



NETZERO
ENERGY BUILDING
CERTIFICATIONSM

DOCUMENTATION REQUIREMENTS

January 2015

**LIVING BUILDING
CHALLENGESM 3.0**

A Visionary Path to a Regenerative Future



INTERNATIONAL
LIVING FUTURE
INSTITUTESM

NET ZERO ENERGY BUILDING DOCUMENTATION REQUIREMENTS

LIVING BUILDING CHALLENGE™ 3.0

NZEB CERTIFICATION

OVERVIEW

Net Zero Energy Building (NZEB) Certification™ is one of three Certification paths under the Living Building Challenge. Projects meeting the requirements rely on exceptional energy conservation and on-site renewables to meet all of their heating, cooling and electricity needs. NZEB Certification:

- Verifies, through a third party audit of actual performance data, the building is truly operating as claimed, harnessing energy from the sun, wind or earth to exceed net annual demand.
- Provides a platform for the building to inform other efforts throughout the world and accelerate the implementation of restorative principles.
- Celebrates a significant accomplishment and differentiates those responsible for the building's success in this quickly evolving market.

Net Zero Energy Building Certification is a program operated by the International Living Future Institute using the structure of the Living Building Challenge – the world's most rigorous and progressive green building program.

REQUIREMENTS

To earn Net Zero Energy Building Certification, projects must meet the requirements of the four Living Building Challenge™ Imperatives shown to the right.

Teams should read the Living Building Challenge Standard and carefully review the intent of these specific Imperatives.

NZEB CERTIFICATION REQUIRED IMPERATIVES	
I-01	Limits to Growth
I-06	Net Positive Energy ¹
I-19	Beauty + Spirit
I-20	Inspiration + Education

HOW THIS INFORMATION WILL BE USED

AUDIT PROCESS

This packet was compiled as a reference guide for teams pursuing Net Zero Energy Building (NZEB) Certification® under Living Building Challenge™ 3.0.

As the owner of the Living Building Challenge Program, the International Living Future Institute™ (the Institute) will request specific information from various members of a project team (Team) to determine compliance with the Living Building Challenge Imperatives. This data will be shared in a limited capacity with the project's assigned Auditor, a third party who is responsible for performing documentation review and onsite verification once the twelve-month occupancy phase is complete. When on site, the Auditor may look for additional complementary information to support the project's claims in the written documentation. Therefore, additional records may be required if further proof of compliance is needed.

¹ Under the NZEB Certification path, projects are not required to comply with the positive energy (105% production) or storage for resiliency requirements.

3.0 NZEB Documentation Requirements

The Institute and the Auditor will treat with confidentiality any/all project drawings, project manuals, and construction documents submitted by members of a Team. Twelve months following a project's certification, these project drawings, project manuals, and construction documents may no longer be stored and any existing printed copies may be destroyed.

PUBLIC EDUCATION

The Institute may use and retain other non-sensitive project documentation as deemed necessary to further the educational mission of the organization, and may share information contained within the documentation with members of the Living Building Challenge Community (Community) or the general public. The Institute retains the right to use and/or publish essays written by the Team, and will attribute the content to the members of the Team as directed.

By submitting photographs and/or 3D renderings of the project, the Team grants the Institute royalty-free use of these image(s) in promotional material, such as web-based, printed, and other presentation formats, to support the Living Building Challenge or one of its auxiliary programs. The Institute will use the image(s) in a manner consistent with a Creative Commons "Attribution-No Derivative Works 3.0 United States" license.

Project teams are required to share documentation information about the project's performance on the publicly-accessible Institute website Case Study Database once the project is in its operational phase. This information must be updated with verified data after the project is certified, and additional feedback may be added to the project's case study subsequently as desired by the project team.

HOW TO USE THIS DOCUMENT

DOCUMENTATION PROCESS

Project teams should refer to this document periodically throughout every phase of their project, from pre-design through the end of the Performance Period, in order to prepare for the Audit.

Project teams are responsible for collecting and maintaining their documentation until they are ready to submit for review. Documentation should be organized, by Petal and Imperative, according to the structure shown in this document. Documents will be submitted digitally to the Auditor through the Institute.

The Institute has an ongoing goal to reduce the documentation needed to demonstrate compliance with the Living Building Challenge while publishing robust case studies. Over time, items may be modified to reflect this effort. Teams may elect to submit information using the current guidelines at the time of project registration or later releases.

BASIC DOCUMENTATION

All projects require all Basic Documentation, unless noted otherwise.

EXCEPTION DOCUMENTATION

Projects that use Exceptions or compliance paths that are not standard for all projects require additional documentation.

3.0 NZEB Documentation Requirements

PROJECT OVERVIEW

GENERAL REQUIREMENTS

G-01 General Project Information Summary

The Team should provide one document that includes all of the information below:

- Project Typology (Renovation, Landscape + Infrastructure, Building)
- Living Transect (L1-L6)
- Project Area (in square feet)
- Gross Building Area (in square feet)
- Building Footprint (in square feet)
- Project Floor Area Ratio (FAR)
- Construction documents start date
- Construction start date
- Occupancy date
- Twelve-month Performance Period start date

G-02 General Project Documentation

In addition, the following general documentation should be submitted:

- Site Plan with Project Area clearly noted
- Construction Drawings
- Project Manual (specifications)
- Records of significant changes during construction, e.g.
 - Architect's Supplemental Instructions, Construction Change Directives, Change Orders, General Contractor's Requests for Information, or other documents that record significant product or equipment modifications during the construction process as needed to demonstrate compliance with the Materials Petal.
- At least ten color 3D renderings or photographs of the project that can be used at the Institute's discretion to publicize the project and the program.
- Project Team Roster, including the name of each organization or individual participant on the Team, role, office location, and proximity to the project (in kilometers).

CASE STUDY QUESTIONNAIRE

Project Teams must complete the I04-1 Case Study Questionnaire for each Imperative submitted for Audit. Documentation that is likely to be used as supplemental case study content is noted in that questionnaire.

3.0 NZEB Documentation Requirements

PLACE PETAL

I01 LIMITS TO GROWTH

Under the NZEB Certification path, projects are not required to comply with the Landscape requirements of I-01, including Documentation I01-3 Landscape Plan or I01-4 Landscape Narrative.

BASIC DOCUMENTATION

I01-1

“Previously Developed” Documentation

Pre-December 31, 2007 aerial photos and/or other documents that show the following:

- The site and its adjacent properties to a minimum distance of 1000 feet beyond the project property line
- The land use on all sides of property
- “Previously developed” status
- All sensitive ecological habitats on or by the Project Area
- Third party evidence of the project development date such as county records (written descriptions and images), dated historic photos, newspaper articles, tax records, or permit documents.

Existing Buildings

Projects in existing buildings operational prior to December 31, 2007 must provide a photo showing that the project building was complete and operational prior to December 31, 2007.

I01-2

Flood Map

A FEMA-issued flood map documenting the project’s location relative to any nearby flood zones. For projects outside the United States or in instances where a FEMA-issued flood map does not exist, a zoning diagram or letter from the jurisdictional authority may be submitted.

3.0 NZEB Documentation Requirements

EXCEPTION DOCUMENTATION

I-01 Exception Documentation Summary Table

EXCEPTION		I01-a Conservation Docs	I01-b Technical Docs	I01-c Context Docs	I-01-d Calculations
I01-E1	Greenfields Protecting Virgin Land	x			
I01-E2	Greenfields Developed Before December 31, 0407			x	
I01-E3	Greenfields Surrounded by Development		x	x	x
I01-E4	Abandoned Brownfields	x	x		
I01-E5 - E8	Various sensitive ecological habitats	x			
I01-E9 - E10	Working farms, ports or docks		x		
I01-E11 - E12	Floodplain Exceptions			x	
I01-E13	Educational Landscapes		x		

- I01-a** **Conservation Documentation**
Official documents, from the organization responsible for the protection or interpretation of the sensitive ecological habitat, that demonstrate the project’s compliance with Exception requirements.

- I01-b** **Technical Documentation**
Legal, economic or contract documents that verify Exception requirements have been met, e.g.
 - Official documents such as current business licenses or registrations
 - Contracts or receipts showing transactions related to Exception requirements.

- I01-c** **Context Documentation**
Dated maps and/or photos demonstrating the project site meets Exception requirements.

- I01-d** **Calculations**
Calculations showing that Exception requirements have been met.

3.0 NZEB Documentation Requirements

ENERGY PETAL

I06 NET POSITIVE ENERGY

Under the NZEB Certification path, projects are not required to comply with the positive energy (105% production) or storage for resiliency requirements, including Documentation I06-6 Resilient Energy Storage Documentation.

BASIC DOCUMENTATION

I06-1 Energy Narrative

A two to three page narrative that is written by the energy designers or engineers, that describes the energy system, including:

- Anticipated building's needs and operational issues
- Design strategy
- All subsystems of the energy-using and energy-producing systems, including all areas listed in the I02-4 Energy Table
- The energy storage system

I06-2 Energy System Schematic

A schematic drawing of the energy system that correlates to the information in the I02-1 Energy Narrative.

I06-3 Photographs

Photographs of the systems, particularly portions that will be hidden from view at time of audit due to completion of construction.

I06-4 Energy Bills

Utility bills for a continuous 12-month period, beginning with the designated start date of the performance period.

If the project is not connected to a utility, or is sub-metered from a utility meter serving a larger area, and therefore has no energy bills, the energy or mechanical engineer must provide a letter, stamped with her or his professional seal and signed by both the engineer and the owner, substantiating that this is the case.

I06-5 Energy Production and Demand Table

Completed Energy Usage Table with monthly data from the 12-month performance period, from meter(s), other on-site tracking systems or web-link to an online mechanism that clearly records energy produced and consumed (e.g., total energy generated; total energy use by subsystem including simulated/designed demand if available).

3.0 NZEB Documentation Requirements

Energy Production and Demand Table (kBTU/ft2/yr kJ/m2/yr)

Living Building Challenge 3.0														Project Name:
Energy Production and Demand Table														
Performance Period	Performance Month	1	2	3	4	5	6	7	8	9	10	11	12	Annual Total
	Actual Month & Year (fill in name/year)	Month Year	Month Year	Month Year	Month Year	Month Year	Month Year	Month Year	Month Year	Month Year	Month Year	Month Year	Month Year	
Energy units (fill in)														
Energy Production	Photovoltaics (location 1)													0
	Photovoltaics (location 2)													0
	Micro-hydro-turbines													0
	Wind power													0
	Municipal Power (if grid tied)													0
	Other (describe)													0
	Total Energy Production	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Demand	Heating													0
	Cooling													0
	Hot Water													0
	Lighting													0
	Ventilation													0
	Computer Services													0
	Pumps													0
	Vertical Transportation													0
	Plug Loads/ Equipment													0
	Other (list)													0
Total Energy Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Energy Use Intensity (EUI)														
Modelled (optional)	Modelled energy production													0
	Modelled energy demand													0
	Predicted delta	0	0	0	0	0	0	0	0	0	0	0	0	0

106-6 Resilient Energy Storage Documentation (Optional)

Calculations showing the required amount of storage, supported by:

- A brief summary of the predicted lighting demand methodology
- Refrigeration manufacturer’s energy use information

3.0 NZEB Documentation Requirements

EXCEPTION DOCUMENTATION

I-02 Exception Documentation Summary Table

EXCEPTION		I02-a Narratives	I02-b Metering Data	I02-c Technical Docs	I02-d Photographs
I02-E1	Pre-existing Infrastructure	x	x		x
I02-E2	Photovoltaic Array Ownership			x	
I02-E3	Tenant Improvements in Existing High Rises	x	x	x	x
I02-E4	Specialty Combustion	x			
I02-E5	Ornamental Fireplace in Transects L1 and L2	x			
I02-E6	Emergency Power Systems	x			
I02-E7	Periodic Cultural Festivals	x	x		
I02-E8	Existing Buildings Sub-metering	x			
I02-SJ1	Shared/3rd Party Arrangements		x	x	
I02-SJ2	Campus Setting		x		
I02-SJ3	District Energy System		x		
I02-SJ4	Rural Projects			x	

- I02-a** **Additional Narrative**
A narrative describing the project’s need for the exception, the approach to and implementation of the alternative solution, and compliance with Exception requirements.
- I02-b** **Metering Documentation**
Metering documentation or data showing compliance with exception requirements.
- I02-c** **Technical Documents**
Legal, financial or contract documents showing compliance with exception requirements.

3.0 NZEB Documentation Requirements

- I02-d **Photographs**
Photographs showing compliance with exception requirements, including images of all components that will be changed from an existing state, or hidden by the completion of the performance period.

BEAUTY & INSPIRATION PETAL

I03 BEAUTY + SPIRIT

BASIC DOCUMENTATION

- I03-1 **Beauty Narrative**
A two- to four-page narrative written by the project designer or owner that describes how the project meets the intent of the Imperative. The narrative must be accompanied by photographs, diagrams and drawings that illustrate major ideas.
- I03-2 **Survey + Results**
Survey and results from project occupants/users. Survey must state the Imperative, and inquire of respondents whether they think the project has succeeded, and include additional questions related to the beauty of the project based on the designer’s narrative. Survey respondents must represent a randomized sampling of 10% of project occupants. Surveys may be administered online or in person. For single-family residences, testimonies from the home’s occupants, visitors or family members may be used.

I04 INSPIRATION + EDUCATION

BASIC DOCUMENTATION

- I04-1 **Case Study Questionnaire**
A complete Institute Case Study Questionnaire, to be used as content for the public case study of the project on the Institute website.
- I04-2 **Open House**
Non-residential and multifamily residential projects:
At least one annual “open day” to educate the public about the project and its achievements. This “open day” shall be publicized to the community at large.
- Single family residential projects:**
At least one “open house” to educate the public about the project and its achievements. This “open house” shall be publicized to the community at large. Subsequent events are encouraged, but not required.
- I04-3 **Website**
Educational web site (URL to be provided at submission) that shares information about the design, construction, and operation of the project, ideally, but not necessarily, including performance metrics.
- I04-4 **Owner’s Manual**
Non-residential and multifamily residential projects:

3.0 NZEB Documentation Requirements

A copy of the Operations and Maintenance Manual.

Single family residential projects:

A simplified Owner’s Manual (2-3 pages) that explains any non-typical systems associated with achieving Net Zero Energy Building certification and other unique features of the home, to assist future owners/occupants. No interpretive signage or detailed O&M manual is necessary.

I04-5

Brochure

Non-residential and multifamily residential projects only: A simple brochure describing the design, environmental features, and how occupants can help maintain and operate the project.

I04-6

Signage

Non-residential and multifamily residential projects only: Interpretive signage that teaches visitors and occupants about the project. Signage shall describe the performance goals of the building and major systems and concepts used to achieve Net Zero Energy Building certification.

I04-7

Optional Video

An educational video describing the project’s environmental features.

EXCEPTION DOCUMENTATION

None at time of issue.