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 energy (ZE) certified, verified, and emerging 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, regional and sector focused Getting to Zero Watchlists, and Projects Lists.

NBI first collects projects through a ZE 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 meets NBI eligibility requirements (see below), it is included in the Getting to Zero Buildings Database. Verified projects are also considered for case studies. 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 zero energy buildings across 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 and best practices, and generally to promote sustainable and advanced building performance.

The database includes zero energy projects that are certified, verified, and emerging.

- **ZERO ENERGY CERTIFIED** projects have been awarded Net Zero Energy (or equivalent) certification by a trusted third party such as the International Living Future Institute (ILFI). The certifier has thoroughly reviewed at least one continuous year of energy consumption and generation data to certify zero energy performance.
- **ZERO ENERGY VERIFIED** projects have achieved ZE for at least one full year and NBI has verified the performance data.
- **ZERO ENERGY EMERGING** projects have publicly stated goals of reaching ZE. These projects may be in the planning or design phase, under construction, or have been in operation for fewer than 12 months. Others may have been operating for at least a year, but their measured energy use data has yet to achieve ZE, or the data to document ZE performance was not available.

What is zero energy? How is it measured?

Zero energy (ZE), also commonly referred to as "zero net energy" (ZNE), "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 thousands of British thermal units (kBtu) per square foot (sf) per year (yr). 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/sf/yr 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 in units of kBtu/sf/yr)

What's the difference between a building and a project?

In many cases, NBI lists projects that include multiple buildings like campuses, districts, and building portfolios as a single project rather than listing them as individual buildings. Typically this is done when the decision to reach ZE performance is made on the project (group of buildings) level rather than the individual building level. For instance, a university campus may use a central energy plant and large centralized renewable generation facilities to offset the energy use of all the buildings on campus.

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 commercial and multifamily buildings with a publicly stated ZE target or goal 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 (see "What about offsite renewables?" below).

Do you use site or source EUI?

The database reports site and source EUI. Site EUI 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 ZE buildings?

It is important to prioritize passive systems, energy load reduction, and energy efficiency in any ZE building. All ZE 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 ZE 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 ZE buildings actually produce more renewable energy over the course of a year than they consume; these are often called "Net Positive" buildings.

[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.

Can I use offsite renewables?

Generally, NBI has limited our definition of ZE buildings to those that generate their renewable energy entirely within the site boundary. However, in some cases (urban high-rises, high-intensity building types, and campus/district/portfolio ZE projects, for example), the use of offsite energy may be required to get to zero. In these special cases, NBI allows the inclusion of offsite energy in ZE calculations if the following conditions are met:

1. Renewable energy purchase contract to last at least 15 years. RECs must be retained or retired.
2. The contract should be structured so that it can survive partial or full transfer of building ownership (that is, renewable energy allocation should remain tied to the building).
3. Renewables may come from solar, wind, geothermal, landfill/feed-lot methane, new run-of-river hydro, or expansions of existing impoundment hydropower facilities. Renewable energy generated from new hydro impoundments and offsite-sourced biomass are not considered renewable.
4. Renewable energy generation should be located within the same utility or grid operation region (that is, the same Integrated System Operator (ISO) or Regional Transmission Operator (RTO)).

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 zero energy performance at the site level but did not retain or retire their RECs, a qualifier will be added to the ZE designation recognizing that the installed renewable energy capacity at the project have been allocated away from the project as RECs.

Why should I submit my project?

By submitting your project to NBI, your building 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 ZE. 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 NBI's publication of the **Getting the Zero Buildings Lists** and **Status Updates**, which provide overviews of ZE growth and trends throughout North America, and other ZE publications and promotions. See the 2018 Getting to Zero Status Update.

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

NBI verifies ZE performance data and lists ZE 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. If you project has been certified by a third party such as ILFI or USGBC, NBI will list it in the ZE Certified category.

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: https://newbuildings.org/survey-form. Once submitted, NBI will review your submission, verify data, and add your building to the appropriate section of the database.

Are Zero Energy buildings also GridOptimal buildings?

Zero Energy buildings are helpful to the grid in that they use much less energy than traditional buildings. Zero Energy buildings can still improve how well they support grid operations by being flexible in when they use energy with controls, storage, and passive design features. Additional information about GridOptimal is available here: https://newbuildings.org/resource/gridoptimal/.

Do you have any other resources available for ZE buildings?

- **Getting to Zero Database** – In-depth information about ZE and high performance buildings across the United States, Canada and beyond.
  https://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 ZE and ways in which ZE can transform the built environment.
  https://gettingtozeroforum.org/
- **2018 Getting to Zero Status Update** – NBI's most recent report looking at the projects, policies and programs driving net zero energy performance.
  https://newbuildings.org/resource/2018-getting-zero-status-update
- **ZE Communications Toolkit** - NBI has published a ZE toolkit that includes a message platform, a sample ZE presentation and a series of both general and audience specific fact sheets. The toolkit can be found here:
  https://newbuildings.org/resource/zero-net-energy-communications-toolkit
- **ZE Case Studies** – NBI has published a number of case studies covering a range of building types in a wide variety of climate zones:
  https://newbuildings.org/hubs/zero-net-energy
- **ZE Building Controls Research** – NBI has published a report exploring the role of controls in ZNE buildings, including characteristics, energy impacts, and lessons learned:
  https://newbuildings.org/resource/zero-net-energy-building-controls-characteristics-energy-impacts-and-lessons-learned-research-report