to invest in ZE retrofit projects. Instead, its emphasis on financial thrift led to this solution. GGUSD's leadership shows that, under the right conditions, ZE can make financial sense for any school district.

# TRENDS FROM NBI'S GETTING TO ZERO DATABASE

## Growth in Zero Energy Buildings

In the first *Getting to Zero Status Update* published by NBI in 2012, we proudly reported 60 commercial and multifamily buildings or projects that were either Verified as zero energy or were Emerging to that level. In 2018, the List includes nearly 500 projects and is on a steep curve upward, with our count (see Fig 2) increasing over 700% in those six years[4]. We now have information on 67 ZE Verified and 415 ZE Emerging projects: a total of 482 projects identified in this report. By sharing the specific names, locations, energy outcomes, and targets of these projects, the wide applicability and potential of these high-performance buildings can be used to influence owners, designers and policy makers.

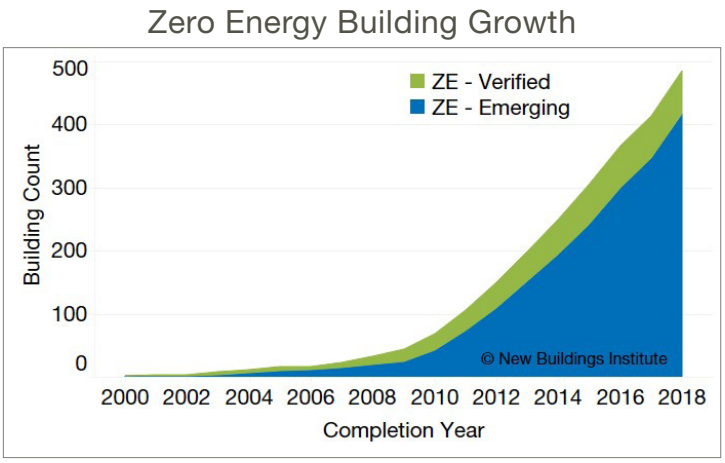



Fig 1. The Buildings List includes nearly 500 projects and is on a steep curve upward, having increased over 700% since 2012.

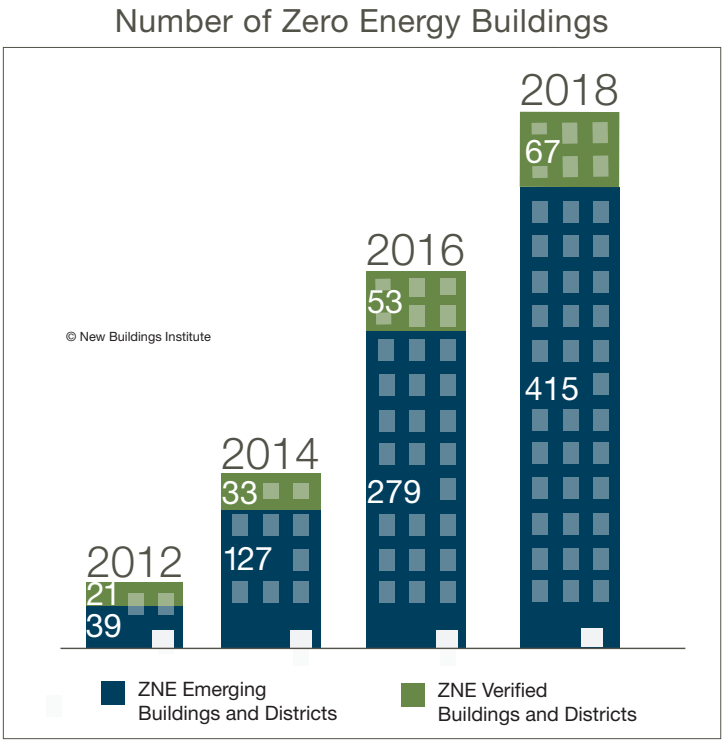



Fig 2. There are now 67 ZE Verified and 415 ZE Emerging projects documented by NBI.

The largest growth is in the ZE Emerging category. The influx of new projects setting these lofty objectives is a reflection of both increased policy goals and market effects of ZE buildings going more mainstream.

The Emerging ZE buildings are approximately evenly split into two groups (see definitions on page 19 for details):

**1. Not yet occupied or occupied less than one year**
**2. Occupied more than one year but not yet Verified as ZE**

This second group underscores that achieving zero energy is a process, not an end point and many projects need further refinement after occupancy.

## Ultra-low Energy Buildings

The strong growth of ZE buildings is exciting for our industry, but there are also many buildings reaching similar levels of energy performance without the added step of renewables or an official ZE goal. NBI has previously included these in our reports as ultra-low energy (ULE) buildings. These buildings are also often referred to as near net zero, zero energy capable, or zero energy ready. These buildings have similar energy performance as ZE buildings and serve as additional examples of the building design and operations to get to ZE energy performance outcomes. The trailblazing project teams and owners building ULE buildings have set the stage for today's growth in ZE buildings. But, this growth has introduced a challenge for our Getting to Zero Buildings List—there are simply too many projects that are pushing the limits of low energy use to reasonably List. Therefore, this *2018 Getting to Zero List* includes only projects with a publicly stated ZE goal. Although NBI is no longer listing ULE projects, we are still gathering energy data from these projects to inform research on design processes, HVAC system integration, and other factors leading to low-energy outcomes.

4 This growth is based on the number of buildings on NBI's List from 2012 – 2018.

## ZE Buildings in the United States and Canada

Zero energy buildings transcend climates and borders between the United States and Canada with projects occurring in 44 of the U.S. states and four of the 10 Canadian provinces. California is by far the front-runner in ZE building activity, with the San Diego and Los Angeles areas being the densest clusters in the state. The San Francisco Bay Area and Silicon Valley forms another large cluster, followed by the Portland, Oregon, metro area, and the North Atlantic coast.

The top two states for ZE buildings (California and Oregon) account for half of all the ZE buildings on the List. California's leading energy policies, ambitious energy reduction goals, and effective utility programs, as well as Oregon's early ZE pilot programs and incentives are clearly driving their rapid uptake in zero energy buildings. The Northeast has six states ranked in the top 10 of the *2017 ACEEE State Energy Efficiency Scorecard*[5] and the west coast occupies three of the remaining four top 10 slots. The effects of strong energy efficiency policies and programs is a clearly a factor propelling the zero energy movement in these leading states.

## Regions, States and Provinces

The 482 ZE projects are shown by state and region with a regional view and growth rate in the legend added this year. The map is also clustered where the six Regional Energy Efficiency Organizations (REEOs) work to advance policies and practices in their geographical area. California continues to lead in both total ZE projects and growth rate while the Northeast and Southwest have seen ZE project growth of over 90% since 2014.


Fig 3. ZE Projects by region and state/province. The legend shows regional growth trends in projects since our 2014 List.

5 The 2017 ACEEE State Energy Efficiency Scorecard is the eleventh annual ranking of states on their efficiency policy and program efforts, and can be found at: http://aceee.org/state-policy/scorecard

Zero energy buildings are in every climate zone across the continental United States. Most buildings in climate zones 3B and 3C are in California. By focusing on super-tight, well-insulated envelopes, passive systems, and careful operations, a small but growing number of ZE buildings have achieved success in even the coldest and most extreme climate zone, which is climate zone 7.

Climate Zone Distribution of Zero Energy Projects

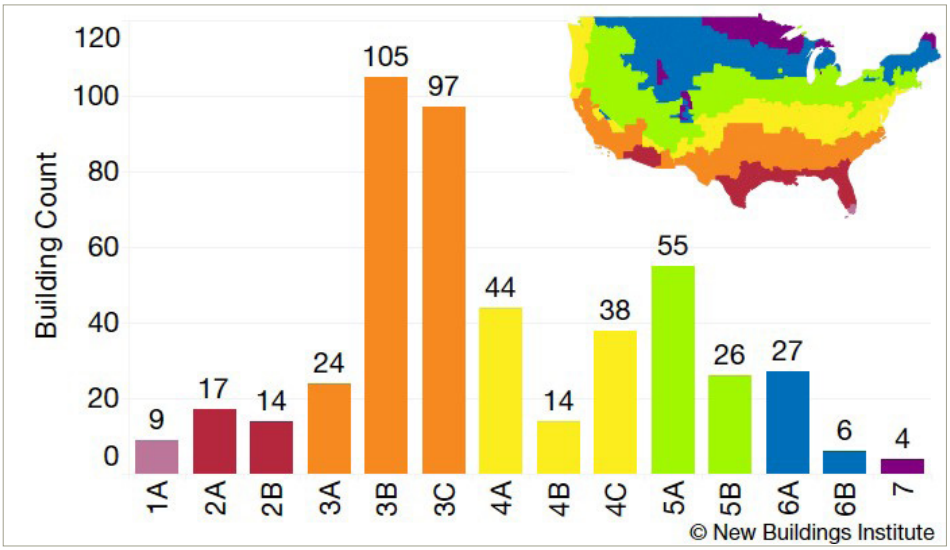



Fig 4. Zero Energy buildings are in every climate zone across the U.S.

## BUILDING RATING SYSTEMS

The Rocky Mountain Institute Innovation Center in Basalt, CO. is both a LEED Certified and Zero Energy Certified Building.

Green building labels like the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED), the BREEAM certification, and the International Living Future Institute's (ILFI) Living Building Challenge (LBC) have been a foundation for many of these early projects. The framework of a third-party certification helps increase the number of projects, knowledge, and market awareness of low-energy objectives.

USGBC staff reviewed the List and found that over one-third of the ZE Emerging projects (36%, or 174 projects) and 70% of the ZE Verified projects are LEED registered or certified. Fully three-quarters of these LEED projects are at the Platinum or Gold certified level, further connecting the importance of LEED as an energy and green building platform that drives higher goals of zero energy.

With its Living Building Challenge (LBC) certification, ILFI has set the highest bar for a green building label. In the List, there are eight projects that have achieved LBC certification and 24 that have achieved either Zero Energy or LBC Energy Petal certification. All in all, a total of 32 projects in this List have achieved ILFI Certification at some level. In May 2017, ILFI and NBI announced a collaboration to connect ILFI's Zero Energy certification and the NBI Getting to Zero Buildings List into one integrated Zero Energy platform (see page 13 for details).

## Energy Performance of ZE Buildings

The ZE Verified projects on the List on average use 60% less energy than comparable existing U.S. commercial buildings and 46% less energy than new buildings under one of the most stringent U.S. base code.[6] The median gross site energy use intensity (EUI) of ZE Verified projects is just 18 kBtu/sf/year (before renewables). The ZE Emerging projects, which are a blend of measured and estimated energy use, have a median gross site EUI of 24 kBtu/sf/year. These extremely low-energy outcomes are the result of careful design, aggressive energy targets, and careful building operation that typically includes operations and occupant education and engagement.

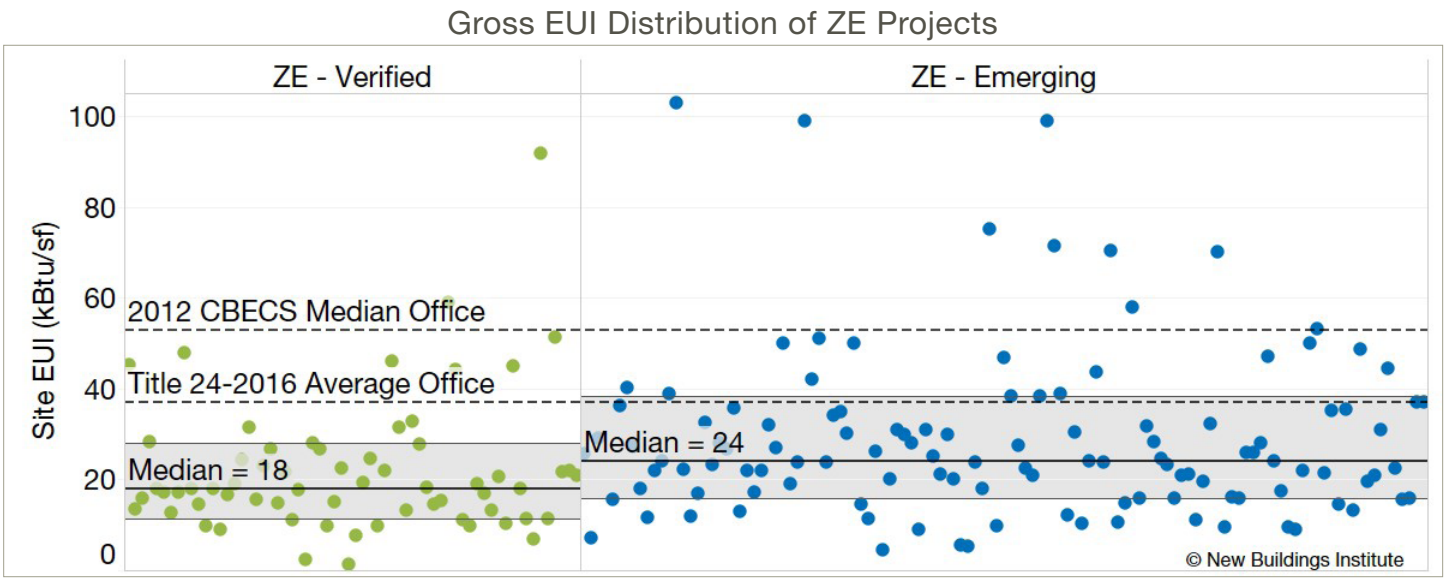



Fig 5. This chart shows the range of energy usage (gross site EUI, not including renewables) for the zero energy projects in this List. The grey band covers the 20th to the 80th percentile in each group.

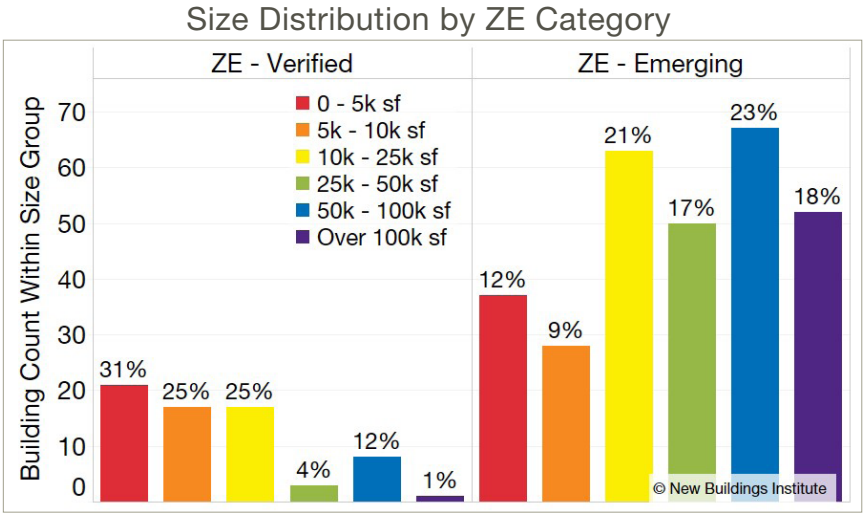



Fig 6. Nearly 30% of all buildings and 88% of the total floor space of ZE Emerging buildings are 50,000 sf or larger.

## Building Size

The majority of Verified ZE buildings (roughly 80%) are smaller than 25,000 square feet, reflecting the early trend of small demonstration projects getting to zero, but the ZE Emerging List tells a very different story. The Emerging List building size is more evenly distributed suggesting that not only are more diverse size projects pursuing ZE, but also that large ZE buildings are entering the market. In the 2018 Emerging List more than 40% of all buildings and 88% of the total floor space of ZE Emerging buildings are 50,000 sf or larger.

6 For existing buildings, CBECS 2012 provides a useful baseline: the median U.S. office building EUI is 53 kBtu/sf/year. For new buildings, California's Title 24 2016 energy code provides a good comparison, with a baseline new office EUI of 37 kBtu/sf/year.

## Building Type

Zero energy buildings can be found across a growing number of building types. Even high-energy intensity building types, such as hospitals and restaurants, are finding innovative ways to pursue ZE. For example, the Gundersen Health System in Wisconsin is targeting zero energy on a portfolio basis and has invested in a wind farm and a biogas-fired combined heat and power unit. As in years past, the combined education market, which includes K-12 schools, higher education, and general education, dominates the *2018 Getting to Zero List*, making up 37% of the projects. Breaking education into its sub-categories brings offices to the top: office buildings now account for one in five ZE buildings, while K-12 schools are a close second at 18%. The building type distribution is reasonably consistent across ZE Verified and ZE Emerging buildings, though multifamily projects are fairly new to the List and few have achieved ZE verification to date.

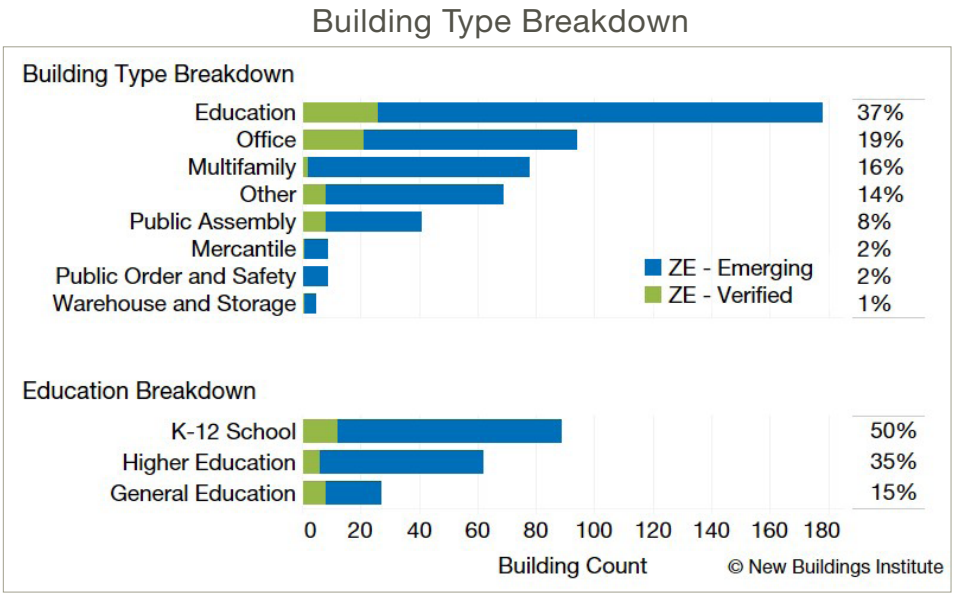



Fig 7. Zero energy buildings can be found across many different building types.

The 'Other' category includes building types ranging from airports to hospitals, light industrial to retail, even a ski resort. As a growth trend, based both in terms of rate of additions to the *2018 Getting to Zero List* and market rate of growth, the multifamily sector is poised for continued substantial additions.

## Community, Districts, Portfolios, and Campuses

Pursuing ZE across sets of buildings is being done through districts, campuses, in neighborhoods or city developments, and by portfolio owners such as the military or corporations. These approaches to ZE within a physical area or portfolio are critical paths to accelerate growth and scaling. Within our *2018 Getting to Zero List,* these projects are each counted individually at the portfolio-level rather than at the building-level. While this is not always representative of the total number of 'buildings,' it shows each project as a single decision to get to zero as a portfolio. As this trend increases, the dataset will expand, and we hope to dive deeper into energy consumption and generation modes, portfolio scale, influences and decision process in these larger scale, multiple-building projects in the future.

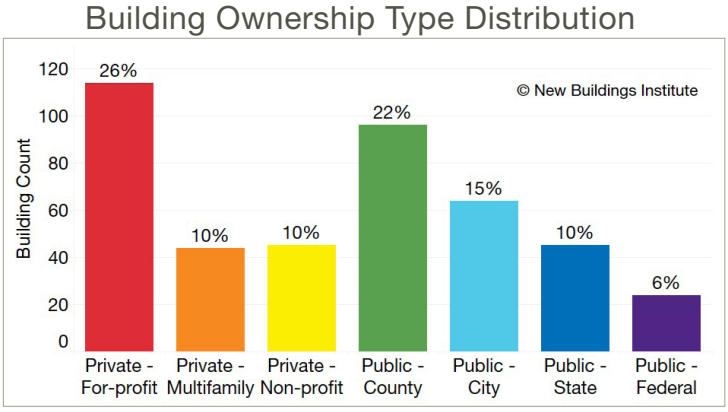



Fig 8. Buildings owned by for-profit companies now making up 26% of the List.

## Building Ownership

The picture is shifting when it comes to who owns ZE buildings with those owned by for-profit companies now

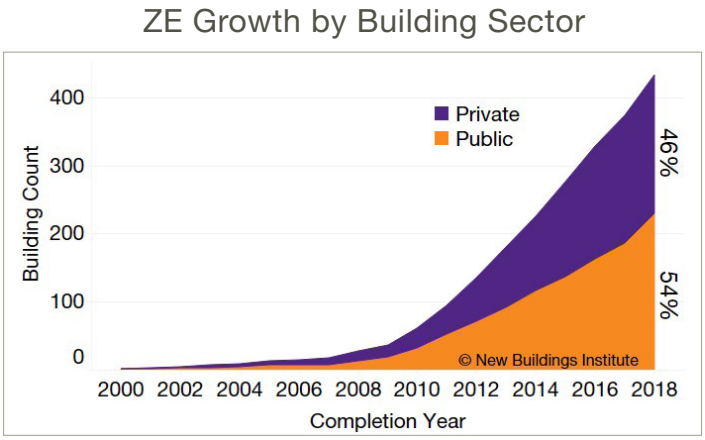



Fig 9. ZE Verified and ZE Emerging projects by ownership. Projects with missing ownership data are excluded

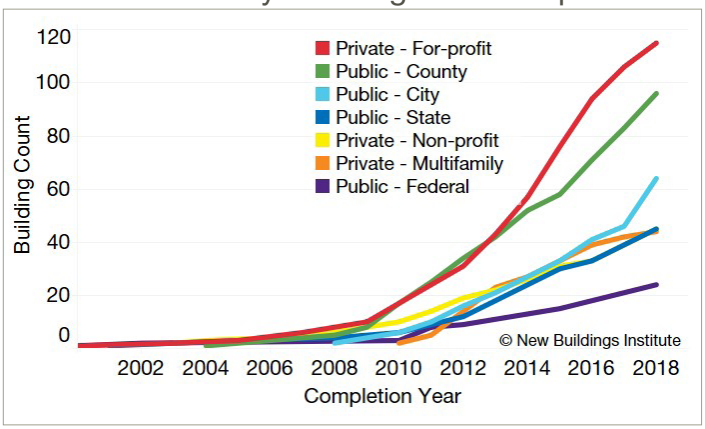



Fig 10. ZE Verified and ZE Emerging projects by ownership. Projects with missing ownership data are excluded.

| Top ZE MEP Companies | Top ZE Architect Firms |
|---|---|
| Integral Group | EHDD |
| CMTA Engineers | Maclay Architects |
| PAE Engineering | HGA Architects |
| Stantec | HMC Architects |
| KPFF Consulting Engineers | ZGF Architects |
| Interface Engineering | BNIM |
| | Opsis Architecture |

making up 26% of the List. These companies can provide valuable references on their business rationale for investing in zero. The for-profit ZE buildings also now have a larger market share than K-12 schools (18% of the List) which are a clear market leader. These are part of the 46% of the ZE List that are privately held buildings. We anticipate that as the ZE market matures it will continue approaching the national distribution where 78% of U.S. commercial buildings are privately held[7].

Most ZE buildings (approximately 65%) owned by private for-profit organizations are offices and private schools. With offices representing half of all for-profit-owned projects while private schools represent about another 15%. The remaining 35% varies significantly but is mostly comprised of retail and public assembly facilities.

The majority of publicly owned buildings on the List are education facilities (60%)—similar to the market proportion of education within public buildings. Nationally, higher education accounts for about two-thirds of state-owned ZE facilities. The remaining ZE projects at the state level are mostly government offices and public assembly such as visitor centers, museums and zoos.

As the Building List begins to more closely mirror the market, the market can see that Getting to Zero is achievable throughout our built environment.

## Designing the Future

It takes a village to design, construct, and operate ZE buildings, so we are very happy to see an increasing diversity of firms reflected in the design-end of these leading buildings. Although we are not always able to capture the full teams involved in these projects, we recognize the important role firms and individuals play in advocating for advanced design and low-energy outcomes. The List this year has approximately 70 unique mechanical-electrical-plumbing (MEP) firms and over twice that many architecture firms. Twenty-one percent (101) of the ZE projects are designed by six leading firms. Seven leading architecture firms have multiple projects that together represent 7% of the List. Design firms are at the interface with clients and projects, and the growth of their skills, knowledge and confidence in getting to zero expands the opportunity to mainstream ZE buildings.

7 U.S. Energy Information Administration, Commercial Buildings Energy Consumption Survey, 2012

## RESIDENTIAL ZERO ENERGY BUILDINGS

"Zero energy has done more to define our brand than any other strategy we have used. Various programs that incrementally reduce energy consumption lack the impact of zero energy. We call it the Power of Zero."

- Gene Myers, CEO of Thrive Home Builders

Zero energy buildings are appearing in every sector, led by residential. The Net-Zero Energy Coalition (NZEC), which published its 2016 inventory of ZE housing projects in June 2017[8], identified more than 8,000 housing units across the United States and Canada—33% more than the previous year. The number of projects increased even more, by 82%. Both numbers are clear market indicators that momentum is steadily building in residential ZE. Given the increasing number and power of market and policy drivers pushing for more ZE homes, this growth will likely continue in the coming years.

Multi-unit housing projects are responsible for 94% of all units identified by NZEC in 2016. The majority (61%) of those are in multifamily buildings, and 39% are in single-family developments. The average multi-unit single-family project has 33 units; the average multifamily project has 46 units. The largest multi-unit project is the University of California Davis' West Village.

A few market-leading builders are responsible for much of the growth in ZE homes. The top 10 builders and developers identified in the 2016 NZEC Inventory are collectively responsible for 3,731 units—45% of all housing units inventoried. These builders report that zero energy is a powerful differentiator in a crowded market. For these leading companies, making the shift to zero has been more profitable, sustainable, and rewarding for their businesses and their customers.

### Multi-unit projects

PROJECT TYPE BY UNITS[8]

2,960 single-family units

4,727 multi-family units

741 projects

4,077 buildings

8,203 units

8 This information published with permission from NZEC based on their "*To Zero and Beyond: 2016 Residential Zero Energy Buildings Study*." http://netzeroenergycoalition.com/2016-zero-energy-inventory/

# POLICY DIRECTIVES AND PROGRAM SUPPORT: TAKING ZERO ENERGY TO SCALE

California, Oregon, New York, Arizona, Massachusetts. These five states are leading in the number of zero energy projects across the country with California inarguably holding the highest penetration of ZE Verified and Emerging projects by nearly 10-fold. So what do these top five states all have in common? Zero energy policies, either statewide, by county, or by municipality, that are sending distinct market signals necessary to drive goal setting and investment around ZE projects. Many of them also have strong energy efficiency programs supporting adoption of zero energy goals with technical assistance and financial incentives.

In Oregon, which takes second place on the List, the Energy Trust of Oregon has been running its Path to Zero Program for several years, nurturing the market for ZE buildings. That outcome is reflected in a growing number of Emerging projects—up by 50% from the last *Zero Energy Buildings List*. A recent Executive Order from Oregon's Governor Kate Brown builds on this progress stating: *It is the policy of the State of Oregon to establish an aggressive timeline to achieve net zero ready buildings as a standard practice.*

| State | zEPI Jurisdictional Score | ZE Emerging | ZE Verified |
|---|---|---|---|
| CA | 51.7 | 192 | 22 |
| OR | 59.5 | 22 | 2 |
| NY | 55.7 | 13 | 4 |
| AZ | 65.7 | 15 | 1 |
| MA | 51.7 | 13 | 2 |

Beyond the states leading with ZE projects, NBI's Library of Advanced Codes and Policies catalogues over 135 local governments across U.S. and Canada that have adopted a policy that puts them on the path to zero energy. That increase is more than double over the last 18 months, indicating that many cities and states are eager to implement policies that support ultra-low and ZE performance, and many already have. Given the withdrawal of federal leadership on climate action, local governments have emerged as the standard bearers in the battle against climate change resulting in new and aggressive carbon reduction goals with special emphasis on buildings. Buildings are responsible for roughly 40% of $CO_2$ emissions in the United States and as much as 80% in cities.[9] Local jurisdictions that are serious about cutting carbon understand that the local building stock must be addressed, and zero energy buildings have captured policymakers' attention as a mechanism to get there.

GETTING TO **zero**
ZE RESOURCE HUB

While each locality is at a different starting point with different resources and stakeholder mix, they all are positioned to take the first step for getting to zero. In order to help other interested jurisdictions learn from a growing list of ZE policies, NBI created a **ZE Resource Hub** to share the most impactful policies and programs from around the country. The Hub can be found at: gettingtozeroforum.org/zero-energy-resources/

9 US Energy Information Administration, https://www.eia.gov/tools/faqs/faq.php?id=86&t=1

## Setting a Vision for Energy Codes at Zero

Energy codes are a crucial policy lever driving high efficiencies in new construction projects. Some jurisdictions are employing stretch codes as a means to set a vision for zero energy codes by a date in the future and then plan incremental efficiency increases for the intervening code cycles. Jurisdictions accelerating energy code advancement for climate goals have met less resistance than assumed. Building developers and product manufacturers understand that policies need to change and stretch codes give them a clear view of energy efficient building trends that will be used in future codes.

British Columbia (BC) is one such jurisdiction and has claimed that by 2032 the province will work to achieve zero energy-ready status in all new construction. By 2020, BC seeks to reduce the expected increase in electricity demand by 66% and reduce greenhouse gas emissions to 33% below 2007 levels (80% by 2050). To help realize these goals, BC in April 2017 published the BC Energy Step Code, an incremental stretch code which will ultimately lead the province to zero energy construction. Jurisdictions within British Columbia may elect to replace the performance section of the Building Code with the Energy Step Code.

## zEPI Jurisdictional Scores Act as a Sign Post

To help states that are utilizing energy codes to achieve energy and climate action goals understand and track progress, NBI has developed zEPI Jurisdictional Scores, which rank states based on their adopted energy policy. The scores take into account statewide energy codes, local stretch codes, and other factors. Ranging from zero to 100 where "0" is the goal, the scores are based on the Zero Energy Performance Index (zEPI) scale, originally developed by NBI Fellow Charles Eley. The zEPI Jurisdictional Scores allow states to see where they currently stand on the trajectory to zero and set milestones for achieving progress (see more on zEPI on page 18). Beginning next year, the American Council for an Energy-Efficient Economy (ACEEE) will use the zEPI Jurisdictional Score as the key criterion for scoring state building codes in their much anticipated *ACEEE State Energy Efficiency Scorecard* in an effort to more accurately assess the levels of savings achieved by each state's adopted building energy codes.

2017 zEPI Jurisdictional Scores

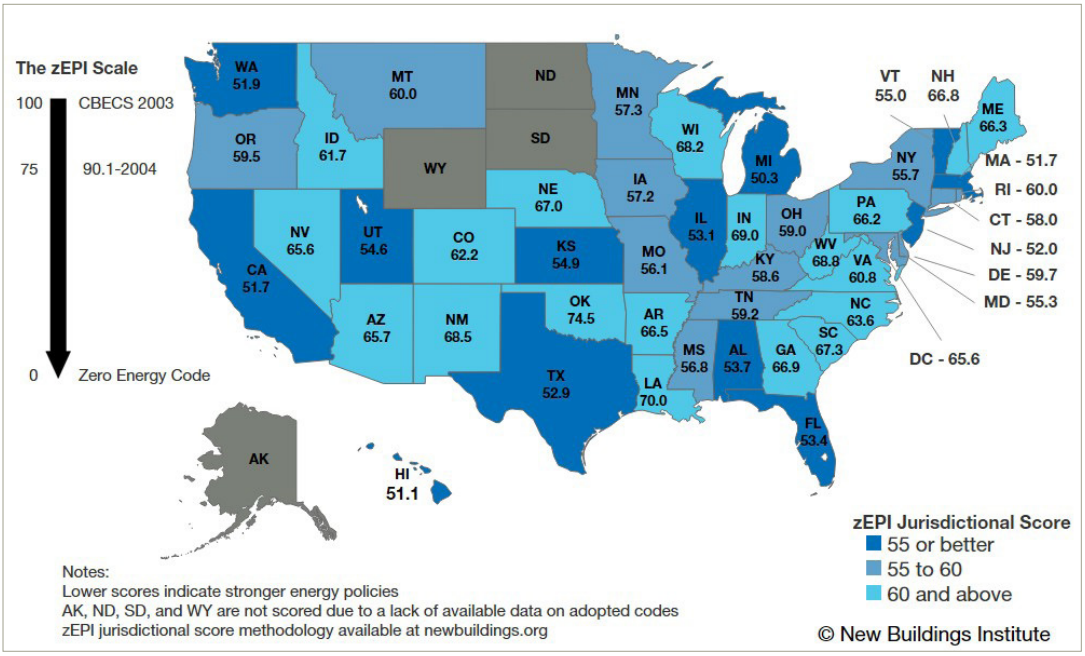



Fig 11. NBI has developed zEPI Jurisdictional Scores, which rank states based on their adopted energy policy.

# ZERO ENERGY CERTIFICATION: COLLABORATION AND EXPANSION

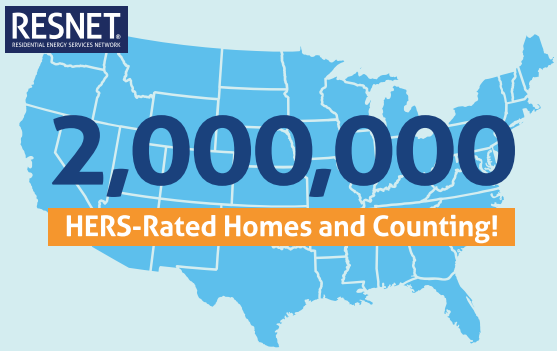
Green building certification programs provide confidence that a building is really walking the walk when it comes to environmentally conscious design and operation. As zero energy buildings come into the mainstream, certification by a trusted third-party organization is increasingly important to show that a building's zero energy design and performance are real. NBI has teamed up with the International Living Future Institute (ILFI) to more directly connect the *Getting to Zero List* and ILFI Zero Energy Certification through a unified zero energy platform. In the residential sector, NBI has teamed up with the Residential Energy Services Network (RESNET) to bring the benefits of ZE certification to homes around the country.

## NBI + ILFI:

In May of 2016, ILFI and NBI announced a collaborative partnership to simplify and scale up the growth of certified ZE buildings based on actual measured energy performance. This partnership builds on the strengths of each organization. The new, streamlined process will provide the buildings industry—design teams, owners, operators and others—with needed clarity on the standards for ZE performance using data-driven outcomes for validation. Data requirements for this *operational rating* have been substantially simplified and aligned with the Getting to Zero Buildings Database. The end result will be one seamless system for tracking, registering, certifying, and evaluating the ZE buildings of today and tomorrow. While elements of the collaboration have been a work in progress, we expect to fully launch this unified ZE platform in the first half of 2018.

## NBI + RESNET:

The Home Energy Rating System (HERS) Index, administered by RESNET, is an *asset rating* that measures a home's energy efficiency performance. The HERS Index is a nationally-recognized standard for inspecting, testing and rating of key aspects influencing energy use. There are more than 2 million HERS-rated homes and over 2,000 certified HERS raters in the United States. NBI is teaming up with RESNET to use the HERS Index as the basis for a zero energy certification for new single-family homes at the point of sale[10]. This new certification will enable ZE Homes to achieve mass-market scale by leveraging RESNET's widely known and trusted HERS Index. We expect to launch this certification program in mid-2018.




## OPERATIONAL RATINGS vs. ASSET RATINGS

***Operational Ratings*** are based on actual energy usage over a period of time (12 months in most cases).

***Asset Ratings*** are based on building characteristics like insulation and HVAC systems, as designed and constructed.

10 This certification is not related to the U.S. Department of Energy's Zero Energy Ready Homes program.


The Port of Portland building in Portland, OR was one of the buildings studied in NBI's recent radiant technology research project

# Radiant Cooling and Heating Systems

While forced-air distribution systems remain the predominant approach to heating and cooling in U.S. commercial buildings, radiant systems can provide an opportunity to contribute significant energy savings. This is due to relatively small temperature differences between the room set-point and cooling/heating source, and the efficiency of using water rather than air for thermal distribution. A common strategy across ZE buildings, radiant systems typically utilize a Dedicated Outdoor Air System (DOAS) to meet ventilation needs. Radiant heating systems are not unusual in high performance buildings, but using radiant systems for both heating and cooling is rarely done. A new study investigates this approach.

In 2016-17, NBI worked with the Center for the Built Environment at UC Berkeley to study the *Energy Performance of Commercial Buildings with Radiant Cooling and Heating*[9]. This study focused on high thermal mass radiant systems—Thermally Activated Building Systems (TABS) with radiant tubing is embedded in a structural slab. Also included were Embedded Surface Systems (ESS) with tubing embedded in topping slabs and ceiling panel systems where the piping is located in metal panels suspended from the ceiling.

Our research team obtained building design characteristics and energy use from 23 commercial buildings across seven climate zones using radiant as the predominant method to cool and heat the occupied space. The research, which was funded by a Californian Energy Commission EPIC grant, found that the set of studied buildings significantly outperformed peer buildings and national benchmarks.

Although a radiant system is not the sole driver of high-performance, it is a valuable option for achieving low-energy outcomes. Selecting a radiant system usually means limiting the overall design cooling load because there are physical limitations to how much cooling a radiant system can achieve. This translates to a better envelope, lower lighting loads, and efforts to reduce plug loads which in turn reduce overall building energy consumption.

Alongside the report, nine individual building case studies[1] were published, which further detail the technologies used in the buildings as well as the energy performance and occupant comfort results.

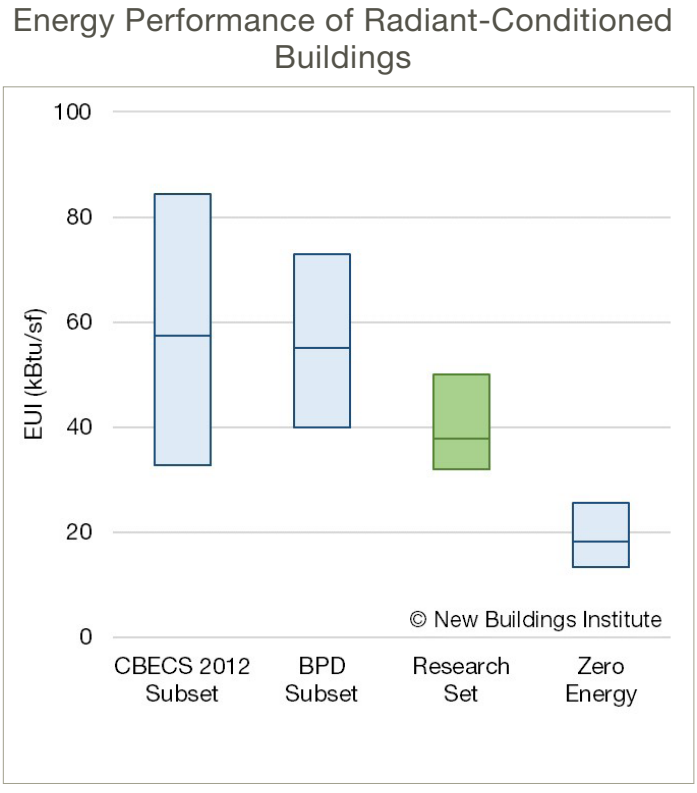



Fig 12. This boxplot compares the interquartile energy performance of the research set alongside a comparable subset of buildings from CBECS, the building performance database (BPD), and NBI's ZE Verified Buildings List. The radiant buildings included in the study used approximately 30% less energy than national benchmark values.

11 Full report: https://newbuildings.org/resource/energy-performance-of-commercial-buildings-with-radiant-heating-and-cooling/

## **ZE Case Study**: Radiant System at the Oregon Department of Transportation Building

The Oregon Department of Transportation (ODOT) headquarters is a five-story, 147,000-square-foot (sf) office building housing 460 employees. The headquarters is a retrofit of a 1950s-era building and features hydronic radiant systems, photovoltaic panels, rainwater harvesting, waste water treatment, and ground-source heat pumps. These technologies enabled the building to achieve LEED Platinum certification in 2012.

Designed by SERA Architects and engineered by Stantec and PAE Engineers, the renovation project reorganized ODOT's workspaces, providing the employees with improved daylight, indoor air quality, and collaboration spaces while optimizing the HVAC systems to ensure energy efficiency.


Nine radiant systems case studies are available on the NBI website at: newbuildings.org/case-studies/

### Building Energy Use

The ODOT building has a whole-building site EUI of just 36 kBtu/sf. This is 44% to 56% less than the average office EUI performance of national, regional, and state peers. While those datasets include a mix of construction ages, ODOT's building energy use is also 10% lower than ASHRAE's best-practice energy efficiency Standard 100 targets.

Radiant cooling and heating systems were a major piece of the design strategy enabling this building to achieve low-energy success.

### Energy Performance of ODOT Building vs. Benchmarks

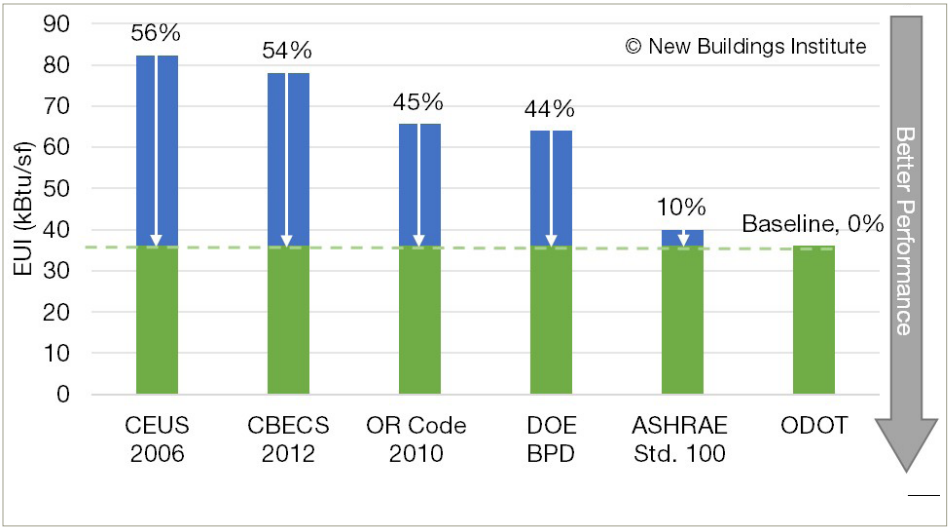



Fig 13. The ODOT building outperforms various national and state-level benchmarks. The building uses slightly more than half the energy of its code baseline.

# A NEW HOPE: ZERO ENERGY TODAY AND FOR THE FUTURE

"[ZNE] It's the next level of ambition"[12]

-Clay Nesler, VP of global energy and sustainability at Johnson Controls (JC)

The *2018 Getting to Zero Status Update and List of Zero Energy Projects* brings a spotlight to an impressive and growing diversity of projects, practitioners and owners striving for the best in design, operations, and occupant benefits. Their low-energy outcomes and targets reflect what can be done in today's market and we expect more innovation ahead. The policy trends show a leap from regulatory methods pushing from the bottom of the pack to examples of leading codes and policies requiring the top end of what's possible. Here is a summary of noteworthy and hopeful areas.

**Growth in projects, size and type.** Tracking of commercial buildings reflects a 700% increase in ZE buildings in six years with sizes more reflective of the general marketplace. As designers become more capable of achieving ZE outcomes, building sizes are getting larger with over 40% of the projects and 88% of the floor space in ZE Emerging buildings over 50,000 sf. Nearly every use type including high energy sectors like retail, hospitals, and light industrial are represented, but 72% of the projects fall into three types: 1) education (36%); 2) offices (20%); and 3) multifamily (16%).

In the residential sector, over 8,000 housing units in 4,077 buildings and 741 projects are targeting zero energy. Of those, 61% of units are in multifamily projects and 39% in single-family with production builders leading the growth with the top 10 builders in the residential inventory responsible for 45% of the units.

**Private sector invests, districts emerge.** ZE is finding favor with the private sector with nearly 26% of the full List representing for-profit private sector buildings and overall private ownership now at 46%. Home production builders say ZE residential projects have been "profitable, sustainable, and rewarding for their businesses and their customers." The communities and commercial districts are increasing and carving a critical path to scale ZE developments.

**Feasibility remains strong.** As we achieve high numbers of projects to analyze we are more able to set targets for energy performance of building types and in climate zones. Current examples show an impressive proof of performance with Verified energy use of just 18 kBtu/sf—46% less than the most stringent new construction energy codes in the U.S. Location is not a barrier as there are ZE buildings in every U.S. and Canadan climate zone and almost every U.S. state.

**Experience and expertise grows.** The ZE corps is expanding with over 70 distinct mechanical and engineering companies and 140 architectural companies involved in these projects. As interest and awareness of ZE rises, the design communities' ability to deliver must keep pace with expanded options for continuing education for architects, engineers and builders. Trainings and focus on ZE design, construction and operations within industry conferences continues to grow and spotlight ZE practices and projects—an encouraging sign.

**Policies and programs are a proven driver.** While ZE projects are now located in nearly every state, larger numbers are certainly driven by local policies or programs. ZE policies, either statewide, by county, or by municipality, are sending distinct market and public benefits signals necessary to drive goal setting and investment around ZE projects. Efficiency programs are also a strong factor in supporting adoption of zero energy goals with technical assistance and financial incentives.

12 In reference to 2016 Energy Efficiency Indicator survey with more than 1,200 facility and energy management executives in the U.S., Brazil, China, Germany and India

**Continued market development is crucial.** This List is at the forefront of three key factors intersecting to change the built environment as we know it: 1) optimized energy efficiency through design, technologies and operational strategies, 2) renewable energy integration at the site, community or portfolio level, and 3) grid harmonization of the building, energy storage and electric vehicles. These factors are informing our work to move buildings and policies to zero energy and lower carbon. It's a long road ahead and there is much work to be done to achieve our zero energy future. We at NBI will continue to drive momentum for buildings that reflect energy, environmental and economic goals. Our sights are set on the horizon:

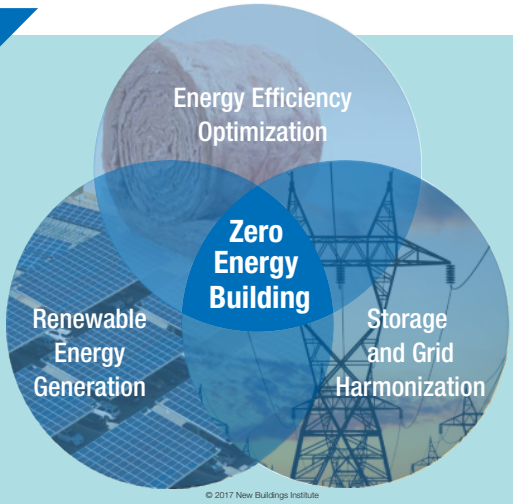
- **Carbon.** Establish metrics that put the relationship between carbon and energy use in the spotlight based on actual generation sources at a building and community level. Connect zero energy buildings to carbon goals and policies.
- **Policies and Programs.** Advancing codes, policies and programs that form the steps to zero energy in the building sector.
- **Practitioners.** Support practitioners' abilities and resources to advocate and create ZE buildings with clients and deliver successful projects.
- **Proof.** Continue to expand the 'proof of the possible' through tracking and disseminating a growing List of ever-wider types of ZE buildings, community approaches and case studies.
- **Markets.** Work on target markets that help swing the majority such as cities, schools, and multifamily.

## BEYOND THE METER: BUILDING-GRID INTERACTIONS IN THE AGE OF ZERO ENERGY

For a century, electricity has flowed only one way: from the power plant to the building. This long-established paradigm is changing fast as distributed renewables and ZE buildings come online across U.S. and Canada. Already, some grid operators are struggling to integrate renewable energy onto the grid.

At the building level there is a lack of knowledge and incentive to encourage grid-friendly design and operation. Across U.S. and Canada there are no metrics that define building-level grid citizenship or rate building-grid interaction quality. Current thinking on the topic is fragmented and different players are using different language to discuss the topic from a variety of perspectives.

NBI and USGBC are launching the GridOptimal Initiative to provide standards, tools, and guidance to improve building-grid interactions in the built environment by empowering owners, architects, and engineers with a dedicated building rating system and certification protocol.



Grid Harmonization: Buildings, Energy Storage, and Electric Vehicles

By creating a standardized metric that defines a building's operational performance as a grid asset, many doors open. Utilities can incentivize grid-sensitive design. Government agencies can include the metric in their procurement requirements or other policies. Designers, owners, and operators can consider grid impacts with a sensible, straightforward approach. Future building codes can begin to encourage the adoption of these solutions and help ensure that new buildings coming online will be good grid citizens.

The GridOptimal Initiative will play a major role in bridging the gap in knowledge, understanding, and priorities across the meter, including both grid operators and electricity consumers. We welcome your insights and support. To find out more, please visit: www.newbuildings.org/gridoptimal.

# THE ZERO ENERGY PERFORMANCE INDEX

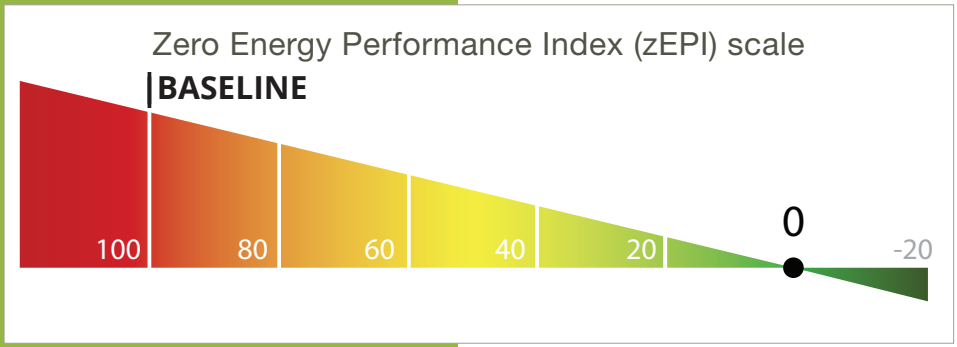
Since 2016, NBI has included building zEPI Scores in the *Getting to Zero Buildings List*. The zEPI score is a simple metric measuring a building's progress toward zero energy.

## zEPI: A Simple, Versatile Scale for Measuring Commercial Building Energy Performance

The Zero Energy Performance Index (zEPI) scale represents a fundamental shift in measurement of building efficiency. zEPI sets energy targets for actual energy consumption rather than using a predictive energy model of building energy performance to calculate a "percent better than code" metric.

zEPI is calculated using a building's EUI and is adjusted based on building type and climate. zEPI is also the measure by which a building's energy efficiency is calculated once operational and occupied based on measured energy use data.

zEPI was created to address confusion caused by comparing the energy efficiency of buildings by referencing their "percent savings beyond code." Which code? What year? Given there have been at least six major commercial energy codes on the books at any given time in the United States since 2000, identifying the correct baseline can take some time.




zEPI sets a constant goal of zero energy and shifts the conversation from percent better than code to an index leading to zero, which is the kind of market shift that is required for buildings to achieve wide-scale zero energy and exemplary energy performance. One noteworthy function of the zEPI scale is that it allows key energy milestones including individual project consumption and energy policies to all be represented on one scale. It permits direct comparisons in order to understand the relative performance of each of these elements in measurement of energy performance.

The ZE Certified Hood River Middle School Music and Science Building in Hood River, OR, has a zEPI Score of 0.

*Photo Credit: Michael Mathers*

# 2018 Getting to Zero List of Zero Energy Projects

We know there are more projects than we have captured here. We encourage you to submit ZE and ULE projects through our registry so we can recognize these leaders in the growing field of zero energy buildings.

**Be Counted** at newbuildings.org/share.

The 482 trailblazing projects listed here are proof positive that zero energy design and operation is feasible in every climate, market sector, size, and building type across U.S. and Canada. In the six years since NBI produced the first *Getting to Zero List* in 2012, the number of ZE projects has increased more than 700%. More and more designers, owners, and occupants are gaining valuable ZE experience and expertise, and new projects are appearing regularly. Projects are listed alphabetically and grouped by year completed or projected for completion.

New information is included in the *2018 Getting to Zero List* about project certification. Projects that have achieved Zero Energy Certification from ILFI are listed in the ZE Certified buildings category. For the first time, this List also shows information about the LEED status of ZE projects.

## Definitions

**Zero Energy (ZE)** 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.

**Zero Energy Certified** projects have been awarded Zero Energy, 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. NBI and ILFI are collaborating to launch a new ZE platform in 2018, including a combined data portal, certification program, and interactive ZE project database.

**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.

**(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 of building space. 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. That sum is divided by the building size in gross square feet, thus the units are kBtu/sf/year.

**Source EUI** accounts for upstream generation, transmission, and distribution losses associated with delivering usable energy to the site.

**RPI** stands for Renewable Production Intensity, a metric used to define annual renewable energy generation per square foot. This is the onsite renewable analogue to EUI. This is shown in both site and source, just like EUI.

**Net EUI** is simply EUI minus RPI. 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.

**zEPI** is metric on a 0-100 scale that sets a constant goal of ZE and is normalized by climate and building type. For more information about zEPI, see page 18.

## ZERO ENERGY CERTIFIED

| YEAR | PROJECT NAME | CITY | STATE | BUILDING TYPE | SIZE (SF) | TOTAL EUI | SOURCE EUI | SITE RPI | SOURCE RPI | NET EUI | NET SOURCE EUI | ZEPI SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2007 | IDeAs Z2 Design Facility (M) | San Jose | CA | Office | 6,557 | 22.6 | 71.2 | 23.2 | 73.0 | -0.6 | -1.8 | -1 |
| 2009 | Chrisney Library (M) | Chrisney | IN | Public Assembly | 2,413 | 16.7 | 52.6 | 17.4 | 55.0 | -0.8 | -2.4 | -1 |
| | Living Learning Center at Tyson Research Center (M) | Eureka | MO | Education | 2,968 | 24.5 | 77.1 | 26.4 | 83.2 | -1.9 | -6.1 | -2 |
| | Omega Center for Sustainable Living L (M) | Rhinebeck | NY | Other | 6,200 | 13.2 | 41.6 | 21.5 | 67.6 | -8.3 | -26.0 | -7 |
| | Pringle Creek Painter's Hall L (M) | Salem | OR | Public Assembly | 3,595 | 11.1 | 35.0 | 15.4 | 48.4 | -4.3 | -13.4 | -5 |
| | Putney Field House L (M) | Putney | VT | Education | 16,800 | 9.7 | 30.6 | 10.4 | 32.9 | -0.7 | -2.3 | -1 |
| 2010 | Bertschi School Science Wing L (M) | Seattle | WA | Education | 1,425 | 48.0 | 151.2 | 48.4 | 152.5 | -0.4 | -1.3 | 0 |
| | DPR Construction San Diego Net Zero Office L (M) | San Diego | CA | Office | 24,000 | 14.8 | 46.1 | 17.1 | 53.9 | -2.4 | -7.8 | -3 |
| | Energy Lab at Hawaii Preparatory Academy L (M) | Kamuela | HI | Education | 5,902 | 11.0 | 34.8 | 28.0 | 88.2 | -17.0 | -53.4 | -15 |
| | Hood River Middle School Net-Zero Addition L (M) | Hood River | OR | Education | 5,331 | 26.8 | 84.3 | 27.1 | 85.4 | -0.4 | -1.1 | 0 |
| | Richardsville Elementary School L (M) | Bowling Green | KY | Education | 72,285 | 19.0 | 59.9 | 21.6 | 68.0 | -2.6 | -8.1 | -3 |
| 2011 | Coastal Maine Botanical Gardens Bosarge Family Education Center L (M) | Boothbay | ME | Education | 8,200 | 19.2 | 60.3 | 23.5 | 73.9 | -4.3 | -13.6 | -4 |
| | Locust Trace AgriScience Campus (High School) (M) | Lexington | KY | Education | 70,000 | 9.9 | 31.0 | 10.6 | 33.3 | -0.7 | -2.3 | -1 |
| | TD Bank Branch - Ft. Lauderdale L (M) | Fort Lauderdale | FL | Office | 3,970 | 91.8 | 289.3 | 95.6 | 301.1 | -3.8 | -11.8 | -4 |
| | zHome - Issaquah (M) | Issaquah | WA | Multifamily | 5,813 | 21.0 | 66.2 | 22.0 | 69.3 | -1.0 | -3.1 | -2 |
| 2012 | Bullitt Foundation Cascadia Center for Sustainable Design and Construction (M) | Seattle | WA | Office | 51,800 | 9.7 | 30.6 | 16.6 | 52.4 | -6.9 | -21.8 | -10 |
| | David and Lucile Packard Foundation L (M) | Los Altos | CA | Office | 49,161 | 24.4 | 76.8 | 29.0 | 91.4 | -4.6 | -14.6 | -7 |
| | DPR Construction Phoenix Net Zero Office L (M) | Phoenix | AZ | Office | 16,533 | 26.8 | 84.3 | 29.5 | 92.9 | -2.7 | -8.6 | -3 |
| | Phipps Center for Sustainable Landscapes L (M) | Pittsburgh | PA | Public Assembly | 24,350 | 18.2 | 57.3 | 18.7 | 58.8 | -0.5 | -1.5 | 0 |
| | Sacred Heart Schools Stevens Family Library L (M) | Atherton | CA | Education | 6,800 | 13.2 | 41.6 | 30.8 | 97.0 | -17.6 | -55.4 | -22 |
| | **Smith College Bechtel Environmental Classroom (M)** | Northampton | MA | Education | 2,500 | 11.5 | 36.1 | 17.6 | 55.6 | -6.2 | -19.5 | -6 |
| 2013 | **435 Indio Ave (M)** | Sunnyvale | CA | Office | 31,800 | 13.5 | 42.5 | 28.7 | 90.2 | -15.2 | -47.7 | -23 |
| | PNC Net-Zero Branch L (M) | Ft Lauderdale | FL | Mercantile (Enclosed and Strip Malls) | 4,766 | 59.1 | 186.0 | 64.4 | 203.0 | -5.4 | -17.0 | -5 |
| | Sandy Grove Middle School L (M) | Lumber Bridge | NC | Education | 74,000 | 20.6 | 64.9 | 35.7 | 112.6 | -15.1 | -47.7 | -15 |
| | West Berkeley Public Library L (M) | Berkeley | CA | Public Assembly | 9,399 | 21.7 | 68.3 | 25.5 | 80.4 | -3.8 | -12.1 | -5 |
| 2014 | Brock Environmental Center L (M) | Virginia Beach | VA | Education | 10,500 | 14.6 | 45.9 | 28.6 | 90.1 | -14.0 | -44.2 | -14 |
| | DPR San Francisco Office L (M) | San Francisco | CA | Office | 24,010 | 21.6 | 68.0 | 22.1 | 69.6 | -0.5 | -1.6 | -1 |
| | Willow School L (M) | Gladstone | NJ | Education | 20,000 | 21.8 | 68.8 | 35.0 | 110.2 | -13.1 | -41.4 | -12 |
| 2015 | **Phipps Conservatory SEED Classroom L (M)** | Pittsburgh | PA | Education | 950 | 14.5 | 45.8 | 20.8 | 65.6 | -6.3 | -19.8 | -6 |
| | **Rocky Mountain Institute Innovation Center L (M)** | Basalt | CO | Office | 15,610 | 16.8 | 52.9 | 26.2 | 82.7 | -9.4 | -29.8 | -12 |
| | **Suncoast Credit Union - Bushnell Service Center (M)** | Bushnell | FL | Office | 3,743 | 6.8 | 21.4 | 8.4 | 26.5 | -1.6 | -5.1 | -12 |
| 2016 | Maclay Architects' Office (M) | Waitsfield | VT | Office | 2,568 | 22.1 | 69.5 | 25.0 | 78.6 | -2.9 | -9.1 | -2 |

Building names in **Bold** are new to the List
Buildings with (M) indicate measured data
(L) indicates LEED Certification

## ZERO ENERGY VERIFIED

| YEAR | PROJECT NAME | CITY | STATE | BUILDING TYPE | SIZE (SF) | TOTAL EUI | SOURCE EUI | SITE RPI | SOURCE RPI | NET EUI | NET SOURCE EUI | ZEPI SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2000 | Oberlin College Lewis Center (M) | Oberlin | OH | Education | 13,600 | 31.4 | 98.8 | 36.9 | 116.2 | -5.5 | -17.4 | -5 |
| 2001 | Environmental Tech. Center Sonoma State (M) | Rohnert Park | CA | Education | 2,200 | 2.3 | 7.3 | 3.8 | 11.9 | -1.5 | -4.6 | -2 |
| 2003 | Audubon Center at Debs Park [L] (off grid) (M) | Los Angeles | CA | Other | 5,020 | 17.1 | 53.9 | 17.1 | 53.9 | 0.0 | 0.0 | 0 |
| | Science House (M) | St. Paul | MN | Other | 1,532 | 18.0 | 56.7 | 18.0 | 56.7 | 0.0 | 0.0 | 0 |
| 2004 | Challengers Tennis Club (M) | Los Angeles | CA | Other | 3,500 | 9.0 | 28.1 | 9.0 | 28.4 | 0.0 | -0.3 | 0 |
| 2005 | Hawaii Gateway Energy Center [L] (M) | Kailua-Kona | HI | Other | 5,600 | 28.0 | 88.2 | 31.0 | 97.7 | -3.0 | -9.5 | -4 |
| 2007 | Aldo Leopold Legacy Center [L] (M) | Baraboo | WI | Office | 11,900 | 16.0 | 50.4 | 18.0 | 56.7 | -2.0 | -6.3 | -2 |
| 2008 | **Bagatelos Architectural Glass Solutions (M)** | Sacramento | CA | Other | 63,000 | 17.1 | 53.9 | 17.5 | 55.1 | -0.4 | -1.2 | 0 |
| | Camden Friends Meeting Social Hall [L] (M) | Camden | DE | Public Assembly | 3,121 | 17.9 | 56.3 | 19.7 | 62.0 | -1.8 | -5.7 | -2 |
| | Environmental Nature Center [L] (M) | Newport Beach | CA | Education | 8,535 | 17.6 | 55.4 | 27.7 | 87.3 | -10.1 | -31.9 | -12 |
| | Hudson Valley Clean Energy HQ (M) | Rhinebeck | NY | Other | 5,470 | 9.8 | 30.7 | 10.4 | 32.6 | -0.6 | -1.9 | -1 |
| 2009 | Bacon St. Offices [L] (M) | San Diego | CA | Office | 4,500 | 12.7 | 40.0 | 22.2 | 69.9 | -9.5 | -29.9 | -13 |
| | Watsonville Water Resources Center Admin Building [L] (M) | Watsonville | CA | Office | 16,000 | 51.4 | 160.4 | 117.8 | 371.1 | -66.4 | -210.7 | -101 |
| 2010 | Dovetail Construction HQ Barn [L] (M) | Richmond | VA | Office | 6,800 | | | | | 0.0 | | 0 |
| | NREL Research Support Facility [L] (M) | Golden | CO | Office | 222,000 | 46.1 | 145.2 | 46.1 | 145.2 | 0.0 | 0.0 | 0 |
| 2011 | Anna Maria Historic Green Village [L] (M) | Anna Maria | FL | Other | 9,797 | 28.2 | 88.8 | 34.8 | 109.6 | -6.6 | -20.8 | -7 |
| | Diamond X Ranch Student Intern Center-Malibu (M) | Calabasas | CA | Public Assembly | 3,500 | 31.5 | 99.3 | 35.1 | 110.5 | -3.6 | -11.2 | -4 |
| | EcoCenter at Heron's Head Park (off grid) [L] (M) | San Francisco | CA | Education | 2,400 | | | | | | | |
| 2012 | Leon County Cooperative Extension (M) | Tallahassee | FL | Office | 13,000 | 19.4 | 61.1 | 19.6 | 61.7 | -0.2 | -0.6 | 0 |
| | **Plaza Point [L] (M)** | Arcata | CA | Multifamily | 20,283 | 15.3 | 48.2 | 16.3 | 51.4 | -1.0 | -3.2 | -2 |
| 2013 | IBEW Local 595 Zero Net Energy Center (M) | San Leandro | CA | Education | 45,001 | 15.0 | 47.3 | 21.0 | 66.2 | -6.0 | -18.9 | -7 |
| | Lenawee Intermediate School District Center for a Sustainable Future (M) | Adrian Township | MI | Education | 8,750 | 7.7 | 24.3 | 10.1 | 31.8 | -2.4 | -7.5 | -2 |
| 2014 | **231 Main Street (Alfandre Architecture, EcoBuilders, and Others) [L] (M)** | New Paltz | NY | Office | 5,400 | 45.2 | 142.1 | 52.6 | 165.8 | -7.5 | -23.7 | -9 |
| | DMV Fresno Field Office [L] (M) | Fresno | CA | Office | 19,808 | 23.1 | 72.7 | 43.4 | 136.8 | -20.4 | -64.1 | -28 |
| | Jess Jackson Sustainable Winery Building (M) | Davis | CA | Warehouse and Storage | 8,500 | 1.4 | 4.4 | 2.7 | 8.5 | -1.3 | -4.1 | -5 |
| | Pahranagat National Wildlife Refuge Administrative Office and Visitor Contact Station (M) | Alamo | NV | Public Assembly | 5,000 | 27.8 | 87.7 | 39.9 | 125.5 | -12.0 | -37.8 | -12 |
| 2015 | AP+I Design (M) | Mountain View | CA | Office | 14,300 | 17.9 | 56.3 | 18.4 | 57.8 | -0.5 | -1.5 | -1 |
| | **Bishop O'Dowd High School, Environmental Science Center [L] (M)** | Oakland | CA | Education | 3,275 | 18.0 | 56.5 | 18.6 | 58.7 | -0.7 | -2.2 | -1 |
| | **Discovery Elementary School (M)** | Arlington | VA | Education | 98,000 | 15.5 | 48.8 | 19.1 | 60.2 | -3.6 | -11.4 | -4 |
| | **Frick Environmental Center (M)** | Pittsburgh | PA | Public Assembly | 15,500 | | | | | -2.1 | | -2 |
| | **P.S. 62 (Kathleen Grimm School of Leadership and Sustainability) (M)** | Staten Island | NY | Education | 68,680 | 32.9 | 103.7 | 33.9 | 106.7 | -0.9 | -3.0 | -1 |
| | **Potomac Watershed Center [L] (M)** | Accokeek | MD | Education | 3,971 | 44.2 | 139.4 | 46.0 | 144.8 | -1.7 | -5.4 | -2 |
| | **Sarasota Audubon Nature Center [L] (M)** | Sarasota | FL | Education | 2,500 | 10.3 | 32.4 | 15.6 | 49.1 | -5.3 | -16.7 | -5 |
| 2016 | **Sbrega Technology and Learning Center - Bristol Community College (M)** | Fall River | MA | Education | 50,679 | 45.0 | 116.2 | 60.9 | 191.8 | -15.9 | -75.6 | -15 |
| | **Twenty Mile Farm Administration and Maintenance Building [L] (M)** | Boise | ID | Office | 15,222 | 11.3 | 35.6 | 18.6 | 58.6 | -7.3 | -23.0 | -10 |

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## ZERO ENERGY EMERGING

| YEAR | PROJECT NAME | CITY | STATE | BUILDING TYPE | SIZE (SF) | TOTAL EUI | SOURCE EUI | SITE RPI | SOURCE RPI | NET EUI | NET SOURCE EUI | ZEPI SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2002 | NREL Wind Site Entrance Building (SEB) | Golden | CO | Other | 160 | 70.3 | 221.3 | 24.0 | 75.7 | 46.2 | 145.6 | 45 |
| 2003 | Woods Hole Research Center [L] (M) | Falmouth | MA | Office | 19,200 | 16.0 | 50.4 | 5.0 | 15.8 | 11.0 | 34.6 | 13 |
| 2004 | **Westmont High School Science Education Facility (M)** | Campbell | CA | Education | 12,362 | 44.4 | 140.0 | 0.0 | 0.0 | 44.4 | 140.0 | 55 |
| 2005 | **CDPH Richmond Labs, Building P** [L] | Richmond | CA | Office | 205,153 | | | | | | | |
| | **Delmar High School Science Education Facility** | San Jose | CA | Education | | | | | | | | |
| | Melink Corporation Headquarters [L] (M) | Milford | OH | Office | 30,000 | 12.2 | 38.3 | 5.4 | 16.9 | 6.8 | 21.4 | 9 |
| 2006 | Prospect Sierra Founders Art Center | El Cerrito | CA | Education | 5,000 | | | | | | | |
| 2007 | **Montenay Office Building** | Burnaby | BC | Office | | | | | | | | |
| | Prairie Hill Learning Center | Roca | NE | Education | 2,940 | | | | | | | |
| | **Regent College Library** | Vancouver | BC | Public Assembly | | | | | | | | |
| 2008 | Akron Zoo [L] | Akron | OH | Public Assembly | | | | | | | | |
| | Aquarium of the Pacific Watershed Addition [L] | Long Beach | CA | Education | 2,500 | | | | | | | |
| | **City of Hayward Water Pollution Control Facility** | Hayward | CA | Other | | | | | | | | |
| | Mills River Elementary School [L] (M) | Mills River | NC | Education | 80,820 | 30.4 | 95.8 | 0.0 | 0.0 | 30.4 | 95.8 | 30 |
| 2009 | da Vinci School High Performance Classroom [L] (M) | Portland | OR | Education | 1,485 | 27.1 | 85.4 | 25.0 | 78.8 | 2.1 | 6.6 | 2 |
| | **Design Engineer Headquarters** [L] | Cedar Rapids | IA | Office | 15,747 | | | | | | | |
| | **Millennium Water (Southeast False Creek Olympic Village)** [L] | Vancouver | BC | Multifamily | | | | | | | | |
| | Oak Ridge National Lab Office Building 3156 | Oak Ridge | TN | Office | 6,900 | | | | | | | |
| 2010 | Bagley Classroom University of Minnesota Duluth [L] | Duluth | MN | Education | 2,000 | | | | | | | |
| | Center for Energy Efficient Design [L] | Rocky Mount | VA | Education | 3,600 | | | | | | | |
| | Charlotte-Douglas Airport - Fire Rescue and Fire Facility | Charlotte | NC | Public Order and Safety | | | | | | | | |
| | **Clif Bar Headquarters** [L] | Emeryville | CA | Office | | | | 23.0 | 72.4 | | | |
| | Evie Garrett Dennis E12 Campus (Denver Schools) [L] (M) | Denver | CO | Education | 184,769 | 99.0 | 311.9 | 71.0 | 223.7 | 28.0 | 88.2 | 29 |
| | Green Phoenix Learning Center | Phoenix | AZ | Education | | | | | | | | |
| | Greensburg Kansas Net Zero Community [L] | Greensburg | KS | Multifamily | | | | | | | | |
| | Harmony House for Cats [L] (M) | Chicago | IL | Other | 7,095 | 50.0 | 157.5 | | | 50.0 | | 43 |
| | Lowell Trial Court | Lowell | MA | Other | 245,000 | | | | | | | |
| | Magnify Credit Union [L] (M) | Lakeland | FL | Mercantile (Enclosed and Strip Malls) | 4,151 | 75.0 | 236.3 | 68.0 | 214.2 | 7.0 | 22.1 | 7 |
| | MEC Aviation Campus (M) | Glendale | AZ | Education | 85,000 | 99.0 | 311.9 | 69.0 | 217.4 | 30.0 | 94.5 | 31 |
| | New Bristow Elementary School [L] (M) | Bowling Green | KY | Education | 79,817 | 23.8 | 75.0 | 0.0 | 0.0 | 23.8 | 75.0 | 23 |
| | New Century Elementary School | Fayetteville | NC | Education | 109,758 | | | | | | | |
| | Palmetto Bay Municipal Center [L] | Palmetto Bay | FL | Office | 25,000 | | | | | | | |
| | The Andrew | New York City | NY | Multifamily | | | | | | | | |
| | Turkey Foot Middle School (M) | Edgewood | KY | Education | 133,000 | 22.0 | 69.2 | 11.0 | 34.7 | 11.0 | 34.5 | 11 |

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## ZERO ENERGY EMERGING

| YEAR | PROJECT NAME | CITY | STATE | BUILDING TYPE | SIZE (SF) | TOTAL EUI | SOURCE EUI | SITE RPI | SOURCE RPI | NET EUI | NET SOURCE EUI | ZEPI SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2011 | Broadway High School [L] | San Jose | CA | Education | | | | | | | | |
| | Butte Glenn Community College | Oroville | CA | Education | 800,000 | 38.9 | 122.6 | 27.2 | 85.7 | 11.7 | 36.9 | 13 |
| | Centre for Interactive Research on Sustainability (CIRS) [L] | Vancouver | BC | Education | 76,223 | | | | | | | |
| | Desert Research Institute Renewable Energy Experimental Facility [L] | Reno | NV | Other | 1,400 | | | | | | | |
| | **Eastside Fire & Rescue Station 72** [L] | Issaquah | WA | Public Order and Safety | 11,400 | | | | | | | |
| | EcoFlats Building | Portland | OR | Multifamily | 19,860 | | | | | | | |
| | Frito-Lay Casa Grande Snack Factory [L] | Casa Grande | AZ | Other | 188,000 | | | | | | | |
| | George V Leyva Middle School Admin Bldg | San Jose | CA | Office | 9,200 | 34.0 | 107.1 | 25.0 | 78.8 | 9.0 | 28.3 | 14 |
| | Glenn York Elementary School | Pearland | TX | Education | 96,297 | | | | | | | |
| | Highland Chevron ExtraMile Gas Station | Beaverton | OR | Mercantile (Retail Other than Mall) | 6,000 | | | | | | | |
| | June Key Delta Community Center | Portland | OR | Public Assembly | 1,631 | | | | | | | |
| | Lady Bird Johnson Middle School | Irving | TX | Education | 152,000 | | | | | | | |
| | McCormick Spice Net Zero Warehouse (M) | Belcamp | MD | Warehouse and Storage | 369,000 | 38.3 | 120.6 | 20.0 | 63.0 | 18.3 | 57.6 | 50 |
| | Mokelumne Watershed Headquarters (M) | Campo Seco | CA | Office | 5,675 | 10.4 | 32.8 | 9.8 | 30.9 | 0.6 | 1.9 | 1 |
| | Mutual Housing at the Highlands | Sacramento | CA | Multifamily | | | | | | | | |
| | NASA Propellants Facility at Kennedy Space Center [L] (M) | Titusville | FL | Office | 9,540 | 43.6 | 137.3 | 34.0 | 107.1 | 9.6 | 30.2 | 12 |
| | **Nazlini Community School Fire Station** | Nazlini | AZ | Public Order and Safety | 1,900 | | | | | | | |
| | Parris Island Child Development Center | Parris Island | SC | Other | 25,775 | 58.0 | 182.6 | 58.0 | 182.6 | 0.0 | 0.0 | 0 |
| | Pierce College Maintenance & Operations Facility and Net-Zero Central Plant [L] (M) | Los Angeles | CA | Education | 42,000 | 16.0 | 50.4 | 8.0 | 25.2 | 8.0 | 25.2 | 9 |
| | Portland Community College Newberg Center [L] | Newberg | OR | Education | 13,000 | | | | | | | |
| | Redding School for the Arts [L] (M) | Redding | CA | Education | 77,091 | 16.0 | 50.4 | 8.0 | 25.2 | 8.0 | 25.2 | 9 |
| | Rice Fergus Miller Office & Studio [L] (M) | Bremerton | WA | Office | 39,000 | 21.0 | 66.2 | 3.0 | 9.5 | 18.0 | 56.7 | 25 |
| | San Ysidro Land Port of Entry [L] | San Diego | CA | Other | 200,000 | | | | | | | |
| | Sangre de Cristo PK-12 School [L] (M) | Mosca | CO | Education | 8,000 | 26.0 | 81.9 | 0.0 | 0.0 | 26.0 | 81.9 | 25 |
| | VanDusen Botanical Garden Visitor Centre [L] | Vancouver | BC | Public Assembly | 19,000 | 35.2 | 110.9 | 10.2 | 32.1 | 25.0 | 78.8 | 27 |
| | West Irving Library [L] | Irving | TX | Public Assembly | 25,876 | | | | | | | |
| | Wilson Air Center - Chattanooga Airport - West Side Aviation Development [L] | Chattanooga | TN | Other | 9,015 | | | | | | | |
| 2012 | Abondance - Montreal Multi-Family Net Zero | Montreal | QC | Multifamily | 3,048 | | | | | | | |
| | Aster Place | Eureka | CA | Multifamily | | | | | | | | |
| | **Blanchet House of Hospitality** [L] | Portland | OR | Multifamily | 35,000 | 22.0 | 69.3 | | | | | |
| | Clos du Bois Winery | Sonoma | CA | Office | | | | | | | | |
| | Colonel Smith Middle School | Fort Huachuca | AZ | Education | 88,693 | | | | | | | |
| | Conrad N. Hilton Foundation [L] | Agoura Hills | CA | Office | 22,240 | 22.0 | 69.3 | 24.0 | 75.6 | -2.0 | -6.3 | -3 |
| | Fireside Elementary (M) | Phoenix | AZ | Education | 88,664 | 51.0 | 160.7 | 41.1 | 129.5 | 9.9 | 31.2 | 10 |

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## ZERO ENERGY EMERGING

| YEAR | PROJECT NAME | CITY | STATE | BUILDING TYPE | SIZE (SF) | TOTAL EUI | SOURCE EUI | SITE RPI | SOURCE RPI | NET EUI | NET SOURCE EUI | ZEPI SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2012 | Franklin Regional Transit Center | Greenfield | MA | Other | 24,000 | | | | | | | |
| | High Tech Middle North County [L] | San Diego | CA | Education | 27,058 | | | | | | | |
| | Jody Richards Elementary School (M) | Bowling Green | KY | Education | 80,904 | 20.0 | 63.0 | 0.0 | 0.0 | 20.0 | 63.0 | 20 |
| | Kaupuni Village | Aiea | HI | Multifamily | | | | | | | | |
| | **Kohler Environmental Center** [L] | Wallingford | CT | Education | 31,325 | | | | | | | |
| | La Valentina North (M) | Sacramento | CA | Multifamily | 19,875 | 31.0 | 97.7 | 6.0 | 18.9 | 25.0 | 78.8 | 39 |
| | Maharishi University of Management Sustainable Living Center | Fairfield | IA | Education | 6,900 | 9.9 | 31.2 | 10.4 | 32.8 | -0.5 | -1.6 | 0 |
| | McGrory Glass Facility | Paulsboro | NJ | Warehouse and Storage | 108,000 | | | | | | | |
| | Morphosis Architecture Studio (M) | Culver City | CA | Office | 11,600 | 24.0 | 75.6 | 20.0 | 63.0 | 4.0 | 12.6 | 6 |
| | North Shore Community College Health and Student Services Building [L] | Danvers | MA | Education | 58,000 | | | | | | | |
| | Orangewood Middle School and Studio Project | Phoenix | AZ | Education | | | | | | | | |
| | Paisano Green Community [L] | El Paso | TX | Multifamily | 55,202 | | | | | | | |
| | **Playa Vista Elementary (M)** | Los Angeles | CA | Education | | 28.3 | 89.1 | 20.9 | 65.8 | 7.4 | 23.3 | 9 |
| | Sail Lofts | Thomaston | ME | Multifamily | 7,500 | | | | | | | |
| | San Luis National Wildlife Refuge Complex HQ and Visitor Ctr. [L] | Los Banos | CA | Education | 16,500 | | | | | | | |
| | Skaneateles Village Hall [L] | Skaneateles | NY | Office | 3,723 | 47.0 | 148.1 | 0.0 | 0.0 | 47.0 | 148.1 | 57 |
| | St Petersburg Net Zero Office (Sierra Club) [L] | St Petersburg | FL | Office | 5,000 | | | | | | | |
| | Student Services Center at Mesa College [L] | San Diego | CA | Education | 85,000 | | | | | | | |
| | Sweetwater Spectrum Community (M) | Sonoma | CA | Multifamily | 15,990 | 9.4 | 29.6 | 4.4 | 13.7 | 5.1 | 15.9 | 9 |
| | UC Davis West Village (eco district) | Davis | CA | Education | | 50.0 | 157.5 | 0.0 | 0.0 | 50.0 | 157.5 | 58 |
| | UniverCity Childcare Centre | Burnaby | BC | Service | 5,690 | | | | | | | |
| | Valatie Free Library | Hudson River Valley | NY | Public Assembly | 750 | | | | | | | |
| | **Vernonia School** | Vernonia | OR | Education | 135,000 | 35.4 | 111.6 | | | | | |
| | William S Hart High School District | Santa Clarita | CA | Education | | | | | | | | |
| | Zero Energy Research Lab at University of North Texas | Denton | TX | Education | 1,200 | | | | | | | |
| 2013 | 64 Catherine Street [L] | Boston | MA | Multifamily | 1,416 | | | | | | | |
| | **Austin Gardens Environmental Education Center** [L] | Oak Park | IL | Public Assembly | 2,100 | | | | | | | |
| | Beckstoffers Mill Senior Housing Complex | Richmond | VA | Multifamily | 8,000 | | | | | | | |
| | Bennington Superior Court & State Office Building (M) | Bennington | VT | Office | 65,000 | | | | | 26.1 | | 31 |
| | Blackford School Multi-Use Building | San Jose | CA | Education | | | | | | | | |
| | Boy Scouts of America The Summit Bechtel Reserve Treehouse | Glen Jean | WV | Public Assembly | 5,000 | | | | | | | |
| | Bright 'n Green 'Sandy Resistant' Mixed Use Project [L] | Brooklyn | NY | Multifamily | | | | | | | | |
| | **Burr and Burton Academy Mountain Campus** [L] | Peru | VT | Education | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2013 | **Castlemont Elementary School Multipurpose Building** | Campbell | CA | Education | | | | | | | | |
| | Centre of Excellence at Okanagan College | Kelowna | BC | Education | 61,100 | | | | | | | |
| | Church Hill Townhomes [L] | Fortuna | CA | Multifamily | | | | | | | | |
| | College of the Desert West Valley Campus - Phase 1 | Palm Springs | CA | Education | 50,000 | 22.0 | 69.3 | 24.0 | 75.6 | -2.0 | -6.3 | -2 |
| | Delta Building - NYC | Brooklyn | NY | Other | 2,700 | | | | | | | |
| | Exploratorium Pier 15 [L] (M) | San Francisco | CA | Other | 330,000 | 42.0 | 132.3 | 36.0 | 113.4 | 6.0 | 18.9 | 7 |
| | Forest Service's Technology and Development Center | San Dimas | CA | Office | 32,800 | | | | | | | |
| | Foundry Court by Nexus Homes | Philadelphia | PA | Multifamily | | | | | | | | |
| | General Aviation Terminal [L] | Appleton | WI | Other | 8,000 | | | 13.0 | 41.0 | | | |
| | Green Leaf Inn | Delavan | WI | Lodging | | | | | | | | |
| | **Hollis Montessori School (M)** | Hollis | NH | Education | 19,100 | 11.3 | 35.6 | | | | | |
| | Keene State College Technology, Design and Safety Building | Keene | NH | Education | 53,000 | | | | | | | |
| | Lane Community College, Downtown Academic Center [L] (M) | Eugene | OR | Education | 90,000 | 25.0 | 78.8 | 0.0 | 0.0 | 25.0 | 78.8 | 27 |
| | Los Guilicos Correctional Facility (M) | Santa Rosa | CA | Public Order and Safety | 149,000 | 23.9 | 75.3 | 1.1 | 3.5 | 22.8 | 71.8 | 28 |
| | **MetroWest High School** | | CA | Education | | | | | | | | |
| | **OUSD Downtown Educational Complex** | Oakland | CA | Education | | | | | | | | |
| | Park Place | Missoula | MT | Other | 4,295 | | | | | | | |
| | Park Slope Brooklyn ZNE Brownstone | Brooklyn | NY | Multifamily | 7,000 | | | | | | | |
| | Rohner Village | Fortuna | CA | Multifamily | | | | | | | | |
| | Salt Lake City Public Safety Building [L] (M) | Salt Lake City | UT | Public Order and Safety | 175,480 | 70.1 | 220.9 | 34.8 | 109.7 | 35.3 | 111.2 | 34 |
| | **Sherman Oaks Elementary School Multiuse Facility** | Campbell | CA | Education | | | | | | | | |
| | SMUD Net Zero Campus - East Campus-Operations Center [L] | Sacramento | CA | Office | 350,000 | | | | | | | |
| | Sokol Blosser Winery Tasting Room [L] | Dundee | OR | Mercantile (Retail Other than Mall) | 5,700 | 24.0 | 75.6 | 0.0 | 0.0 | 24.0 | 75.6 | 27 |
| | Solterra EcoLuxury Apartments [L] | San Diego | CA | Multifamily | | | | | | | | |
| | Taliesin West Net Zero Retrofit - Frank Lloyd Wright | Scottsdale | AZ | Public Assembly | | | | | | | | |
| | **TD Bank ZNE Branch Prototype** | Mississauga | ON | Service | 1,590 | | | | | | | |
| | UC San Diego J Craig Venter Institute [L] | La Jolla | CA | Education | 40,079 | 53.2 | 167.6 | 63.8 | 201.1 | -10.6 | -33.5 | -12 |
| | University of South Carolina Darla Moore School of Business [L] | Columbia | SC | Education | 250,000 | | | | | | | |
| | VF Outdoor HQ [L] | Alameda | CA | Office | 160,000 | | | | | | | |
| | Walgreens Evanston Store [L] | Evanston | IL | Mercantile (Enclosed and Strip Malls) | 14,000 | 48.7 | 153.4 | 54.0 | 170.1 | -5.3 | -16.7 | -4 |
| | Wayne Aspinall Federal Building and Courthouse [L] (M) | Grand Junction | CO | Public Order and Safety | 41,562 | 21.0 | 66.2 | 15.0 | 47.3 | 6.0 | 18.9 | 6 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | California Department of Motor Vehicles | Sacramento | CA | Office | 520,000 | | | | | | | |
| | Camp Parks | Dublin | CA | Other | | | | | | | | |
| | **Catherine Houghton Arts Center** | Bethehem | NH | Education | | | | | | | | |
| | Chatham University Eden Hall Campus | Richlandtown | PA | Education | | | | | | | | |
| | Chemeketa Community College Health Science Complex | Salem | OR | Education | 70,000 | | | | | | | |
| | Clarum Homes Headquarters | Palo Alto | CA | Office | | | | | | | | |
| | Cottages at Cypress L | Fort Bragg | CA | Multifamily | | | | | | | | |
| | Craftsbury Outdoor Center Lodge | Craftsbury Common | VT | Lodging | | | | | | | | |
| | Dixon Valley Glen L | Dixon | CA | Multifamily | | | | | | | | |
| | East Bay MET School | Newport | RI | Education | 16,800 | | | | | | | |
| | Electrical and Computer Engineering Building and University of Illinois | Champaign | IL | Education | 250,000 | | | | | | | |
| | **Environmental Innovation Center** L | San Jose | CA | Education | 46,000 | 23.8 | 75.0 | | | | | |
| | Ewa Elementary School Portable Classroom - Oahu | Aiea | HI | Education | 13,000 | | | | | | | |
| | Family Pet Hospital | Clovis | CA | Health Care (Outpatient) | 8,700 | | | | | | | |
| | First Housing Development Corp | Tampa | FL | Office | 17,000 | | | | | | | |
| | Glumac Office Aon Center Floor 23 | Los Angeles | CA | Office | 17,500 | | | | | | | |
| | Gundersen Health System L | La Crosse | WI | Health Care (Inpatient) | | | | | | | | |
| 2014 | Kaiser Permanente Antelope Valley Medical Office Building L (M) | Lancaster | CA | Office | 136,800 | 31.0 | 97.7 | 6.0 | 18.9 | 25.0 | 78.8 | 35 |
| | Kalaeloa NZE Community | Honolulu | HI | Multifamily | | | | | | | | |
| | La Escuelita Education Center | Oakland | CA | Education | 123,000 | | | | | | | |
| | LPL Financial Center at La Jolla Commons L | San Diego | CA | Office | 415,000 | | | | | | | |
| | Market One L | Des Moines | IA | Office | 50,000 | | | | | | | |
| | Massachusetts Division of Fisheries & Wildlife - Field Headquarters Building L | Westborough | MA | Office | 45,000 | 22.6 | 71.2 | 0.0 | 0.0 | 22.6 | 71.2 | 27 |
| | MEC Northeast Campus (M) | Phoenix | AZ | Education | 101,081 | 71.5 | 225.2 | 48.1 | 151.5 | 23.4 | 73.7 | 24 |
| | Monarch School Classroom L | Houston | TX | Education | 1,120 | | | | | | | |
| | Oak Park High School | Oak Park | CA | Education | 960 | | | | | | | |
| | Odyssey Elementary School | Woods Cross | UT | Education | 84,000 | | | | | | | |
| | **Perkins + Will Office** L | San Francisco | CA | Office | 21,170 | | | | | | | |
| | Pflugerville Elementary School | Pflugerville | TX | Education | 93,000 | | | | | | | |
| | Richard J. Lee Elementary School L (M) | Coppell | TX | Education | 95,633 | 21.2 | 61.8 | 18.8 | 59.3 | 2.3 | 2.5 | 2 |
| | San Bernardino Community College District | Garden Grove | CA | Education | | | | | | | | |
| | SFO Airfield Operations Terminal - VIP Center L | San Mateo | CA | Other | 8,300 | | | | | | | |
| | Solana Ranch Elementary School | San Diego | CA | Education | 68,000 | | | | | | | |
| | Student Success and Retention Center at East Los Angeles College L | Los Angeles | CA | Education | 136,000 | | | | | | | |
| | The Village at Beechwood | Lancaster | CA | Multifamily | 22,960 | | | | | | | |

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## ZERO ENERGY EMERGING

| YEAR | PROJECT NAME | CITY | STATE | BUILDING TYPE | SIZE (SF) | TOTAL EUI | SOURCE EUI | SITE RPI | SOURCE RPI | NET EUI | NET SOURCE EUI | ZEPI SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2014 | UC Santa Barbara Recreation Center [L] | Santa Barbara | CA | Education | 140,000 | | | | | | | |
| | University of Minnesota Itasca Biological Station and Laboratories | Lake Itasca | MN | Education | 10,900 | | | | | | | |
| | **Varennes Library [L] (M)** | Varennes | QC | Public Assembly | 24,000 | 14.5 | 45.7 | | | | | |
| | **Zenger Farms Community Building** | Portland | OR | Public Assembly | 8,500 | | | | | | | |
| 2015 | 415 Mathilda (M) | Sunnyvale | CA | Office | 33,750 | 7.1 | 22.4 | 6.6 | 20.9 | 0.5 | 1.5 | 1 |
| | Ankeny Row Townhomes | Portland | OR | Multifamily | 8,500 | | | | | | | |
| | Archimania Office | Memphis | TN | Office | 5,000 | | | | | | | |
| | Brinkmann True Value | Miller Place | NY | Mercantile (Retail Other than Mall) | | | | | | | | |
| | CA Lottery District Office [L] | Santa Fe Springs | CA | Office | 12,840 | 22.1 | 69.8 | 22.2 | 70.1 | -0.1 | -0.3 | 0 |
| | **CA Lottery Southern Distribution Center [L]** | Rancho Cucamonga | CA | Office | 60,600 | 12.0 | 37.8 | 0.0 | 0.0 | 12.0 | 37.8 | 17 |
| | **Carlos Ortega Villas** | Palm Desert | CA | Multifamily | | | | | | | | |
| | Cincinnati Police Department - District 3 [L] (M) | Cincinnati | OH | Public Order and Safety | 39,000 | 26.6 | 83.8 | 34.0 | 107.1 | -7.4 | -23.3 | -7 |
| | **Dearing Elementary School** | Pflugerville | TX | Education | 93,000 | | | | | | | |
| | Delta Americas Headquarters [L] (M) | Fremont | CA | Office | 200,000 | 50.1 | 157.7 | 36.7 | 115.6 | 13.4 | 42.1 | 19 |
| | Dr. Martin Luther King, Jr. School | Cambridge | MA | Education | 140,000 | | | | | | | |
| | Friends School of Portland | Cumberland Foreside | ME | Education | 15,000 | | | | | | | |
| | Grantham Middle School | Goldsboro | NC | Education | 86,400 | | | | | | | |
| | Grass Education Center | Washington DC | MD | Education | 3,800 | | | | | | | |
| | Greenway Building | Arcata | CA | Office | 40,000 | | | | | | | |
| | **Gresham Wastewater Plant** | Gresham | OR | Other | | | | | | | | |
| | Hanover Page Mill Building [L] | Palo Alto | CA | Office | 86,253 | 30.1 | 85.8 | 25.8 | 81.3 | 4.3 | 4.5 | 7 |
| | Indigo Hammond & Playle Architects Office (M) | Davis | CA | Office | 4,000 | 4.4 | 13.9 | | | | | |
| | Langston Terrace Dwellings | Washington DC | DC | Multifamily | | | | | | | | |
| | Los Angeles Harbor College Sciences Complex [L] | Los Angeles | CA | Education | 71,800 | 5.2 | 16.3 | 5.8 | 18.3 | -0.6 | -2.0 | -1 |
| | **Marine Corps Logistics Base (MCLB) [L]** | Albany | GA | Other | | | | | | | | |
| | Monterey Bay CSU - Academic Building 2 | Seaside | CA | Education | 57,331 | | | | | | | |
| | Mosaic Centre for Conscious Community and Commerce [L] | Edmonton | AB | Public Assembly | 30,000 | | | | | | | |
| | Muse School | Calabasas | CA | Education | | | | | | | | |
| | Mutual Housing at Spring Lake [L] | Woodland | CA | Multifamily | 64,600 | | | | | | | |
| | **MZ Condo-Townhomes** | Scottsdale | AZ | Multifamily | | | | | | | | |
| | Net Zero Plus Electrical Training Institute [L] | Los Angeles | CA | Education | 142,000 | | | | | | | |
| | **Parkview Place** | Davis | CA | Multifamily | 9,300 | | | | | | | |
| | **Picuris Pueblo Fire Station** | Penasco | NM | Public Order and Safety | 2,640 | | | | | | | |
| | R W Kern Center at Hampshire College | Amherst | MA | Education | 16,950 | 23.2 | 73.1 | 26.6 | 83.8 | -3.4 | -10.7 | -3 |
| | **Resort at Playa Vista [L]** | Santa Monica | CA | Public Assembly | 25,000 | | | | | | | |
| | **SAAS Stream [L]** | Seattle | WA | Education | 32,156 | 32.3 | 101.7 | 1.4 | 4.4 | 30.9 | 97.3 | 33 |
| | **Seasons At Ontario Senior Community** | Ontario | CA | Multifamily | | | | | | | | |

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| YEAR | PROJECT NAME | CITY | STATE | BUILDING TYPE | SIZE (SF) | TOTAL EUI | SOURCE EUI | SITE RPI | SOURCE RPI | NET EUI | NET SOURCE EUI | ZEPI SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015 | Sierra Nevada Aquatic Research Lab & Multiuse Classrom [L] | Mammoth Lakes | CA | Education | 2,696 | | | | | | | |
| | Spring Creek Middle School | Seven Springs | NC | Education | 96,000 | | | | | | | |
| | Stanford Central Energy Facility Admin Building | Stanford | CA | Office | | | | | | | | |
| | Sun Baths | Ann Arbor | MI | Other | 10,000 | | | | | | | |
| | University of Hawaii at Manoa Net Zero Classrooms | Honolulu | HI | Education | 1,500 | | | | | | | |
| | Village in the Bosque Apartments [L] | Bernalillo | NM | Multifamily | | | | | | | | |
| | West Hollywood City Hall Automated Parking Garage | West Hollywood | CA | Other | | | | | | | | |
| | Yarrow Village | Fortuna | CA | Multifamily | | | | | | | | |
| | Zero Energy Nanotechnology Building at SUNY Poly | Utica | NY | Education | 356,000 | | | | | | | |
| 2016 | Arch Nexus SAC Office [L] | Sacramento | CA | Office | 8,200 | 36.3 | 114.4 | 39.7 | 125.1 | -3.4 | -10.7 | -5 |
| | **Beneficial State Bank** | Oakland | CA | Mercantile (Retail Other than Mall) | | | | | | | | |
| | BEST Center at Laney College | Oakland | CA | Education | | | | | | | | |
| | **Bluebonnet Studios Mixed-Use Commons** | Austin | TX | Multifamily | 86,000 | | | | | | | |
| | Building Positive: Four in One Prototype | Kansas City | MO | Other | 43,000 | | | | | | | |
| | California DOT SFOBB Phase 2 Warehouse | Oakland | CA | Warehouse and Storage | 28,000 | | | | | | | |
| | **City Place Development** | Santa Clara | CA | Other | | | | | | | | |
| | Cowhorn Vineyard | Jacksonville | OR | Other | 2,200 | | | | | | | |
| | Creamery Row | Arcata | CA | Multifamily | | | | | | | | |
| | Culver City Library | Los Angeles | CA | Public Assembly | | | | | | | | |
| | **DPR Office Washington DC** | Reston | VA | Office | 20,000 | | | | | | | |
| | Egan Junior High School | Los Altos | CA | Education | 17,000 | | | | | | | |
| | **Equinox Apartments** | Scottsdale | AZ | Multifamily | | | | | | | | |
| | Fair Oaks Zero Net Energy Office | Pasadena | CA | Office | 12,000 | | | | | | | |
| | Foothill College Sunnyvale Center [L] | Los Altos | CA | Education | 50,000 | | | | | | | |
| | Fort Hunter Liggett [L] | Jolon | CA | Other | | 23.9 | 75.3 | | | 23.9 | | 30 |
| | Grow Community | Bainbridge Island | WA | Multifamily | | | | | | | | |
| | **Hitchcock Center for the Environment** | Amherst | MA | Education | 9,000 | | | | | | | |
| | Imperial Beach Branch Library [L] | Imperial Beach | CA | Public Assembly | 14,000 | | | | | | | |
| | Indian Creek Nature Center | Cedar Rapids | IA | Other | 12,000 | | | | | | | |
| | **Ironhorse Lodge** | Prineville | OR | Multifamily | 27,000 | | | | | | | |
| | Irvine High School Campus Center | Irvine | CA | Education | | | | | | | | |
| | Kaiser Permanente San Jose Medical Office Building | San Jose | CA | Office | | | | | | | | |
| | King County Housing Authority Administration Building | Tukwila | WA | Office | 36,000 | 28.0 | 88.2 | 0.0 | 0.0 | 28.0 | 88.2 | 40 |
| | **King Street L (M)** | Seattle | WA | Office | 3,680 | | | | | | | |
| | LinkedIn Offices [L] | Sunnyvale | CA | Office | 40,000 | 30.0 | 94.5 | 35.0 | 110.3 | -5.0 | -15.8 | -8 |
| | Lowry Redevelopment Multi-Family ZNE | Denver | CO | Multifamily | | | | | | | | |
| | **Lumbee River EMC** | Raeford | NC | Office | 15,000 | 18.0 | 56.7 | | | | | |

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| YEAR | PROJECT NAME | CITY | STATE | BUILDING TYPE | SIZE (SF) | TOTAL EUI | SOURCE EUI | SITE RPI | SOURCE RPI | NET EUI | NET SOURCE EUI | ZEPI SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2016 | McClellan Ranch (M) | Cupertino | CA | Other | 3,265 | 20.9 | 65.7 | 11.6 | 36.6 | 9.3 | 29.1 | 12 |
| | **MEC SW Campus Phase I & II (M)** | Buckeye | AZ | Education | 77,565 | 39.0 | 122.9 | 25.2 | 79.4 | 13.8 | 43.5 | 14 |
| | Montpelier Multi Modal Transit Center | Montpelier | VT | Other | 35,000 | | | | | | | |
| | Mt. San Antonio College L | Walnut | CA | Education | 20,610 | | | | | | | |
| | **Newcastle Elementary** | Newcastle | CA | Education | | | | | | | | |
| | Olympic & Olive Apartments | Los Angeles | CA | Multifamily | | | | | | | | |
| | **Ontario Association of Architects HQ** | Toronto | ON | Office | | | | | | | | |
| | Passive House Apartments | Steamboat Springs | CO | Multifamily | | | | | | | | |
| | **Porter Drive Office Building** | Palo Alto | CA | Office | 96,626 | 24.5 | 77.2 | 21.0 | 66.2 | 3.5 | 11.0 | 5 |
| | **REI Distribution Center** | Goodyear | AZ | Warehouse and Storage | 400,000 | | | | | | | |
| | SFO Firehouse #3 | San Mateo | CA | Other | 20,000 | | | | | | | |
| | Socastee Elementary School | Myrtle Beach | SC | Education | | | | | | | | |
| | Socastee Middle School | Myrtle Beach | SC | Education | | | | | | | | |
| | Sol-Lux Alpha (685 Florida Street) | San Francisco | CA | Multifamily | 7,000 | | | | | | | |
| | SunCommon Headquarters | Waterbury | VT | Office | 8,800 | 17.5 | 55.1 | 17.5 | 55.1 | 0.0 | 0.0 | 0 |
| | Sustainable Energy Fund | Allentown | PA | Office | 15,000 | | | | | | | |
| | Tesla Gigafactory | Reno | NV | Other | 10,000,000 | | | | | | | |
| | **Toyota Dealership Corvallis** | Corvallis | OR | Other | 34,800 | | | | | | | |
| | Vista Grande Elementary School | Rancho Palos Verdes | CA | Education | | | | | | | | |
| | Waitsfield Town Offices | Waitsfield | VT | Office | 4,700 | 13.2 | 41.5 | 13.2 | 41.5 | 0.0 | 0.0 | 0 |
| | Walden Pond Visitor Center L | Boston | MA | Public Assembly | 5,680 | | | | | | | |
| | William Penn Hotel | San Francisco | CA | Lodging | 41,836 | | | | | | | |
| | **Woodside Priory School** | Portola Valley | CA | Education | 13,000 | | | | | | | |
| | **Wyandot Lodge** | Columbus | OH | Public Assembly | 5,800 | | | | | | | |
| | Xilinx HQ Renovation | San Jose | CA | Office | 100,000 | 37.0 | 116.5 | 30.7 | 96.7 | 6.3 | 19.8 | 10 |
| 2017 | 380 Pastoria Office | Sunnyvale | CA | Office | 45,383 | 25.7 | 80.8 | 31.0 | 97.8 | -5.4 | -17.0 | -8 |
| | **47951 Westinghouse** | Fremont | CA | Other | 82,408 | | | | | | | |
| | **Amenities Building, Towers at Great America** | Santa Clara | CA | Food Service | 23,930 | 174.2 | 548.8 | 342.3 | 1,078.4 | -168.1 | -529.6 | -26 |
| | **Arizona State University Student Pavilion** | Tempe | AZ | Education | 74,653 | 40.2 | 126.6 | 16.3 | 51.5 | 23.8 | 75.1 | 25 |
| | **Borrego Springs Library and Park** | San Diego | CA | Public Assembly | 13,500 | | | | | | | |
| | Boulder Commons | Boulder | CO | Other | 101,000 | 24.1 | 75.9 | 25.3 | 79.7 | -1.2 | -3.8 | -1 |
| | **Clatsop Community College - Patriot Hall** | Astoria | OR | Education | 36,000 | | | | | | | |
| | **College of Continuing & Professional Education (CCPE)** | Long Beach | CA | Education | 35,000 | | | | | | | |
| | Cornell Tech NYC Academic Building - Roosevelt Island | New York City | NY | Education | 158,000 | 31.9 | 100.5 | 0.0 | 0.0 | 31.9 | 100.5 | 31 |
| | **Crotty Hall - Umass** | Amherst | MA | Education | 16,800 | | | | | | | |
| | Housing and Community Development Office | San Diego | CA | Office | 29,408 | 26.1 | 82.1 | 30.2 | 95.0 | -4.1 | -12.9 | -6 |
| | **IBEW Local 58** | Detroit | MI | Office | 33,000 | | | | | | | |
| | **Kaiser Permanente Baldwin Hills Medical Office Building** | Los Angeles | CA | Office | 100,000 | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2017 | **Kaiser Permanente Santa Rosa Medical Office Building** | Santa Rosa | CA | Office | 87,300 | 30.0 | 94.6 | 30.1 | 94.8 | -0.1 | -0.2 | 0 |
| | Makers Quarter Block D | San Diego | CA | Office | 52,974 | 46.8 | 147.4 | 28.2 | 88.8 | 18.6 | 58.6 | 26 |
| | **Marin Academy Science & Innovation Center** | San Raphael | CA | Education | 20,040 | 38.4 | 121.1 | 61.8 | 194.6 | -23.3 | -73.5 | -29 |
| | Mark Day School | San Raphael | CA | Education | 11,917 | 27.6 | 86.9 | 55.6 | 175.1 | -28.0 | -88.2 | -35 |
| | Memphis Welcome Center | Memphis | TN | Public Assembly | | | | | | | | |
| | Myrtle Beach Middle School | Myrtle Beach | SC | Education | | | | | | | | |
| | **Ocean Discovery Institute** | San Diego | CA | Education | | | | | | | | |
| | Ohlone Campus Core Replacement Project | Fremont | CA | Education | | | | | | | | |
| | Oregon Zoo Ed Center [L] | Portland | OR | Public Assembly | 20,000 | | | | | | | |
| | OUSD Madison Middle School | Oakland | CA | Education | 35,000 | 14.9 | 46.9 | 17.6 | 55.5 | -2.7 | -8.6 | -3 |
| | **Oxford County Waste Management Administration Building** | Salford | ON | Office | 4,000 | | | | | | | |
| | Palomar Community College | San Marcos | CA | Education | | | | | | | | |
| | **Pitzer College Redford Conservancy** | Claremont | CA | Education | | | | | | | | |
| | **Planet Fitness - St. Petersburg** | St. Petersburg | FL | Public Assembly | 20,000 | | | | | | | |
| | **Ralston Intermediate Multipurpose Building** | Garden Grove | CA | Education | | | | | | | | |
| | Salt Lake County District Attorney Office | Salt Lake City | UT | Office | | | | | | | | |
| | Santiago High School Science Building | Garden Grove | CA | Education | 8,000 | 26.0 | 81.9 | 0.0 | 0.0 | 26.0 | 81.9 | 30 |
| | SFO Ground Transportation Unit Facility | San Mateo | CA | Other | 14,000 | | | | | | | |
| | Sonoma Academy Grange Building | Santa Rosa | CA | Education | 130,000 | | | | | | | |
| | St. James Intermediate School | Myrtle Beach | SC | Education | | | | | | | | |
| | The Roosevelt | Tempe | AZ | Multifamily | | | | | | | | |
| | **TreeHouse Flagship Store** | Dallas | TX | Mercantile (Retail Other than Mall) | 25,000 | | | | | | | |
| | **UC Davis California Avenue Lecture Hall** | Davis | CA | Education | | | | | | | | |
| | UC Santa Barbara Student Services Buildings | Santa Barbara | CA | Education | | | | | | | | |
| | **United Therapeutics Jax Net Zero Center** | Jacksonville | FL | Office | 75,000 | | | | | | | |
| | **West Dorm, Wolf Ridge Environmental Learning Center** | Finland | MN | Multifamily | 16,500 | 31.0 | 97.7 | | | | | |
| | **Wilde Lake Middle School** | Ellicott City | MD | Education | 106,221 | | | | | | | |
| | **Yellowhawk Tribal Health Center** | Pendleton | OR | Health Care (Outpatient) | 63,000 | | | | | | | |
| | **Yosemite Community College District** | Modesto | CA | Education | | | | | | | | |
| | **Z-Stay** | Denver | CO | Office | 1,870 | 37.0 | 116.6 | 32.8 | 103.3 | 4.2 | 13.3 | 6 |
| 2018 | American Geophysical Union HQ | Washington DC | DC | Office | 62,000 | | | | | | | |
| | **Atherton City Hall** | Atherton | CA | Office | | | | | | | | |
| | CA State Poly Tech University | Pomona | CA | Education | 138,000 | 17.0 | 53.4 | 23.6 | 74.2 | -6.6 | -20.8 | -8 |
| | Carolina Forest Middle School | Myrtle Beach | SC | Education | | | | | | | | |
| | **City of Dublin Public Safety Complex** | Dublin | CA | Public Order and Safety | | | | | | | | |
| | City of Hayward 21st Century Library | Hayward | CA | Public Assembly | 57,000 | 35.6 | 112.1 | 43.2 | 136.1 | -7.6 | -24.0 | -7 |
| | **City of Santa Clara Swim Center** | Santa Clara | CA | Public Assembly | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2018 | **Durham Education Center** | Tigard | OR | Education | 17,000 | 19.0 | 59.9 | 28.7 | 90.4 | -9.7 | -30.5 | -10 |
| | **Elk Grove Civic Center - Aquatic Center** | Elk Grove | CA | Public Assembly | | | | | | | | |
| | **Elk Grove Civic Center - Community/ Senior Center** | Elk Grove | CA | Public Assembly | | | | | | | | |
| | **Environmental Learning Center at Mass Audubon Drumlin Farm** | Worcester | MA | Other | 3,700 | | | | | | | |
| | **Gulf State Park Interpretive Center** | Baldwin County | AL | Public Assembly | | | | | | | | |
| | Half Moon Bay Library | Half Moon Bay | CA | Public Assembly | 22,000 | | | | | | | |
| | **Kaiser Permanente Ventura Medical Office Building** | Ventura | CA | Office | 57,000 | | | | | | | |
| | **Lick Wilmerding New Classroom Building** | San Francisco | CA | Education | 55,140 | 21.1 | 66.4 | 24.9 | 78.4 | -3.8 | -12.0 | -5 |
| | **Lombardo Welcome Center** | Millersville | PA | Education | 14,627 | | | | | | | |
| | **Mohawk College Centre for Partnership and Innovation** | Hamilton | ON | Education | 90,000 | | | | | | | |
| | **North Coastal Health and Human Services Agency Facility** | San Diego | CA | Office | 40,000 | | | | | | | |
| | **OUSD Glenview Elementary School Replacement** | Oakland | CA | Education | 53,700 | | | | | | | |
| | **Pikes Peak Summit Complex** | Colorado Springs | CO | Public Assembly | 26,000 | | | | | | | |
| | Re Farm Café | State College | PA | Food Service | | | | | | | | |
| | Rio Hondo Community College District | Whittier | CA | Education | 78,201 | | | | | | | |
| | **Schmidt Ocean Institute and Schmidt Family Foundation** | Palo Alto | CA | Office | 25,000 | 28.0 | 88.2 | 32.0 | 100.8 | -4.0 | -12.6 | -6 |
| | **SFO Long-Term Parking Garage #2** | San Francisco | CA | Other | 1,300,000 | | | | | | | |
| | Sonoma County Junior College District | Sonoma | CA | Education | 26,954 | | | | | | | |
| | United Therapeutics Unisphere | Silver Spring | MD | Office | 122,000 | | | | | | | |
| | Whisper Valley net zero community | Austin | TX | Other | | | | | | | | |
| | Woodburn Success High School [L] | Woodburn | OR | Education | 11,000 | | | | | | | |
| | **Yosemite Institute** | Yosemite National Park | CA | Education | | | | | | | | |
| 2019 | **Bethelehem Steel Site** | Lackawanna | NY | Other | 76,280 | | | | | | | |
| | **Botanica Educational Center** | Louisville | KY | Education | 10,500 | | | | | | | |
| | **Coliseum Place** | Oakland | CA | Multifamily | | | | | | | | |
| | Denver Water Headquarters Office | Denver | CO | Office | 190,000 | | | | | | | |
| | **Erie County Z7+ Light Industrial Facility (ECIDA)** | Buffalo | NY | Other | | | | | | | | |
| | Garfield Elementary School | San Francisco | CA | Education | 33,800 | | | | | | | |
| | **Georgia Tech - Living Building Challenge** | Atlanta | GA | Education | 34,258 | 35.0 | 110.3 | | | | | |
| | **Graceland Elementary School** | Baltimore | MD | Education | 94,330 | | | | | | | |
| | **Healdsburg City Hall** | Healdsburg | CA | Office | 13,282 | | | | | | | |
| | **Holabird Elementary School** | Baltimore | MD | Education | 94,330 | | | | | | | |
| | **King Open / Cambridge St Upper School & Community Complex** | Cambridge | MA | Education | 270,000 | | | | | | | |
| | **Lilienthal Elementary School** | San Francisco | CA | Education | 21,995 | | | | | | | |
| | **Lubber Run Community Center** | Arlington | VA | Public Assembly | 42,000 | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | **Marin County Day School** | Corte Madera | CA | Education | | | | | | | | |
| | **Nueva Middle School Expansion** | Hillsborough | CA | Education | 24,000 | | | | | | | |
| | **Santa Monica City Hall** | Santa Monica | CA | Office | 92,000 | | | | | | | |
| | **Telesis Dairy House Complex** | Lincoln | NE | Other | 174,000 | | | | | | | |
| | Whole Foods | San Francisco | CA | Food Sales | 25,187 | | | | | | | |
| | **Yosemite Slough Ed Center** | San Francisco | CA | Education | | | | | | | | |
| 2020 | **AvalonBay Middlefield** | Mountain View | CA | Multifamily | | | | | | | | |
| | CA Air Resources Board ZNE Building | Sacramento | CA | Other | 300,000 | 102.9 | 324.1 | 102.9 | 324.1 | 0.0 | 0.0 | 0 |
| | Cal State Northridge [L] | Los Angeles | CA | Education | 6,000,000 | 32.6 | 102.6 | 5.9 | 18.5 | 26.7 | 84.1 | 31 |
| | Fort Bliss | Fort Bliss | TX | Other | | | | | | | | |
| | Fort Carson | Fort Carson | CO | Other | | | | | | | | |
| | Fort Detrick | Frederick | MD | Other | | | | | | | | |
| | Fremont High School | Oakland | CA | Education | 140,000 | | | | | | | |
| | IKEA | Multiple | | Mercantile (Retail Other than Mall) | | | | | | | | |
| | LA Convention Center | Los Angeles | CA | Public Assembly | 1,000,000 | | | | | | | |
| | Oregon National Guard | Roseburg | OR | Other | 20,000 | | | | | | | |
| | SFO Airport Campus | San Mateo | CA | Other | | | | | | | | |
| | Sierra Army Depot | Herlong | CA | Other | | | | | | | | |
| | UC Merced Campus | Merced | CA | Education | 6,250,000 | | | | | | | |
| | West Point USMA | West Point | NY | Other | | | | | | | | |
| 2023 | **CCCCD Diablo Valley College Kinesiology Complex** | Pleasant Hill | CA | Education | | | | | | | | |
| 2029 | The Village at RiverBend | London | ON | Multifamily | | | | | | | | |
| 2030 | **Vail Resorts** | Multiple | | Other | | | | | | | | |
| Year Unknown | **Arbor Green** [L] | Carson | CA | Multifamily | 34,880 | 15.6 | 49.2 | 18.9 | 59.6 | -3.3 | -10.4 | -5 |
| | **Arcade Row** | Hyattsville | MD | Multifamily | 64,560 | | | | | | | |
| | **Arroyo De Paz I** | Desert Hot Springs | CA | Multifamily | 65,752 | 27.4 | 86.2 | 31.9 | 100.4 | -4.5 | -14.2 | -7 |
| | **Atsacadero** | Atascadero | CA | Multifamily | 60,588 | 18.0 | 56.8 | 19.5 | 61.5 | -1.5 | -4.7 | -3 |
| | **Bandar Salaam** | San Diego | CA | Multifamily | 54,732 | 11.7 | 36.7 | 12.0 | 37.8 | -0.3 | -1.1 | -1 |
| | **Buena Vista** | HolLister | CA | Multifamily | | | | | | | | |
| | **CaListoga Apartments** [L] | CaListoga | CA | Multifamily | 37,669 | 23.4 | 73.7 | 26.9 | 84.8 | -3.5 | -11.1 | -6 |
| | **Camp Southern Ground, Peterson Dining Hall & Lodge #1** | Peachtree City | GA | Food Service | 19,500 | | | | | | | |
| | **Castroville** | Castroville | CA | Multifamily | 50,254 | 28.2 | 88.7 | 28.2 | 88.7 | 0.0 | 0.0 | 0 |
| | **CCAC Boyce Campus Student Housing** | Pittsburgh | PA | Multifamily | | | | | | | | |
| | **Cloverdale** | Cloverdale | CA | Multifamily | 29,618 | 13.0 | 40.9 | 13.0 | 40.9 | 0.0 | 0.0 | 0 |
| | **Colonial House Apartments** [L] | Oxnard | CA | Multifamily | 46,552 | 17.2 | 54.0 | 17.0 | 53.6 | 0.2 | 0.4 | 0 |
| | **Colorado University Indoor Practice Facility** [L] | Boulder | CO | Public Assembly | 108,000 | | | | | | | |
| | **Corn Creek Visitor Center** [L] | Las Vegas | NV | Public Assembly | 15,000 | | | | | | | |
| | **Heritage Square** | Pasadena | CA | Multifamily | 46,306 | 14.6 | 45.9 | 13.6 | 42.8 | 1.0 | 3.1 | 2 |
| | **La Costa Paloma** | Carlsbad | CA | Multifamily | 192,043 | 8.9 | 28.2 | 11.6 | 36.5 | -2.6 | -8.3 | -4 |

Building names in **Bold** are new to the List
Buildings with (M) indicate measured data
(L) indicates LEED Certification

## ZERO ENERGY EMERGING

| YEAR | PROJECT NAME | CITY | STATE | BUILDING TYPE | SIZE (SF) | TOTAL EUI | SOURCE EUI | SITE RPI | SOURCE RPI | NET EUI | NET SOURCE EUI | ZEPI SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year Unknown | **Lancaster Urban Forest Center** | Lancaster | PA | Education | 21,000 | | | | | | | |
| | **Live Oak** | Live Oak | CA | Multifamily | 86,366 | 20.0 | 63.0 | 20.0 | 63.1 | 0.0 | -0.1 | 0 |
| | **Los Adobes de Maria I** | Santa Maria | CA | Multifamily | 64,630 | 5.5 | 17.4 | 5.5 | 17.4 | 0.0 | 0.0 | 0 |
| | **Los Osos Middle School** | Los Osos | CA | Education | | | | | | | | |
| | **Lynhaven Elementary School Multipurpose** | Campbell | CA | Education | | | | | | | | |
| | **NetZero Village** | Rotterdam | NY | Multifamily | | | | | | | | |
| | **Oak Park 1** | Paso Robles | CA | Multifamily | 94,923 | 10.6 | 33.5 | 11.4 | 35.8 | -0.7 | -2.3 | -1 |
| | **Phase Change Energy Solutions Manufacturing Facility** | Asheboro | NC | Other | 75,000 | | | | | | | |
| | **Placer Village** | Placerville | CA | Multifamily | 72,400 | 31.7 | 99.8 | 31.7 | 99.8 | 0.0 | 0.0 | 0 |
| | **River View Townhomes** | Guadalupe | CA | Multifamily | 96,504 | 11.0 | 34.6 | 13.9 | 43.9 | -3.0 | -9.3 | -5 |
| | **Riverview Terrace** | Fortuna | CA | Multifamily | 43,740 | 19.5 | 61.5 | 20.0 | 63.0 | -0.5 | -1.5 | -1 |
| | **Ruffin Organic Food and Learning Center** | Las Vegas | NV | Education | | | | | | | | |
| | **S Office Buildings** | Seattle | WA | Office | 1,200,000 | | | | | | | |
| | **San Andreas** | Watsonville | CA | Multifamily | 49,420 | 9.6 | 30.3 | 18.8 | 59.2 | -9.2 | -28.9 | -16 |
| | **San Remo I** | Hesperia | CA | Multifamily | 66,223 | 16.2 | 51.0 | 14.9 | 47.0 | 1.3 | 4.0 | 2 |
| | **San Remo II** | Hesperia | CA | Multifamily | 63,232 | 15.8 | 49.7 | 15.6 | 49.2 | 0.1 | 0.5 | 0 |
| | **Tesoro Grove** | San Diego | CA | Multifamily | 85,113 | 8.9 | 28.2 | 10.3 | 32.4 | -1.3 | -4.2 | -2 |
| | **Thaden School** | Bentonville | AR | Education | 125,000 | | | | | | | |
| | **Thomas Jefferson Elementary School** | Baltimore | MD | Education | 105,000 | | | | | | | |
| | University of Wisconsin Arlington Agricultural Research Station | Arlington | WI | Education | | | | | | | | |
| | **Valley View Phase II** | Selma | CA | Multifamily | 51,698 | 21.5 | 67.7 | 21.5 | 67.8 | 0.0 | -0.1 | 0 |
| | **Wasco** | Wasco | CA | Multifamily | 76,325 | 19.6 | 61.8 | 19.9 | 62.5 | -0.2 | -0.7 | 0 |
| | **Williams Green Valley** | Williams | CA | Multifamily | 44,869 | 22.6 | 71.2 | 22.6 | 71.2 | 0.0 | 0.0 | 0 |
| | **Winnetka** | Winnetka | CA | Multifamily | 53,642 | 15.6 | 49.3 | 21.9 | 68.9 | -6.2 | -19.6 | -10 |
| | **Yellowstone National Park Youth Campus** | Mammoth | WY | Education | 52,000 | | | | | | | |

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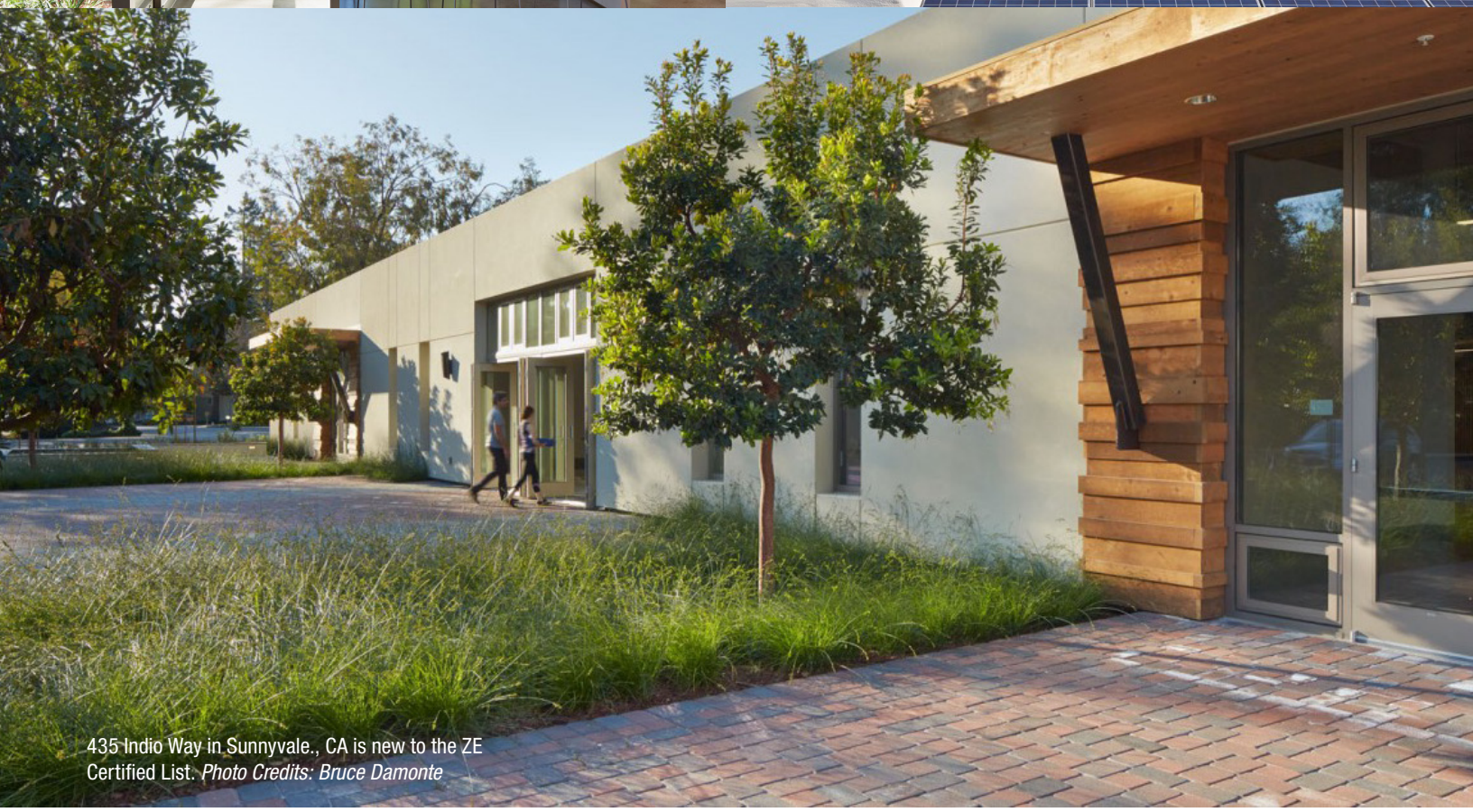

435 Indio Way in Sunnyvale., CA is new to the ZE Certified List. *Photo Credits: Bruce Damonte*

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New Buildings Institute (NBI) is a nonprofit organization driving better energy performance in buildings. We work collaboratively with industry market players—governments, utilities, energy efficiency advocates, and building professionals—to promote advanced design practices, innovative technologies, public policies, and programs that improve energy efficiency. We also develop and offer guidance and tools to support the design and construction of energy efficient buildings.

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