

## **Tsleil-Waututh Nation Declaration**

*We are the Tsleil-Waututh First Nation, the People of the Inlet.  
We have lived in and along our Inlet since time out of mind.  
We have been here since the Creator transformed the Wolf  
into that first Tsleil-Wautt, and made the Wolf responsible for this land.*

*We have always been here and we will always be here.  
Our people are here to care for our land and water.  
It is our obligation and birthright  
To be the caretakers and protectors of our Inlet.*

*Our people descended from powerful Hereditary leaders, Waut-salk and Sla-holt  
We know where we come from and we know who we are  
We respect our heritage and  
Nothing can change our history and our truth.*

*Our people travelled far and wide on our traditional territory, they paddled  
Our waters and climbed our mountains.  
They understood the richness that our traditional territory held, and in  
Understanding this, they knew our land.  
Our ancestors were responsible for our rivers, streams, beaches and forests  
Of our traditional territory.  
Our people knew our land well because it was for the benefit of everyone.*

*Our Tsleil-Waututh Nation is moving into our future.  
Our children and our land are our future.  
Our future will bring enough for our children's children to thrive.  
We are looking forward,  
We are ready to meet the next millennium.*

*Therefore, be it known far and wide that our Tsleil-Waututh Nation, the  
People of the Inlet, are responsible for and belong to our traditional territory.  
Let it be known that our Tsleil-Waututh Nation is a Nation unto itself,  
Holding traditional territory for its people.*



Tsleil-Waututh Nation  
PEOPLE OF THE INLET

# TSLEIL-WAUTUTH NATION Policy and Procedures

## Energy Efficient Low Carbon Buildings Policy

<b>Policy Number</b>	PP-23-01
<b>Department Lead</b>	Public Works
<b>Council Consideration Date</b>	13 June 2023

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## 1.0 DEFINITION OF TERMS

The following definitions apply to this Policy:

**Air Leakage Rate** – A measure of the rate that air leaks through the building envelope per unit area of the building envelope, as recorded in L/(s·m<sup>2</sup>) at a 75 Pa pressure differential. Used for **Part 3 Buildings**.

**Airtightness** – Typically measured number of times the full volume of air in the building exchanges per hour at 50 Pa pressure differential (ACH50), airtightness is the common term for describing the continuity of the building air barrier system. Increasing airtightness to lower air leakage rates is a key strategy to reduce building energy consumption. Airtightness is measured by airtightness testing (blower door test).

**BC Building Code (BCBC)** – The BC Building Code is a provincial regulation that sets minimum requirements for safety, health, accessibility, fire and structural protection, energy and water efficiency for new building construction, building alterations, repairs and demolitions. The BC Building Code is amended from time to time to ensure alignment with National Codes and to respond to specific provincial needs. BCBC section references in this Policy refer the 2018 BC Building Code, as amended.

**Coordinating Registered Professional** – a registered professional retained under BC Building Code clause 2.2.7.2(1)(a) to coordinate all design work and field reviews of the Registered Professional who are required for a project. A Registered Professional means:

- a person who is registered or licensed to practice as an architect under the Architects Act, or
- a person who is registered or licensed to practice as a professional engineer under the Engineers and Geoscientists Act.

**Energy Step Code (ENSC)** – a compliance pathway in the 2018 **BCBC** (Division B, sections 9.36 (for **Part 9 Buildings**) and 10.2 (for **Part 3 Buildings**) as amended) that sets progressively increasing energy efficiency performance steps for new buildings. The **ENSC** enables a whole building systems approach and guides the use of energy modelling and on-site testing to increase energy efficiency of building envelopes, **airtightness**, equipment and systems. BC has set mandatory energy efficiency requirements and timelines for new buildings of 20% more efficient than the 2018 **BCBC** by 2022, 40% more efficient by 2027, and 80% more efficient **Net Zero Energy Ready** construction by 2032.

**Energy Model** – a software model that calculates how much energy a proposed building is expected to use for space heating, hot water heating, ventilation, lighting, appliances, and plug loads. The energy model accounts for the size and geometry of the building, the climate zone, the effective insulation values of assemblies such as walls, ceilings, and windows, and the mechanical systems that heat and ventilate the house. Standard operating conditions are assumed for the quantity and living habits of the occupants.

**Energy Modeller** – a trained professional that performs similar work to a **Registered Energy Advisor**, but may not be affiliated with a service organization and the **EnerGuide** Rating System. Instead, they may use other energy simulation software to test compliance with **Energy Step Code** requirements. Energy Modellers understand energy modelling software, construction details, and code requirements. All Energy Advisors are Energy Modellers, but not all Energy Modellers are Energy Advisors. For **Part 3 Buildings**, an Architect, Engineer or trained Energy Modeller can complete building energy modelling to test **ENSC** performance.

**EnerGuide** – EnerGuide is Canada's energy performance and labelling system for new and existing homes and appliances. For homes, EnerGuide rating compares the annual home energy use (Gigajoules/year) to that of a newly constructed reference home. EnerGuide evaluations are typically done by an Energy Advisor and results identify how the home uses energy and suggest recommended energy retrofits.

**Greenhouse Gas Intensity (GHGI)** – a measure of a building's greenhouse gas (GHG) performance per square metre using the definition, calculation, and fuel type emissions factors established in the energy modelling guidelines and is a calculated value determined through energy modelling and reported in kilograms of carbon dioxide-equivalent per square metre/year (kgCO<sub>2e</sub>/m<sup>2</sup>/yr).

**Low Carbon Energy Systems (LCES)** – professionally operated, highly efficient mechanical systems that supply a building's space heating, cooling, and domestic hot water heating demand primarily from low carbon energy sources; and that do not exceed the identified **Greenhouse Gas Intensity (GHGI)** limits. LCES

systems include, but are not limited to, air-source and water-source electric heat pump systems, heat recovery systems, variable refrigerant flow systems, package terminal heat pumps, and more.

**Major Occupancy** – the principal occupancy or use for which a building or part thereof is used or intended to be used, and which also includes subsidiary occupancies that are an integral part of the principal occupancy. Occupancy definitions used in this policy are based on those in the **BC Building Code**.

**Net Zero Energy Ready Building** – a building that is designed to meet high energy efficiency standards such that with the addition of renewable energy it could generate enough energy to meet its own energy needs. A Net Zero Energy Building produces as much clean energy as it consumes.

**Net Zero Carbon Ready Building** – a building that is designed to meet high energy efficiency standards and also minimizes greenhouse gas emissions from building materials and operations. With the addition of renewable energy, Net Zero Carbon Ready buildings can achieve net zero carbon emissions.

**Part 3 Buildings** – buildings larger than 3 storeys or with a footprint of over 600 square metres. Some buildings may be smaller, but also fall into any of these types of uses: public gathering, residential care, larger residential, commercial and light industrial. Includes shopping centres, office buildings, apartment buildings, hospitals, care facilities, schools, daycares, churches, theatres, restaurants.

**Part 9 Buildings** – buildings 3 storeys and under in height and with a footprint of 600 square metres or less (from **BCBC**). Small buildings intended for residential, commercial or light industrial activities. Includes houses, duplexes, small apartment and/or commercial buildings, and small industrial shops.

**Passive House** – a building that has been designed to achieve exceptional energy efficiency and thermal comfort in accordance with the internationally recognized Passive House (Passivhaus) high performance building standards. Passive House buildings reduce heating and cooling loads through passive measures like massing, insulation, high-quality windows, passive solar energy, shading, and elimination of thermal bridges, and consume as much as 90% less heating and cooling energy than typical new buildings.

**Reference Building** – A building built to base building code standards. **Percent Lower than Reference House** is an **Energy Step Code** performance metric used to determine the energy performance of a building in relation to a modelled building benchmark, referred to by the **BCBC** as a Reference Building. Reference Buildings are based on whole building energy analysis using energy simulation software.

**Registered Energy Advisor** – a third-party consultant trained and registered by service organizations licensed by Natural Resources Canada, to deliver Natural Resource Canada's **EnerGuide** Rating System, ENERGY STAR® for New Homes and R-2000 programs. An Energy Advisor works only on **Part 9 Buildings** and can provide both energy modelling and airtightness testing. See also **Coordinating Registered Professional** and **Registered Professional of Record** for design and modelling for **Part 3 Buildings**.

**Registered Professional of Record (RPR)** – a registered professional retained by the development applicant to take responsibility for design work and field reviews in a particular discipline in accordance with the **BCBC** (subsection 2.2.2 of Division C). The RPR is also responsible for the review and checking of all design documents prepared by any supporting registered professionals retained on the project within that discipline.

**Whole Life Carbon** – total carbon footprint of a building over its lifecycle and includes embodied carbon (carbon emissions generated as part of materials extraction, transportation, manufacture, construction and decommissioning) and operational emissions (carbon emissions generated as part of building operations).

**Zero Carbon Step Code (ZCSC)** – a compliance pathway in the **BCBC** that establishes progressive carbon performance steps for decreasing greenhouse gas emissions from new building operations, as defined in sections 9.37 (for **Part 9 Buildings**) and 10.3 (for **Part 3 Buildings**) of the 2018 **BCBC**, as amended. The Province of BC has set targets to ensure that all new buildings are **Net Zero Carbon Ready** by 2030.

## 2.0 CONTEXT

Tsleil-Waututh Nation (TWN) is seeking to improve the energy efficiency and carbon performance of housing and other buildings on reserve land. This Policy provides performance requirements to reduce building energy consumption, lower greenhouse gas (GHG) emissions and strengthen resilience to climate change.

## 3.0 PURPOSE

The purpose of this Policy is to:

- set a pathway towards **Net Zero Energy Ready** and **Net Zero Carbon Ready** new buildings;
- confirm the incremental, performance-based approach to improving building energy efficiency and carbon emissions for new buildings;
- set clear, consistent performance requirements that are based on established energy efficiency and low carbon performance standards;
- ensure new buildings are climate ready and designed to withstand projected temperature changes;
- establish streamlined procedures for the submission and review of building energy performance and emissions reduction reports; and
- promote building energy and GHG awareness through performance monitoring and labelling.

## 4.0 SCOPE AND APPLICABILITY

1. The TWN Energy Efficient Low Carbon Buildings Policy (“the Policy”) adopts and relates to the energy efficiency and **Energy Step Code (ENSC)** sections of the **BC Building Code** (2018, as amended).
2. The Policy also adopts and relates to the building greenhouse gas emission reductions and **Zero Carbon Step Code (ZCSC)** sections of the **BC Building Code** (2018, as amended).
3. The Policy applies to new **Part 3** and **Part 9 Buildings** with **Major Occupancies** including residential, commercial (office and retail), hotels and motels, public sector assemblies, treatment and care facilities.
4. The Policy comes into effect on the day it is approved by TWN Council and applies to all applicable **Part 3** and **Part 9 Buildings**.
5. The Policy does not replace any National Energy Code of Canada for Buildings (NECB) requirements that may apply to building occupancies (e.g. industrial uses) other than those identified in this Policy.

## 5.0 RELATED POLICIES AND SUPPORTING DOCUMENTS

6. The Policy supports the TWN Declaration and aligns with policies and planning objectives from the TWN Land Use Plan Law, Comprehensive Community Plan and Stewardship Policy.
7. The Policy is intended to be applied in conjunction with:
  - a) Energy Efficient Low Carbon Building Policy related implementation guides, energy performance and design verification forms as issued and updated by the TWN Public Works Department;
  - b) the TWN Land Use Plan Law (2019), TWN Zoning Bylaw, TWN Building Bylaw (2001), TWN Community Energy Plan, **BC Building Code** (2018), National Building Code, the National Energy Code of Canada for Buildings (2020) and other legislation as applicable and as amended from time-to-time; and other relevant laws, policies or plans as may be adopted or endorsed by TWN Council.

## 6.0 POLICY

8. New **Part 3** and **Part 9 Buildings** must be designed and constructed to meet the energy and carbon performance requirements as outlined in Table 1.
9. Performance reductions identified in Table 1 represent the minimum requirements to be met for building energy and carbon emissions reductions performance. For clarity, the applicable performance requirements will be those in place at submission of the complete Building Permit application.

10. Energy performance requirements for the **ENSC** steps identified in Table 1 will be met if energy modelling demonstrates that the building complies with the **ENSC** metrics specified in the 2018 **BCBC** as amended. (Metrics are summarized in the Policy Implementation Bulletin for convenience only.)
11. Carbon performance requirements identified in Table 1 will be met if emissions modelling and calculations demonstrates that the building complies with the **ZCSC** metrics specified in the 2018 **BCBC** as amended. (Metrics are summarized in the Policy Implementation Bulletin for convenience only.)

**Table 1: Building Energy and Carbon Performance Requirements Schedule**

<b>SCHEDULE OF REQUIREMENTS - Energy &amp; Carbon Performance</b>			
<b>MAJOR OCCUPANCY TYPE</b>	<b>2023</b>	<b>1 Jan 2027</b>	<b>1 Jan 2030</b>
<b>Part 9 Residential</b>	<b>ENSC step 4, or step 3 with strong carbon</b>	<b>ENSC step 4 with strong carbon</b>	<b>ENSC step 4 with zero carbon</b>
<b>Part 3 Residential (4-6 stories)</b>	<b>ENSC step 4, or step 3 with strong carbon</b>	<b>ENSC step 4 with strong carbon</b>	<b>ENSC step 4 with zero carbon</b>
<b>Part 3 Residential (over 6 stories)</b>	<b>ENSC step 3, or step 2 with strong carbon</b>	<b>ENSC step 3 with strong carbon</b>	<b>ENSC step 3 with zero carbon</b>
<b>Commercial (Office &amp; Retail)</b>	<b>ENSC step 3, or step 2 with strong carbon</b>	<b>ENSC step 3 with strong carbon</b>	<b>ENSC step 3 with zero carbon</b>
<b>RECOMMENDATIONS ONLY - Energy &amp; Carbon Performance</b>			
<b>MAJOR OCCUPANCY TYPE</b>	<b>2023</b>	<b>1 Jan 2027</b>	<b>1 Jan 2030</b>
<b>Hotels and Motels</b>	<b>ENSC step 3, or step 2 with moderate carbon</b>	<b>ENSC step 3 with strong carbon</b>	<b>ENSC step 3 with zero carbon</b>
<b>Public Sector Assemblies Treatment &amp; Care</b>	<b>ENSC step 3, or step 2 with moderate carbon</b>	<b>ENSC step 3 with strong carbon</b>	<b>ENSC step 3 with zero carbon</b>

12. Attainment of moderate (EL-2) carbon performance measures in Table 1 will require decarbonization of space heating. Attainment of strong (EL-3) carbon performance will require decarbonization of both space heating and domestic hot water systems. Attainment of zero carbon (EL-4) will require full decarbonization of all building systems including equipment and appliances. For **Part 9 Buildings**, decarbonization means having an emissions factor of  $\leq 0.011 \text{ kgCO}_2\text{e/kWh}$ .
13. Under the 2023 column only in Table 1, the required energy performance step can be relaxed to a lower step with achievement of the identified building carbon performance standard.
14. Where an onsite **Low Carbon Energy System** is used to meet the carbon performance requirements, the **LCES** must:
  - adhere to the HVAC equipment requirements including heating and cooling capacity, performance testing standard and minimum performance measures in the **BC Building Code**;
  - supply a minimum of 70% of building thermal energy demand from low emission renewable sources;
  - have a system average co-efficient of performance greater than 2.0; and
  - have a total modeled **GHGI** of no more than  $3 \text{ kg CO}_2\text{e/m}^2\text{-yr}$ .
15. Any peak demand and/or backup system must be appropriately sized to augment (and not replace) the primary **LCES** under peak demand conditions (so not full redundancy).
16. Where natural gas peak demand and/or backup heating systems are proposed in the building design, performance of these systems must be included in building energy modelling and **GHGI** calculations.

## 7.0 PROCEDURES

### Energy Modelling, Energy Design and GHG Reduction Verification

17. Implementation of the energy efficiency and **carbon performance measures** in this Policy requires integrated building design, building energy modelling and **Airtightness** testing.
18. Mid-construction and pre-occupancy blower door tests are required for new **Part 9 Buildings**.

19. For both **Part 3** and **Part 9 Buildings**, the measured **Airtightness** value must be consistent with that used in the as-built energy model.
20. Development applicants are responsible for retaining the necessary **Coordinating Registered Professional** and/or **Registered Professional of Record** to coordinate the integrated building design, complete building energy performance and **GHGI** modelling and mid-construction blower door testing, ensure and demonstrate compliance with the energy and carbon performance requirements in this Policy.
21. To verify that building design and construction complies with the energy and carbon performance requirements in this Policy, the following energy and GHG modelling and verification reports must be submitted to TWN Public Works: (i) Energy Intensity Report (project planning & design), (ii) Energy Design Report (pre-construction), (iii) As-Built Energy Report (post construction), and (iv) Completion Report. (See supplementary Policy Implementation Bulletin for more detail on submission process and timing.)
22. Energy modelling must be consistent with and reflect the proposed design specifications in the drawings submitted for the Building Permit application.
23. To ensure new buildings are climate change ready, energy modelling must be based on projected climate change temperatures and conditions, which includes the RCP-8.5 for 2050, as a minimum, and 2080.
24. Building energy performance systems must consider the space heating, cooling and ventilation needs of building occupants. New **Part 3 Buildings** must provide mechanical cooling in all residential units as well as passive design measures to reduce cooling demand.
25. Calculation and reporting on building **Whole Life Carbon** emissions is encouraged for lower energy performance steps and is required for **ENSC** steps 4 and 5. Reporting is to be submitted with the Building Permit application and compared to a baseline **Reference Building**.
26. For proposed **Low Carbon Energy Systems (LCES)**, Public Works may also request:
  - assurances that **LCES** related manufacturer performance manuals, system operations and thermostat programming, routine maintenance and servicing needs have been provided to building operators and/or occupants; and
  - other assurances as may be needed to ensure optimal and intended performance and maintenance of building energy and mechanical systems.

### Review and Resolution Process

27. Development applicants and their retained professionals must ensure that energy and **GHG** modelling and verification reports are completed and submitted to TWN Public Works in a timely manner and at the appropriate application stage.
28. Completed energy and **GHG** modelling and verification reports submitted by a **Registered Professional of Record** will be reviewed to the satisfaction of the TWN Public Works Director, or designate, to ensure compliance with the applicable energy and carbon performance reduction standards.
29. Where a proposed building fails to achieve the energy and carbon performance measures as outlined in this Policy, the development applicant and retained professionals must exercise due diligence in reviewing the building design and exploring other options to satisfy these requirements. Once due diligence has been demonstrated and options to address this issue are exhausted, the development applicant may seek to negotiate a solution to the satisfaction of the TWN Public Works Director, or designate.
30. TWN Public Works may retain a **Registered Professional**, at the cost of the development applicant, to complete a peer review of the submitted building energy reports to verify if the building design meets the intent of this Policy.
31. TWN Public Works may consider the following measures to support implementation of this Policy, where appropriate:
  - a) excluding additional wall thickness related to increased insulation from floor space ratio calculation;
  - a) relaxing building setback requirements to create space for thicker wall assemblies, exterior mechanical equipment siting, or exterior shading devices;
  - b) relaxing building height limits to enable thicker roof assemblies or rooftop mechanical and renewable energy systems;

- c) providing a floor area exemption for mechanical rooms to incentivize sufficiently-sized and accessible mechanical rooms and low carbon technology;
- d) replacing TWN's energy efficiency design verification process for all new buildings designed to meet **Passive House** Standards, where appropriate **Passive House** certification is provided instead.

### Energy Benchmarking and Labelling

- 32. Upon successful achievement of the energy and carbon performance levels as required by this Policy, and prior to Building Occupancy Permit:
  - a) **Part 9 buildings** must receive an **EnerGuide** rating and the EnerGuide building energy performance label must be affixed to the door of the building electrical service panel. The **GHGI** score should also be affixed to the same location. A comparable energy label can be used when **Energy Modellers** are using software tested in accordance with ANSI/ASHRAE 140 Evaluation of Building Energy Analysis.
  - b) **Part 3 buildings** must receive an ENERGYSTAR score that is calculated and posted in the online ENERGY STAR Portfolio Manager tool.
- 33. For **Part 3 Buildings**, development applicants must provide confirmation to TWN Public Works that an ENERGY STAR Portfolio Manager account, providing TWN with read only access, has been established. Public Works may use this information for energy benchmarking purposes. Individual building performance data will not be made public.
- 34. Where electric vehicle (EV) charging is to be incorporated into **Part 3 Buildings**, the EV charging station should be on a separate metering system than the building energy metering system so that energy performance of the building can be monitored independently of the EV charging energy consumption.

### Methodologies

- 35. Building energy and emissions modelling and calculations must comply with the methodologies and metrics outlined in the **BC Building Code** (2018, as amended), which supports use of the City of Vancouver Energy Modelling Guidelines and/or the Joint Professional Practice Whole Building Energy Modelling Services for energy modelling of **Part 3 Buildings**.
- 36. For **Part 9 Buildings**, the **Registered Energy Advisor** may provide a manual calculation for **GHGI** using the total annual consumption of each fuel source multiplied by the respective emissions factors (electricity: 0.011 kg CO<sub>2</sub>e/kWh, and natural gas: 0.185 kg CO<sub>2</sub>e/kWh).
- 37. Energy modelling reports submitted to TWN Public Works must specify the name and version of the energy modelling software used in energy modelling calculations.
- 38. **Whole Life Carbon** calculations and reporting must provide a whole building life-cycle assessment of embodied and operational emissions in kgCO<sub>2</sub>e/m<sup>2</sup>, with a separate calculation for refrigerant emissions.
- 39. Projected climate change temperatures and conditions should be informed by the Pacific Climate Impacts Consortium PCIC Climate Explorer Tool.

## 8.0 POLICY REVIEW, IMPLEMENTATION MONITORING AND POLICY UPDATES

- 40. Implementation of this Energy Efficient Low Carbon Buildings Policy should be monitored annually and reviewed every 3-5 years by TWN Public Works staff.
- 41. Periodic updates to the Policy may be needed (e.g., in response to changing community needs and priorities, changing federal and/or provincial legislation, and evolving energy technologies and measurement methodologies). Changes to the energy and carbon performance requirements and schedule in this Policy will require Council approval.
- 42. Ability to approve minor updates that will not change the overall intent or performance requirements of this Policy, but which may facilitate and/or improve Policy implementation, is delegated the TWN Public Works Director.



## 9.0 APPROVAL HISTORY

ISSUED BY: Public Works	DATE APPROVED BY TWN COUNCIL:    /    /2023
REVISED BY: Public Works	