



TO ZERO AND BEYOND

Zero Energy Residential Buildings Study

2016 Inventory of residential projects on the path to zero in the U.S. and Canada

JUNE 2017

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THE COALITION

We are standing at the launch point of an opportunity where we can choose to take action and mobilize change. The Net Zero Energy Coalition (NZEC) is doing just that, by undertaking initiatives to unify the industry and accelerate market uptake. Our collective impact efforts include centralizing zero energy resources, industry engagement campaigns, and working directly with cities to catalyze growth of the zero energy sector.

Throughout history and across the world, our homes are places that contain our dreams, our happiness, and the richness of life. We have the tools to make these precious places even better. They can be healthier, more comfortable, last longer, be smarter, and save us money. With zero-energy know-how, this can all be done while treading more lightly on the planet and creating a better world for generations to come.

NZEC is providing resources for the industry to more simply design, build, and sell zero energy homes — to grow this market for all to prosper. We are designers, cities, builders, utilities, product manufacturers, homeowners, and non-profits who believe we can build better, and build for life.

WHY WE EXIST

Buildings and their energy use account for 41% of carbon emissions in the United States (DOE 2011). The goals set out at the last United Nations Climate Change Conference (COP22) call for keeping the global temperature rise well below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit it to 1.5 degrees Celsius. In order to meet this imperative, the World Green Building Council (WGBC), in its recently published report, "From Thousands to Billions," states that all new buildings must operate at net zero carbon by 2030 and 100% of ALL buildings must operate at net zero carbon by 2050.

The next few years will be pivotal for the growing zero energy movement, with new cities and states adopting zero energy and zero carbon policies, solar costs plummeting to new record lows, and growing demand globally for zero energy buildings. Lux Research projects zero energy buildings and nearly-zero energy buildings will grow to a \$1.3 trillion market by 2025. This illuminates a major market opportunity for the entire construction industry that will be driven and accelerated by NZEC's collective action efforts.

We use "zero energy" as a convenient albeit somewhat inaccurate shorthand for more precise but cumbersome nomenclature (e.g., zero greenhouse gas emissions), all of which, however, reflects congruent aims: the transformation of the built environment to contribute positively to global sustainability.

A photograph of three construction workers wearing hard hats and safety glasses, looking towards the right. The image is overlaid with a dark blue tint. The text 'THE INVENTORY' is centered in white, uppercase letters.

THE INVENTORY

ZERO ENERGY BASICS

In simplest terms, a zero net energy building is one that produces as much renewable energy as it consumes each year — the “net” referring to the annual balance between energy production and energy consumption. In non-technical contexts, many practitioners are migrating to the more conversational term, “zero energy.”

The most common renewable energy source for a zero-energy home is a photovoltaic (PV) array, typically roof-mounted but occasionally freestanding on the building site.

However, zero net energy is achieved by working on energy reduction, as well as on energy production. Thus a high degree of energy efficiency is at the core of zero-energy projects; without that foundation, which reduces the energy loads significantly below those of conventional, inefficient buildings, few projects would have enough space for a PV array large enough to meet their annual energy needs.

Project Categories

“Zero,” in theory, is an absolute, yet the reality is that many homes are designed to achieve zero net operating energy — or nearly so, or to be zero-energy ready (ZE with the additional of renewable energy systems) — and all these projects are part of the larger movement towards zero energy, and we can learn from all of them. So we included all of them. The table at right describes our inventory categories and how they relate to a number of ZE programs. In all cases, we have relied on self-reported data from our online inventory form to categorize projects.

As a result of the challenges with roof space for PV, there are many more “solar homes” than zero-energy homes — where PV systems were added to relatively inefficient homes, and don’t come close to meeting the homes’ annual energy demands.

There are also projects touted as zero net energy that are actually only zero net electricity — that is, other energy sources (e.g., natural gas, propane, or solid fuels) used in the buildings are not accounted for in the energy balance.

LEED and virtually all other North American green building programs address energy efficiency and/or renewable energy in some fashion, but just a few explicitly identify or reward zero energy projects. Those that do collaborated with NZEC in developing the project categories used in our inventory and database project.

THE COST QUESTION

Cost is one of the least-understood aspects of zero energy homes; there is a wide perception that a ZE home ‘must cost more.’ All other characteristics being more or less equal, you could say that a zero energy home costs about the same as an otherwise-identical house built under virtually identical conditions, plus the cost of the solar array.

In reality, a zero energy home is a value-added product — being in effect both a home and a personal utility — and thus competes in a unique market segment. When providing zero energy capability is a primary project goal, achieving that goal simply has to be done within the project’s budget, whatever that is, and making accommodations necessary to accomplish that.

Category	Description: Documentation must show that the renewable energy system...	Qualifying Programs
Net Producer	Supplies 110% or more of the annual energy demand	N/A
ZE	Supplies 100% or more of the annual energy demand	ILFI Zero Energy Building Certification Thousand Home Challenge (THC must designate project as ZE)
ZE-ready	Can supply 90% or more of the annual energy demand (or could, if/when renewable energy is added or system capacity is increased); AND/OR energy use data are not available	DOE ZERH Earth Advantage Net Zero & Net Zero Ready PHI ‘Classic’, ‘Plus’ & ‘Premium’ PHIUS+
Thousand Home Challenge	Deep energy reductions in existing homes, whether or not they include renewable energy	Thousand Home Challenge

2015 BASELINE INVENTORY

In years past, every conversation about zero-energy (ZE) residential development invariably included questions like: Is this stuff catching on? Who's building ZE homes? Where are they? How many of them have been built? Are they really achieving zero energy?

We resolved to answer these questions, as so many of them were fundamental to understanding how best to ramp up adoption of ZE practices. Tracking the growth trajectory also would be needed to demonstrate the effectiveness of various ZE policies, programs, and incentives being put in place to spur growth in this toddler segment of the homebuilding industry.

Knowing what the key questions were was only part of the puzzle, though; the larger part was knowing where to go for the answers.

At the core of NZEC's mission is "fostering communication and information-sharing among zero energy champions [and] facilitating collaborative initiatives ...". This means everything we do is to leverage the knowledge and efforts of our members and allied organizations to achieve greater impact. Thus NZEC's baseline 2015 Residential ZE Inventory was conducted via outreach throughout our extended network. Our staff and board members *emailed, phoned, tweeted, surveyed, and blogged* (for those of you who knit: repeat between * and * seven times) to reach every individual and organization we could think of with any involvement in ZE residential projects or initiatives. We also tracked down countless leads from news alerts.

The results of our 2015 campaign were published in *To Zero and Beyond: Zero Energy Residential Buildings Study (January 2016)*, available [here](#). Our network helped us identify 408 projects comprising 3,339 buildings and 6,177 residential units across the US and Canada that were in design, under construction, or completed. An additional 3,068 units were identified as being in the planning stages. A small fraction of all homes in North America, to be sure, but nonetheless a substantial and encouraging number.

2016 INVENTORY UPDATE

So how much has ZE homebuilding changed since the sun set on 2015? After our baseline inventory, that was the next burning question.

Our process for updating the numbers followed the same basic approach we took in 2015 — only this time we had a much larger "Who's Who in Residential ZE" roster to call upon for information. And those contacts led us to others ... and so on.

There is a large and rapidly growing ZE community out across the continent, and a wealth of knowledge and insights embodied in those thousands of individuals and their projects! (Spoiler alert: our agenda for 2017 and forward includes mining that rich vein of data to help further propel the growth in ZE homes. Get in touch if you have ideas about what information might be most valuable.)

We had several advantages this past year over our inaugural inventory: in addition to starting with a much larger contact database and better-established relationships in the ZE institutional community, we received a very welcome grant from the Rockefeller Brothers Fund that enabled us to engage two brilliant and dedicated interns, Núria Casquero-Modrego and Brenton Kreiger. Both Núria and Brenton are members of the UC Berkeley 2015-17 US Department of Energy Solar Decathlon team (see their project online [here](#) — and for inspiration, consider visiting the Solar Decathlon in Denver, October 5–9 and 12–15, 2017).

HUB ZERO

NZEC's research has identified many potential points of intervention to accelerate the adoption of zero-energy building practices, but arguably none more important at this juncture than facilitating the development of more state and local zero-energy policies, and providing related market engagement and program support. As such, we are developing Hub Zero, an online resource that provides industry stakeholders with the tools they need to develop zero energy projects, today.

The core of Hub Zero is our inventory and case study database, which contains extensive data and examples of zero energy residential buildings from around North America. As we grow the Hub, we will add curated content from scores of credible online resources, and new tools we will create to meet our members' needs.

We recently conducted an industry needs survey, in which respondents identified their top barriers to zero energy adoption as perceived cost and market risk. Corresponding to these risks, the top needs were, 1) Library of research and case studies, 2) Searchable database of products used in case studies, and 3) Metrics on project economics. Surprisingly, respondents identified a highly fragmented current set of resources they use to find what they need in order to overcome current barriers. This fragmentation makes it even more challenging to embark on zero energy projects. To centralize access to resources and provide the needed information, Hub Zero will meet the needs of the following groups:

Project Teams

Streamlining and simplifying the process of designing, building, and selling zero. The heart of Hub Zero is a rich case study database featuring scores of zero energy homes, their features and technologies, and the innovators who created them.

Policymakers

Hub Zero will provide a dynamic tool to track, measure, and manage their programs, as an easy-to-use tool for local governments to offer their local practitioners and enable them to meet policy requirements.

Product Manufacturers

Hub Zero will create a pathway to research market trends and connect with the most progressive project teams in the country, while raising brand profiles.

OUR FINDINGS



2015-16 ZE PROJECTS, BUILDINGS, & UNITS



741

PROJECTS

408 IN 2015



4,077

BUILDINGS

3,339 IN 2015



8,203

UNITS

6,177 IN 2015

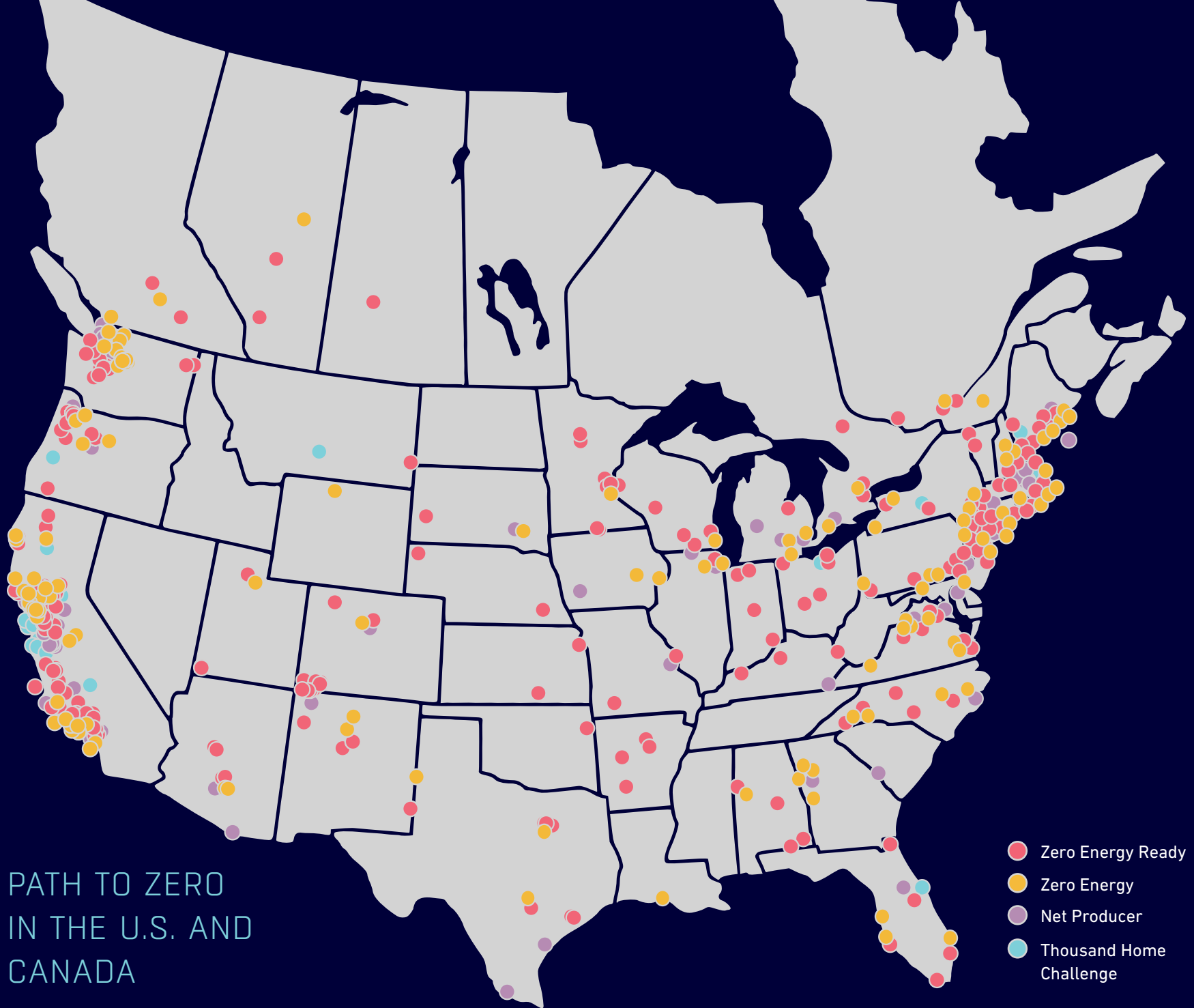
(NOT INCLUDING PLANNED UNITS/PROJECTS)

WE LOVE TO BE SURPRISED — 33% GROWTH IN A SINGLE YEAR

In our 2015 inventory, happily, NZEC found more zero energy projects than our experts had predicted. In 2016, we anticipated continued robust growth, but didn't expect quite the magnitude of growth that we found: our research uncovered a combined total of 8,203 single-family and multifamily units of zero energy housing across the United States and Canada — 33% more units than last year. By going to zero energy, these homes have eliminated the equivalent of 16,406 cars each year and 77,929 tons of CO2 emissions as compared to merely achieving code compliance.

An alternative measure of growth is the number of projects, which increased even more, climbing by a stunning 82%. Both numbers are clear market indicators that momentum is steadily building in the residential ZE sector, and will continue to accelerate.

The solar industry experienced similar growth from 2011 to 2012, increasing by 47%; then, from 2012 to today, residential solar installations increased a whopping 809%. This is a typical example of how new technologies snowball in the market once passing a point of critical mass. While we do not know what 2017 will bring, we fully anticipate explosive growth in coming years.



PATH TO ZERO
IN THE U.S. AND
CANADA

- Zero Energy Ready
- Zero Energy
- Net Producer
- Thousand Home Challenge

THE PUSH CONTINUES: INDUSTRY LEADERSHIP – NOT MARKET DEMAND – DRIVES NUMBERS

Our 2015 inventory revealed large projects as a dominant market driver, with 95% of all units in multi-unit projects. Rather than being a response to market demand, this represented strategic decisions by organizations to pursue zero energy.

That finding foreshadowed this year's results, as well. The 2016 inventory once again found that the vast majority (94%) of all units are within multi-unit projects; 61% of those units are in multifamily buildings, and the remaining 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 (663 units, completed and occupied) and the largest single-family project (350 units, in design) are both at the University of California Davis's West Village. As with the specific rankings in ZE units by cities, state rankings that have changed this year can be directly attributed to large, multifamily projects that have been initiated or built in those states (see next section).

MULTI-UNIT PROJECTS

PROJECT TYPE BY UNITS



2,960

SINGLE-FAMILY UNITS



4,727

MULTI-FAMILY UNITS

Multi-unit projects are projects greater than 2 units, including both single family detached projects and multi-unit buildings

WEST VILLAGE

The University of California Davis's West Village is already the largest built zero net energy community¹ in the United States — with major plans for expansion.

West Village is currently a home for 2,000+ students, faculty, and staff. The project includes 663 apartments, 42,500 square feet of commercial space, a recreation center, study facilities, and a community college center — the first to be located on a University of California campus. When complete, the project will include between 350 and 475 single-family homes for faculty and staff.

The planned single-family homes will help the university to recruit and retain top faculty and staff by enabling them to live locally and participate fully in the life of the campus and community. Also, the project's design, with a village square and network of open spaces, parks, gardens, pathways and courtyards, provides a high quality of place and community amenities.

1: The completed residences at West Village fall into the ZE-ready category in our inventory.

Our 2016 inventory revealed that the top ten builders and developers of ZE homes (by number of units) in the US and Canada are responsible for 45% of all units. This means a large share of ZE market activity is attributed to larger scale builders and developers.

So why are they doing it? NZEC’s network of builders and developers share similar characteristics, including innovation, long-term vision, marketing savvy, and an understanding of market differentiation for zero energy. Zero energy buildings are a critical part of the solution for climate change — and the innovators in zero energy have embraced this challenge with enthusiasm and met with remarkable success. They report that their shift to zero has been more profitable, sustainable, and rewarding for their businesses and their customers.

Among those who have committed to all future projects achieving ZE is Denver-based Thrive Home Builders (formerly New Town Builders). Thrive Home Builders has built 61 ZE units to date and has more in the hopper. Gene Myers, Thrive CEO, talks about why he chose to pursue this market:

“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. This summer we will expand our zero energy offerings to include even more series of homes in our portfolio.”

TOP ZERO ENERGY BUILDERS & DEVELOPERS

Top 10 Builders/Developers by Number of Units

UC Davis	1,014
Corporation For Better Housing	529
Walsh Construction Co.	302
Affirmed Housing	296
Danco Communities	296
Transformations, Inc.	288
Greenenergy	274
Langston Terrace Dwellings	274
Taurus of Texas	237
Landmark Homes	221
Total	3,731

Builders/Developers with 10+ Projects

BrightBuilt Home (ME)	79
Greenhill Contracting Inc. (NY)	31
Clifton View Homes (WA)	19
Palo Duro Homes, Inc. (NM)	16
Corporation For Better Housing (CA)	11
Decker Homes, Inc. (MI)	10

Others in our network reflect similar perspectives:

“We’ve built six ZE and six ZER. We could build 100 homes a year if my company had the capacity.”

“I got tired of building like the second little pig, so decided I wanted to build homes that would last a thousand years.”

ZE builders commonly debunk the perception of a cost premium for zero:

“The home buyers tell me they bought because overall

the cost is lower. We are recording a six to ten year payback, which means with a 30-year mortgage you have 20-plus years of continued savings. We are in a market where climate change is a focus.”

Finally, others support our conclusion that market leaders will drive growth:

“I’m the only ZE builder in my market, but if there were more they would help me create the market faster.”

THE VIRTUOUS CIRCLE: POLICY AND GRASS ROOTS AS MUTUAL DRIVERS

Cities are front-and-center in the shift to zero carbon, because urban areas are where we have the most people, the most buildings, the most construction activity, and the most potential to cost-effectively reduce carbon emissions². Further, cities represent the best opportunity for impactful carbon-reduction policy leadership³. The states are also assuming greater importance in implementing climate-focused policy, and there is an integral policy development relationship between cities and states, illustrated on page 15.

California — the Number 1 ZE state by number of units and number of builders in both 2015 and 2016 — offers multiple examples of this phenomenon. Berkeley, CA, as the birthplace of PACE (Property Assessed Clean Energy), offers one bottom-up example: now widespread, this innovative program has had influence well beyond its own city limits. More recently, the City Council adopted “Berkeley Deep Green,” an initiative that embraces ZE, but also encompasses other advanced green building practices, including reducing embodied carbon and toxics in building materials. If the spread of Berkeley’s earlier initiatives is any indication, this is a harbinger of likely developments in other cities and perhaps eventually at the State level — and beyond.

Another fascinating example from California is the high rate of solar energy installations, eventually leading

to ZE projects, attributable to the robust marijuana-growing industry in the State’s “Emerald Triangle” region, beginning as early as the late 1970s⁴.

Looking from the top down, California’s much-heralded “big, bold” 2020 and 2030 goals have propelled numerous ZE projects and initiatives in several local California jurisdictions; zero-energy/low-carbon building-sector policies have been adopted or are under development in Berkeley, Palo Alto, San Francisco, Oakland, Healdsburg, Hayward, Santa Monica, Fort Bragg, and Lancaster — and undoubtedly others that have not yet come to our attention. Several of these communities now are sharing their experience with one another and collaborating to influence State ZE policies — e.g., facilitating conversions from natural gas to electric heat pump water heaters.

“SUCCESS STORIES ARE REPEATABLE. BUILDERS NEED TO BE CONVERTED TO BELIEVERS FIRST. YOU HAVE TO BELIEVE IN THIS TO SUCCEED. READ ABOUT YOUR PEERS’ PROJECTS, ADAPT THEM TO YOUR MARKET AND REPEAT THEM.”

— STEVE BACZEK, ARCHITECT

ZE goals not only made CA the lead in both the ‘15 and ‘16 inventories, but the number of units in CA has increased by a staggering 104%.

In other parts of the US, as well, there are relationships between grass-roots activities in progressive cities and initiatives at the state level. For example, Boston and Cambridge both have model zero-energy/low-carbon initiatives, and Massachusetts is the US state with the second-highest number of ZE units (499, after California’s 3,137). As in California, government initiatives have had a snowball effect, resulting in a 128% increase in ZE units in MA. Burlington, another city which is leading in creating ZE programs, reflects Vermont’s status as the US state with the highest number of units per capita.

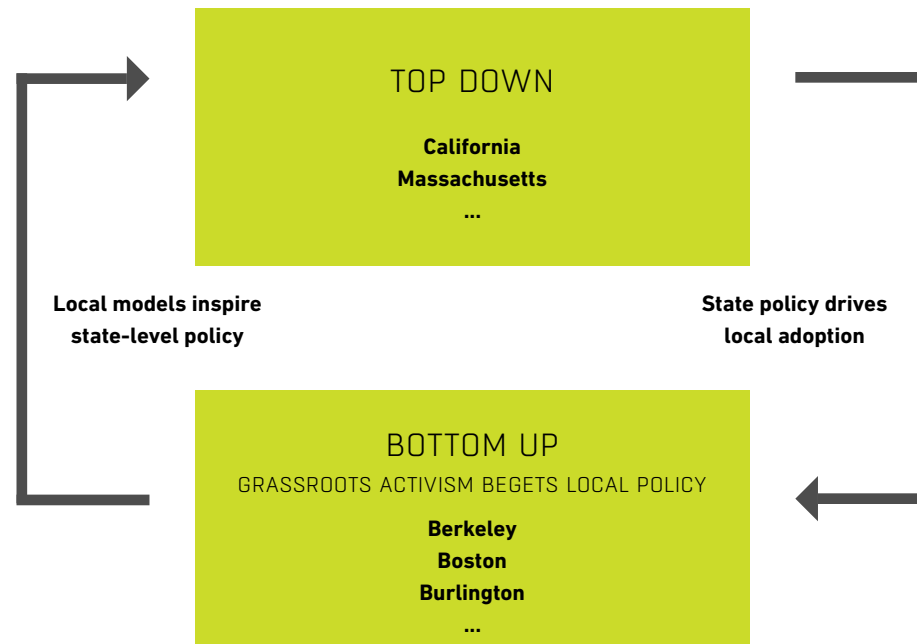
Another way we see the grass-roots effect at work is in the accomplishments — and influence — of individual builders and consultants. With apologies to ZE rock stars we have undoubtedly overlooked (or whose projects have not been captured in the inventory), the following standouts have come to light:

- » Sparsely populated Maine nevertheless lays claim to being the number 10 state by per-capita ZE units; it's no coincidence that BrightBuilt Home, headquartered in Portland, ME, is the North American builder with the largest number of individual projects (79).
- » Another slimly populated state, New Mexico, is number 13 by per-capita units; the front-running ZE builder there is Albuquerque's Palo Duro Homes, with 16 individual projects.
- » Centered around New Paltz, New York (midway between NYC and Albany), is a collection of 31 units built by Greenhill Contracting. The State of NY ranks fourth by number of units and third by number of builders.
- » Back in California, a whopping 1,581 units (the vast majority of them in multifamily projects) have been reported by Redwood Energy, an energy consulting firm in Arcata, CA.
- » The province of Alberta, Canada (the 10th highest ranking state or province by units) is home to a concentration of builders committed to ZE with 8 builders and a number of large-scale ZE projects.

We can only guess at the impact of these practitioners and other ZE leaders on the state of practice in their regions, but it is surely substantial. The building industry

relies heavily on its few, adventuresome innovators to prove out new concepts and inspire imitation and competition within their markets.

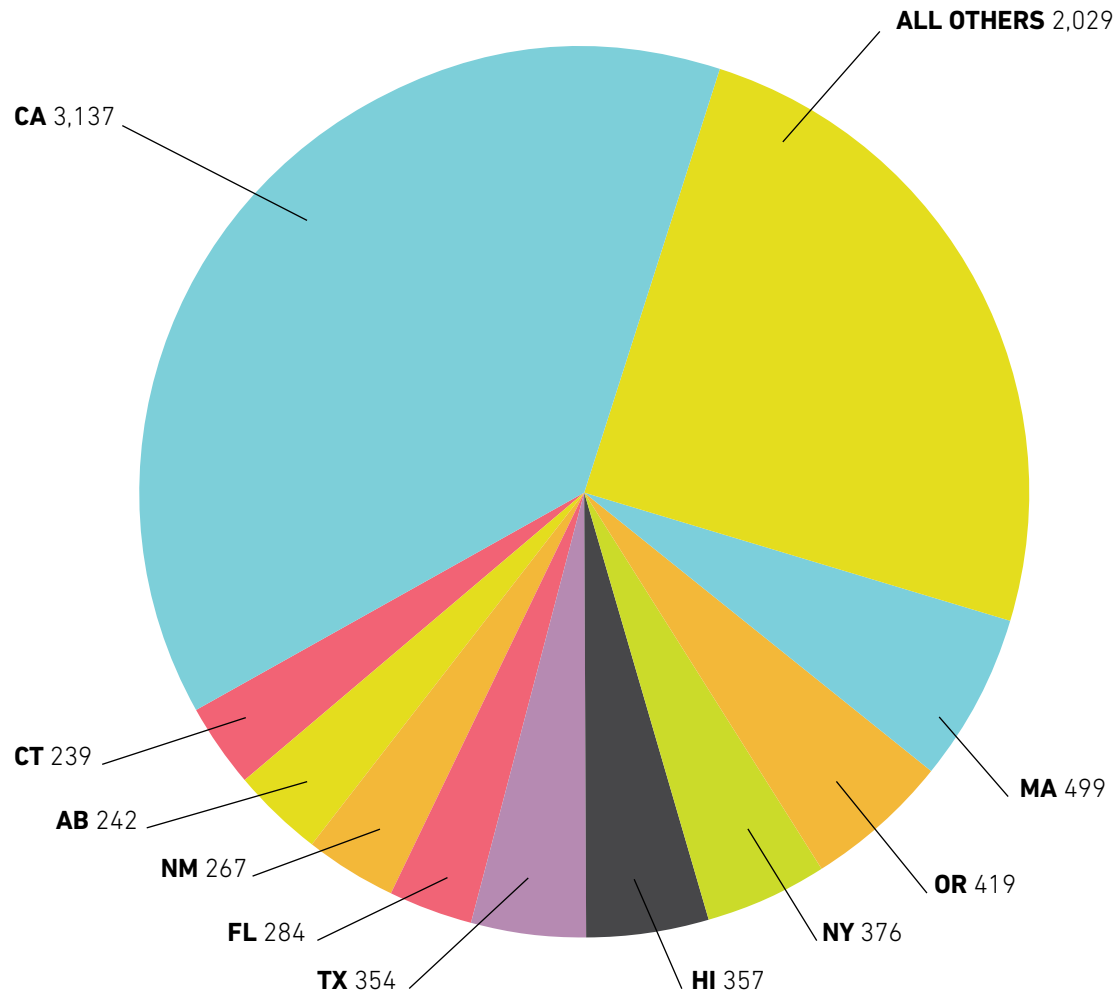
THE VIRTUOUS CIRCLE OF ZE POLICY



Adapted from graphic by Ann Edminster, Design AVenues LLC

2: Urban areas account for up to two-thirds of the potential to cost-effectively reduce global carbon emissions." International Energy Agency (IEA), June 1, 2016. <https://www.iea.org/newsroom/news/2016/june/etp2016-cities-are-in-the-frontline-for-cutting-carbon-emissions.html>
 3: "Cities must take the lead in the transition to a low-carbon energy sector." IEA 2016. Wired Mag, December 2016, "Nations Be Damned, the World's Cities Can Take a Big Bite Out of Emissions."

TOP 10 ZERO ENERGY STATES/PROVINCES BY NUMBER OF UNITS



Top Zero Energy Cities by Number of Units	
Davis, CA	1,015
Austin, TX	346
Honolulu, HI	338
Portland, OR	317
Washington, DC	317
Calgary, AB	209
Townsend, WA	198
Boston, MA	165
Rotterdam, NY	160
Port St. Lucie, FL	154
Chino, CA	135
Colchester, CT	130
Los Angeles, CA	103
London, ON	101
Lancaster, CA	101
Bernalillo, NM	98
Tarpon Springs, FL	95
Winnetka, CA	95
Escondido, CA	94
Eureka, CA	86
ALL OTHERS	3,946

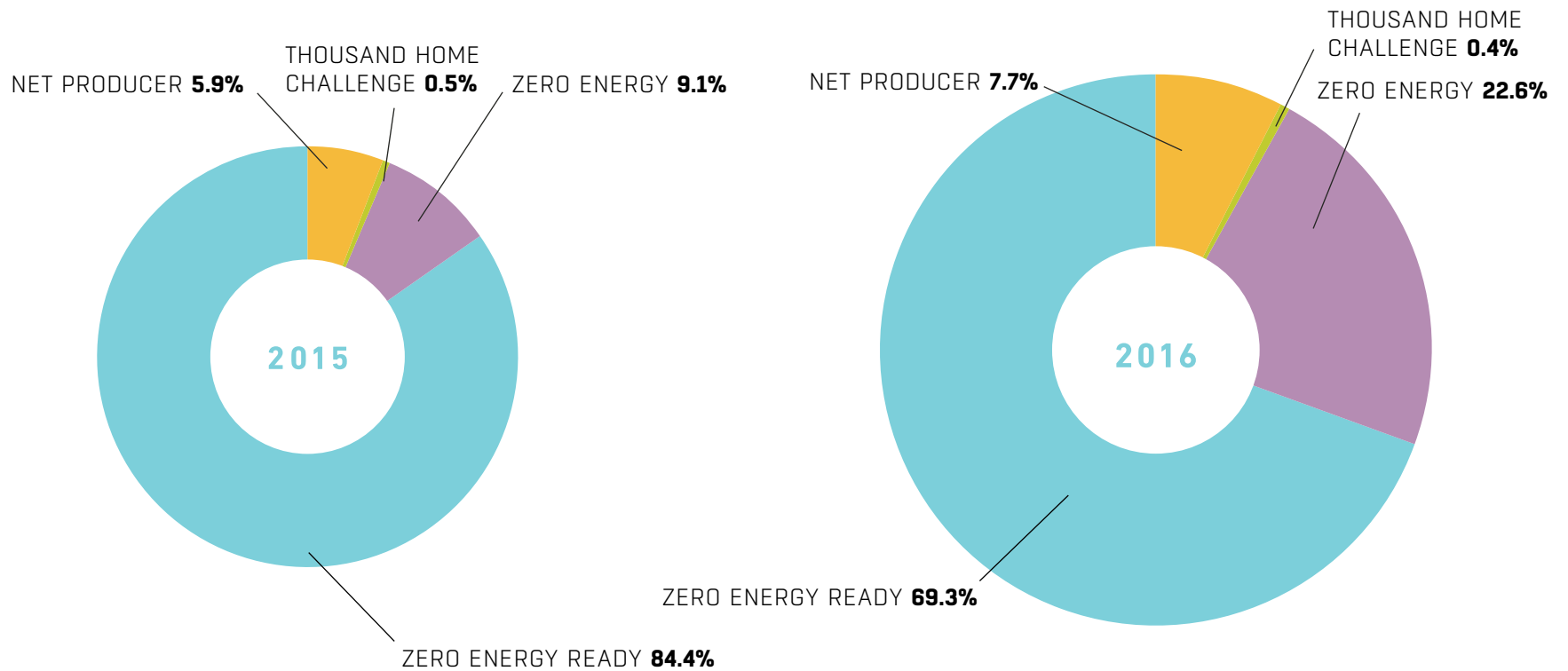
TORTOISE OVERTAKING THE HARE: ABSOLUTE ZERO CLOSING IN ON ZERO ENERGY READY

One of the more significant and exciting findings in this year's inventory is the breakdown by level of energy performance. Our baseline inventory (2015 data) showed that 85% of all the ZE units fell into the zero-energy ready and Thousand Home Challenge (deep energy reduction) categories combined; 9% were zero energy, and 6% were net producers. The 2016 data show a marked upward shift in energy performance, with zero-energy ready and Thousand

Home Challenge projects now representing 70% of the total; the share of zero energy projects, now at 23%, more than doubled; and net producers now represent just under 8% of all units inventoried — a small but encouraging increase.

This overall upward trend speaks volumes about the maturing of the industry and hints of more dramatic shifts to come.

PERCENTAGE OF UNITS BY ENERGY PERFORMANCE



A RIGHTLY IMAGINED FUTURE: ZERO EXPECTED TO BALLOON

All of the numbers cited in prior sections of this report represent only a fraction of the projects in the total pipeline, which includes almost additional 30,000 more planned units. Should all those projects be built this year, we would see a 337% growth.

Compared to the planned projects in the 2015 inventory, these planned units represent nearly a nine-fold increase. It is important to note that a few very large projects account for most of this big bump in planned projects:

- » 1,900 units in London, ON, by Sifton Properties
- » 5,000 units in Waterset, FL, by Greenergy
- » 21,500 units (!) in Newhall, CA, by FivePoint

While we may be approaching a tipping point, what has been accomplished to date is still far from the level of carbon reduction required to reach the goals set out at the last United Nations Climate Change Conference.

NET ZERO NEWHALL

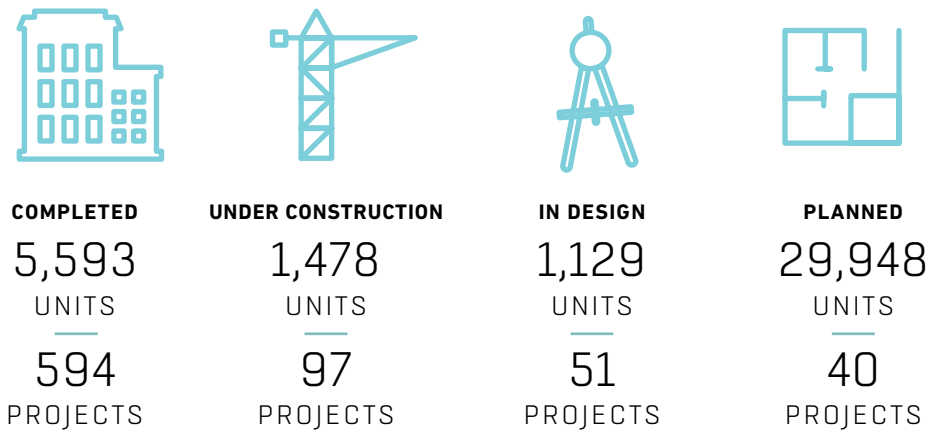
Net Zero Newhall will be an undertaking of extraordinary ambition and vision — a new paradigm for how developments will be built and Californians should live in the 21st century.

Newhall Ranch will be an economic driver for Southern California, adding 60,000 permanent jobs at buildout and generating more than \$800 million a year in state and local taxes — in addition to creating more than 20,000 homes for the Santa Clarita Valley.

Above all, Newhall Ranch will be a standard-bearer for environmental stewardship by upholding innovative green building practices, protecting 10,000 acres of open space, and reducing or mitigating all net greenhouse gas emissions from the project and its construction to zero.

(SOURCE: NET ZERO NEWHALL WEBSITE)

ZERO ENERGY PROJECT PIPELINE



COLLECTIVE ACTION



LEADING THE CHARGE

Our Coalition — forward-thinking non-profits, cities, product manufacturers, developers, builders, and design professionals — is leading the charge to reach the 2050 zero carbon goals by inspiring the market to build zero today, and sharing resources to simplify the process of doing so.

In addition, we are collaborating with other organizations who share our mission and bring unique forces to drive the march toward zero. Below are some examples of their leading zero energy work:

- » Rocky Mountain Institute's Residential Energy Plus program, which includes a large scale zero energy building retrofit strategy for the U.S., modeled after the Dutch Energiesprong program (www.energiesprong.eu)
- » International Living Future Institute's Zero Energy Certification program and recently launched REVEAL energy labeling program
- » New Buildings Institute's zero energy commercial buildings programs with tools and guides for zero energy policy and technical guidance
- » Architecture 2030's District program, bringing entire districts in major cities across the country to zero energy by 2030
- » The World Green Building Council, creating a zero energy certification and building a global zero energy movement

- » U.S. Department of Energy's Zero Energy Ready Home, with a nationally recognized certification program, tools, and examples through their "Tour of Zero"
- » Canadian Home Builders Association's Net-Zero Housing Council, with its recently launched Net Zero Home labeling program, supported by technical training, experts and tools

There are many other non-profits, consultancies, utilities, and governments who are offering zero energy resources across North America. Through collaboration, together we are a strong force that will support those who are on the ground, building zero energy projects, and taking us to a zero carbon future.

FORCES IN ACTION

In Canada, building codes are moving towards a tiered structure with the ultimate target of Net Zero Ready by 2030.

Sonja Winkelmann, former executive director of NZEC and current Director of Net Zero Energy Housing at the Canadian Home Builders' Association (CHBA), believes the CHBA can help facilitate the market to meet these targets.

Here at the CHBA, we recently launched a labeling program to provide transparency and recognition of Net Zero and Net Zero Ready Homes for the market leaders who are paving the way for the mainstream. With our focus on voluntary and affordable choices, we are tracking the costs of the homes in our program to create proof points for mass market adoption, while also advocating for continuing innovation, research and development in both the private sector and government. We have seen great progress, with examples like Landmark Homes' highly successful \$399k single-detached Net Zero Home in Edmonton.

“TODAY WE STAND AT A TIPPING POINT FOR ADDRESSING CLIMATE CHANGE, WHERE DESPITE POPULATION GROWTH AND DEVELOPMENT, U.S. BUILDING SECTOR GREENHOUSE GAS EMISSIONS ARE DECLINING. BY ADOPTING ZERO NET CARBON AS THE STANDARD FOR ALL BUILDINGS, OUR INDUSTRY CAN CREATE THE FUTURE THAT OUR CHILDREN DESERVE.”

— EDWARD MAZRIA, FOUNDER / CEO, ARCHITECTURE 2030

ACKNOWLEDGEMENTS

First and foremost we thank Rockefeller Brothers Fund for their generous financial support of our inventory project. Without that critical support, the 2016 update simply would not have happened.

We also thank our sponsors shown below for their important financial support for this project and our mission.

Many, many other individuals and organizations have assisted us in our outreach and cataloguing efforts, in both 2015 and 2016.



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Special thanks are also due our tireless interns, Núria Casquero-Modrego and Brenton Kreiger; and our outreach coordinator Debra Little.

SPONSORS

NZEC efforts are possible with the leadership and partnership of these zero energy market innovators.



JOIN THE MOVEMENT

NZEC's mission is to bring the industry together, enabling individuals and organizations to increase their ability to affect market adoption of zero energy buildings. **Here's how you can get involved:**

- **Report your project** or refer other great projects and builders for ongoing inventory collection and the case study database:
<http://netzeroenergycoalition.com/zero-energy-case-studies/>
- **Join NZEC** for connections to the industry, exclusive access to resources (e.g., inventory statistics), and recognition as a movement leader: <http://netzeroenergycoalition.com/take-action/join-the-coalition/>
- **Become a recognized sponsor** or funder of NZEC's efforts, and specific projects such as the case study database and Hub Zero. Drive the market and create change:
<http://netzeroenergycoalition.com/take-action/become-a-sponsor/>
- **Sign up for the PULSE** on net-zero energy newsletter:
<http://netzeroenergycoalition.com/discover/newsletter-signup/>

For more information, email info@netzeroenergycoalition.com

