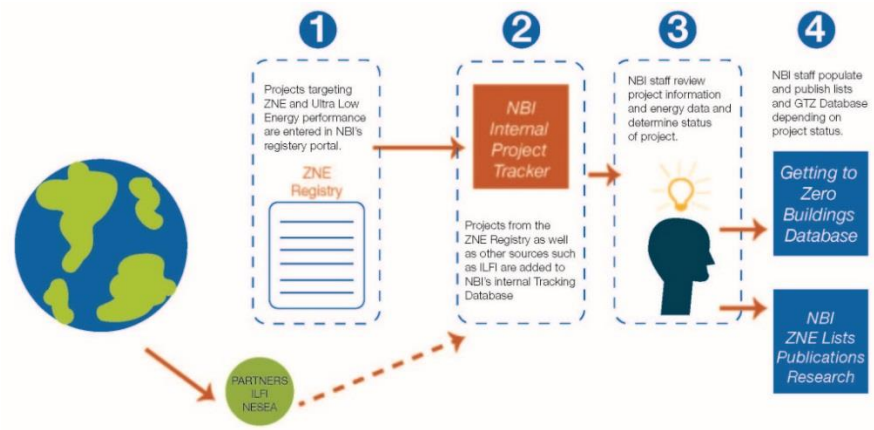
FAQ FOR GETTING TO ZERO REGISTRY, BUILDINGS LIST AND DATABASE

NBI works to identify, research, analyze and promote commercial buildings that are leaders in low- and-zero energy performance outcomes. As such, we maintain the most comprehensive data set of zero net energy (ZNE) verified, emerging and ultra-low energy buildings in North America. This **Frequently Asked Questions** factsheet details the kind of information NBI collects and manages in our tracking tool, how we classify projects and which projects make it into our Getting to Zero Database and Buildings List.

NBI first collects projects through a ZNE buildings registry. Information from these projects is and documented in our internal tracker. NBI staff then reviews the project information and determines a status. If the project is verified zero net energy or ultra-low energy, it is included on our Getting to Zero Buildings List AND our Getting to Zero Buildings Database. Verified projects are also considered for case studies. Emerging projects are included on our Getting to Zero Buildings List only. Once verified, current emerging projects can move to the Buildings Database. Below, you will find more details on NBI's project tracking methodology.



What is the purpose of the Getting to Zero Database?

The Getting to Zero Database is a project undertaken by NBI to track net zero and near net zero buildings in North America. By keeping track of these projects, NBI is able to share insights and resources about these projects to help inform policymakers, designers, and contractors about feasibility, best practices, and generally promote sustainable and advanced building performance.

The database includes net zero energy buildings that are both verified and emerging, as well as "ultra-low" energy buildings, which are said to be "net zero ready".

- ***V*erified buildings** have metered data which show net zero or positive energy generation over a given year.
- **Emerging buildings** are those that have a publically stated goal of ZNE but have not yet demonstrated achievement of these goals. These may be in the planning or design phase, under construction or have been in operation for less than a year. Others may have been operating for 12 months or longer, but their measured energy either has yet to achieve net zero or the measured data to document ZNE verified status was not available.

- **Ultra-low energy buildings** are those with low annual energy usage (gross EUI). These buildings have demonstrated significant technical progress toward goals of building energy use reduction, even though they may not have continued on the ZNE pathway by investing in on- site renewables. Specific performance thresholds for the designation of Ultra-low energy buildings are described below.

What is zero net energy? How is it measured?

Zero net energy (ZNE), also commonly referred to as "net zero energy" (NZE) or zero energy building (ZEB), is a term that describes a building which produces as much energy as it consumes over the course of a year. Typically, this is achieved with low energy consumption along with on-site solar photovoltaic (PV) generation which equals or out-produces the building energy consumption over a year so that the net annual energy consumption is less than or equal to zero.

A common metric to measure energy consumption level is the Energy Use Intensity (EUI) metric, which is measured in kBtu/ft^2/year. It is important to consider the building's gross EUI, or annual energy consumption from all sources (electricity, gas, renewables, and delivered fuels) compared to the Renewable Production Intensity (RPI, also measured in kBtu/ft^2/year representing renewable energy generated by the building) in order to calculate the net EUI. If the generation is greater than or equal to the consumption, then the building is said to be net zero energy.

Net EUI = Gross EUI – RPI (all units: kBtu/ft^2/year)

What is Renewable Energy?

Renewable energy is defined as energy from a source that is either virtually infinite, or replaceable within a human timescale. Common examples of renewable energy sources include: Solar, wind, tides, geothermal, biomass, and hydropower. For buildings, these sources are most often solar, wind, and geothermal[1].

What buildings are eligible for the database?

NBI's Buildings Database houses in-depth information about high performance buildings including measured and modeled energy performance, environmental characteristics, design process, finances, and other aspects of each project. All net zero or near net zero commercial and multifamily buildings are eligible for the database, provided that they have a way to track gross and net energy consumption/generation. Typical building types included in the database are: office, school, library, multifamily, warehouse, and healthcare. Buildings associated with community scale solar projects may be submitted and will be considered on a case-by-case basis.

Is there a performance threshold that needs to be achieved to be included in the database?

Yes, to be included in the database, all buildings must first qualify as ultra-low energy buildings based on gross EUI. Ultra-low energy buildings are those whose verified base energy performance (before renewables are accounted) is within 30% of the 2030 Challenge[2] energy performance targets in effect at the time of first occupancy. These targets specify maximum allowable Zero Energy Performance Index (zEPI)[3] score levels. Projects that submit 12 months of data substantiating that their zEPI score is within 30% of the 2030 Challenge performance targets will be verified as ultra-low. For buildings first occupied between 2015 and 2020, the maximum allowable zEPI score for verification as ultra-low energy is 39.

[1] Systems with ground loops such as ground source heat pumps, while often referred to as "geothermal," are not considered a renewable energy source because the systems do not generate energy themselves but rather use the ground as a heat sink or source to increase overall system efficiency.

Do you use site or source EUI?

The database reports site EUI. This is the data which is typically available to the building from utility bills or sub-metering that is most readily accessed and verified. Source energy accounts for upstream generation impacts of the fuel source, such as natural gas burned to generate electricity. Source energy more accurately represents the carbon impacts of different fuel sources than site energy. Site energy metrics can be converted to source energy to account for carbon impacts, but the conversion factors vary across utilities and regions, so this metric can be more difficult to compare among buildings.

What is the role of solar photovoltaics (PV) in ZNE buildings?

It is important to prioritize passive systems, energy load reduction, and energy efficiency in any ZNE building. All ZNE buildings must meet the ultra-low energy definition based on their gross energy usage, excluding the contribution of the PV systems. With a low baseline energy consumption, Solar PV is then commonly used to offset the energy consumption of a ZNE building and sized so that the total annual energy usage is balanced by the total annual PV generation. Other onsite renewable energy systems, such as wind turbines, biomass, biogas, or micro-hydro, may also be used to offset energy consumption. Many ZNE buildings actually produce more renewable energy over the course of a year than they consume; these are often called "Net Positive" buildings.

Do I need to retain the Renewable Energy Credits (RECs) for my project?

In order to count the renewable energy generation for your project toward your net zero goal, RECs must be retained or retired. If you have not retained or retired the RECs associated with your onsite renewable energy system, other projects may be claiming the RECs from your project toward their own zero energy goals. This policy is put in place to prevent double counting of renewable generation by both the owner of the RECs and the owner or lessor of the generation system. For those projects which achieve net zero energy performance at the site level but did not retain or retire their RECs, a qualifier will be added to the ZNE designation recognizing that the installed renewable energy capacity at the project have been allocated away from the project as RECs. (This designation has no impact on the recognition of a project as an ultra-low energy building based on gross EUI.)

Why should I submit my project?

By submitting your project to NBI, your building--if verified with ZNE or ultra-low energy performance--will be a candidate for inclusion in the **Getting to Zero Database**, which is considered a key resource for industry policymakers, owners, and practitioners targeting ZNE. Participation also helps to advance the net zero energy building knowledge base from which NBI develops trainings, policy, tools, and guidelines to promote advancement of net zero energy and high performance buildings.

All verified projects as well as emerging buildings will also be featured in the annual publication of the **Getting the Zero Buildings List**, which provides an overview of the net zero project growth and trends throughout North America, and other ZNE publications and promotions. See 2015 Getting to Zero Buildings List

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[2] 2030 Challenge: http://architecture2030.org/2030_challenges/2030-challenge/

[3] zEPI provides a scale for measuring commercial building energy performance and ranks a building's energy usage on a scale from 100 (average energy usage in the year 2000, based on the Commercial Buildings Energy Consumption Survey published in 2003) to 0 (net zero energy). A lower zEPI score indicates lower energy consumption. For more information on zEPI, including how to calculate scores, refer to: http://newbuildings.org/resource/zero-energy-performance-index-zepi

If I get my project certified as net zero, will NBI certify my project?

NBI verifies ZNE performance data and lists ZNE verified projects, but does not provide third-party certification of projects. If you are interested in having your project certified as net zero energy see if your project meets the requirements of the International Living Future Institute (ILFI) program offering.

How long does my building stay on the list?

ZNE verified projects remain verified for five years from the latest available data reviewed by NBI. After four years, verified projects will appear in gray on the verified list, pending new data verification. Building owners and project teams will be notified by NBI of their status after four years and be given the opportunity to provide more current data. With a four year window, projects are typically included in two publication cycles of the *Getting to Zero Status Update*.

My building is still in design or under construction, can it still be on the list?

Projects which are still in design or under construction can be added to our tracking database through our online registry and will be classified as emerging. Emerging projects are included on the Getting to Zero Buildings List. Once the building has a year's worth of energy consumption and generation data and this information has been reviewed by NBI, the project will then be moved to the appropriate list.

How do I get my building added to your database?

To add your project to the database, we have an online registry page: http://newbuildings.org/survey-form. Once submitted, NBI will review your submission, verify data, and add your building to the appropriate section of the database.

Do you have any other resources available for ZNE buildings?

- **Getting to Zero Database** – In-depth information about ZNE and high performance buildings across the United States, Canada and beyond.
  http://newbuildings.org/resource/getting-to-zero-database
- **Getting to Zero National Forum** – this forum provides designers, owners, operators, commercial real estate professionals, policymakers and manufacturers an opportunity to share perspectives on the growth of ZNE and ways in which ZNE can transform the built environment.
  http://gettingtozeroforum.org/
- **2014 Getting to Zero Status Update** – NBI's most recent report looking at the projects, policies and programs driving net zero energy performance.
  http://newbuildings.org/resource/2014-getting-zero-status-update
- **ZNE Communications Toolkit** - NBI has published a ZNE toolkit that includes a message platform, a sample ZNE presentation and a series of both general and audience specific fact sheets. The toolkit can be found here:
  http://newbuildings.org/resource/zero-net-energy-communications-toolkit
- **ZNE Case Studies** – NBI has published a number of case studies covering a range of building types in a wide variety of climate zones:
  http://newbuildings.org/hubs/zero-net-energy
  ZNE Building Controls Research – NBI has published a report exploring the role of controls in ZNE buildings, including characteristics, energy impacts, and lessons learned:
  http://newbuildings.org/resource/zero-net-energy-building-controls-characteristics-energy-impacts-and-lessons-learned-research-report/