

WorldGBC Net Zero Carbon Buildings Commitment

Detailed Guidance

v1 January 2019



Acknowledgements

Green Building Councils

Deutsche Gesellschaft für Nachhaltiges Bauen (DGNB)
Emirates Green Building Council
Green Building Council of Australia (GBCA)
United Kingdom Green Building Council (UKGBC)
United States Green Building Council (USGBC)
Sweden Green Building Council


Non-GBC representatives

Alliance to Save Energy
Architecture 2030
B-Team
C40
California Energy Commission
Carbon Disclosure Project
City of LA
City of New York Mayor's Office
City of San Francisco
Institute for Market Transformation
Integral Group
International Living Futures Institute (ILFI)
Majid Al Futtaim
Natural Resources Defense Council
San Francisco Department of the Environment
Strategic Growth Council California
The Climate Group
United Cities and Local Governments
United Nations Environment Programme
World Business Council for Sustainable Development (WBCSD)
World Resources Institute (WRI)

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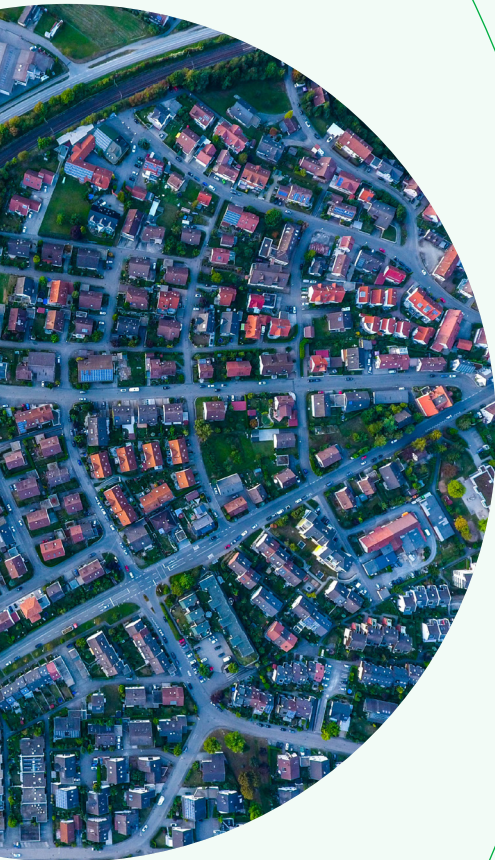
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Disclaimer: This document is intended as further guidance for WorldGBC's Net Zero Carbon Buildings (NZCB) Commitment. It has been developed in conjunction with the NZCB Taskforce, the Global Climate Action Summit working group and WorldGBC corporate partners. As such, it is a live document and will be updated as required. Please refer to the latest version of the Detailed Guidance document for the most accurate guidance relating to the NZCB Commitment requirements.

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Background 1.0

1.1 World Green Building Council

The World Green Building Council (WorldGBC) is a global network of Green Building Councils which is transforming the places we live, work, play, heal and learn. We believe green buildings can and must be at the centre of our lives. Our changing climate means we must reshape the way we grow and build, enabling people to thrive, both today and tomorrow. We take action – championing local and global leadership, and empowering our community to drive change. Together, we are greater than the sum of our parts, and commit to green buildings for everyone, everywhere.

1.2 Advancing Net Zero

To deliver the Paris Agreement, all sectors of the economy must achieve significant emissions reductions; and the global building sector must transition to and operate at net zero carbon emissions by 2050. WorldGBC's Advancing Net Zero global project was launched in 2016 to inspire action from the Green Building Council network and its members towards this transition. In May 2017, WorldGBC released a report outlining the action that business, government and NGO sectors must take to accelerate the market for net zero carbon buildings, and to ultimately achieve the goal for all buildings to operate at net zero carbon by 2050, with new buildings from 2030.

1.3 Green Building Councils

Green Building Councils (GBC) are independent, non-profit organisations made up of businesses and organisations working in the building and construction industry. As members of the WorldGBC, they work to advance green building in their own countries, as well as uniting with other Green Building Councils to achieve environmental, economic and social goals on a larger, global scale. More information can be found on the WorldGBC website.

1.4 Commitment partners

The Climate Group's global EP100 initiative brings together a growing group of energy-smart companies committed to doing more with less. By integrating energy efficiency into business strategy, these leading companies are driving tech innovation and increasing competitiveness while delivering on emissions goals – inspiring others to follow their lead. Saving energy makes business sense; our members are generating green growth and making substantial cost savings by doubling their energy productivity, cutting out waste, and owning and operating smart buildings. EP100 is led by The Climate Group in partnership with the Alliance to Save Energy as part of the We Mean Business coalition, and is delivered in association with the World Green Building Council's Net Zero Carbon Buildings Commitment. Visit theclimategroup.org/EP100 or follow #EP100 on Twitter.



C40
CITIES

C40 is a network of the world's megacities committed to addressing climate change. C40 supports cities to collaborate effectively, share knowledge and drive meaningful, measurable and sustainable action on climate change. Cities are where the future happens first. The C40 Cities Climate Leadership Group connects more than 90 of the world's greatest cities, representing over 650 million people and one quarter of the global economy. Created and led by cities, C40 is focused on tackling climate change and driving urban action that reduces greenhouse gas emissions and climate risks, while increasing the health, wellbeing and economic opportunities of urban citizens. Visit <https://www.c40.org/> or follow [@C40cities](https://twitter.com/C40cities) and [#C40forclimate](https://twitter.com/C40forclimate) on Twitter.

The Under2 Coalition is driven by a group of ambitious state and regional governments committed to keeping global temperature rises to under 2°C. The coalition is made up of more than 200 governments who represent over 1.3 billion people and nearly 40% of the global economy. The Climate Group is the Secretariat to the Under2 Coalition and works with governments to accelerate climate action through three workstreams: 2050 Pathways, supporting governments to develop robust medium and long-term (2050) emissions reduction plans in line with the goals of the Paris Climate Agreement; Policy Action, spreading today's best climate policies and developing new policies to ensure full decarbonisation; Transparency, supporting governments so they have the expertise and systems in place to assess their emissions accurately, track progress and ensure policies remain fit for delivering against climate targets. Visit theclimategroup.org/project/under2-coalition or follow [#Under2Coalition](https://twitter.com/Under2Coalition) on Twitter.



Introduction 2.0

This document is intended for use with the WorldGBC Net Zero Carbon Buildings Commitment ('the Commitment'), which can be found in Appendix A. It aims to provide further guidance and elaborate on the requirements of the Commitment. This introduction provides context including what the Commitment is, and why and how it was formed. It also offers practical information relating to becoming a signatory and what it means for you as a business, organisation, city, state or region.

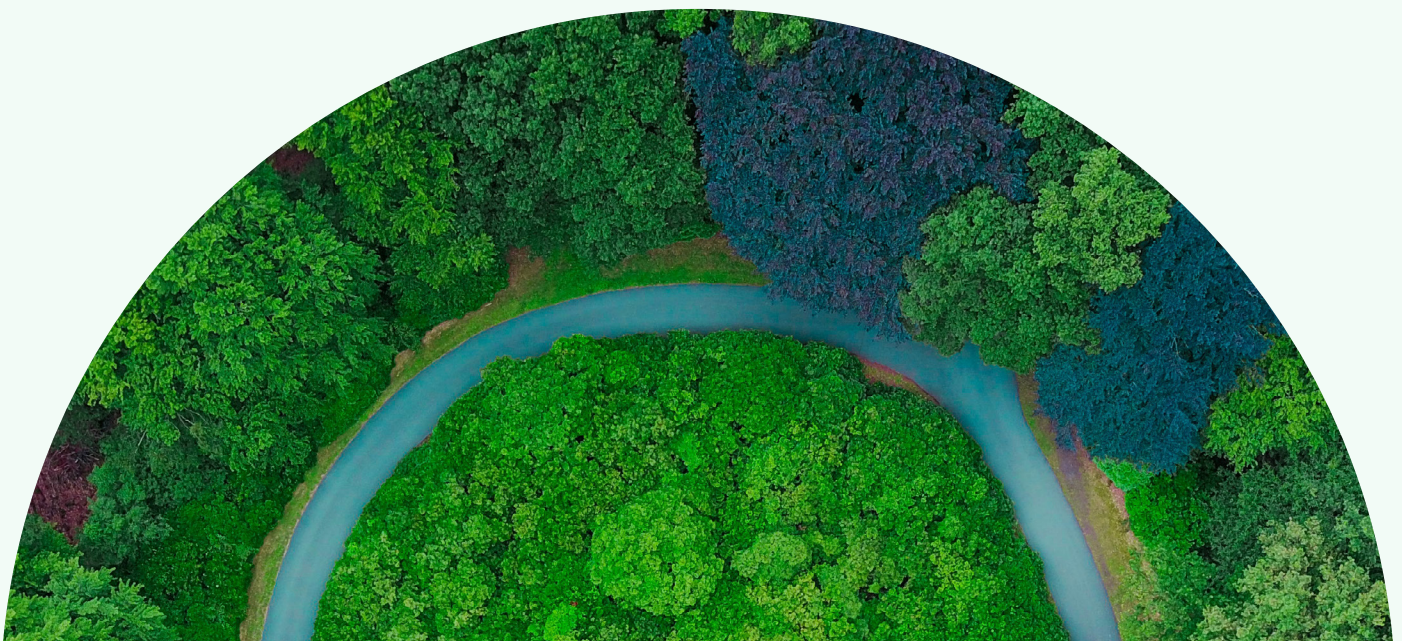
2.1 The Commitment

What is it about?

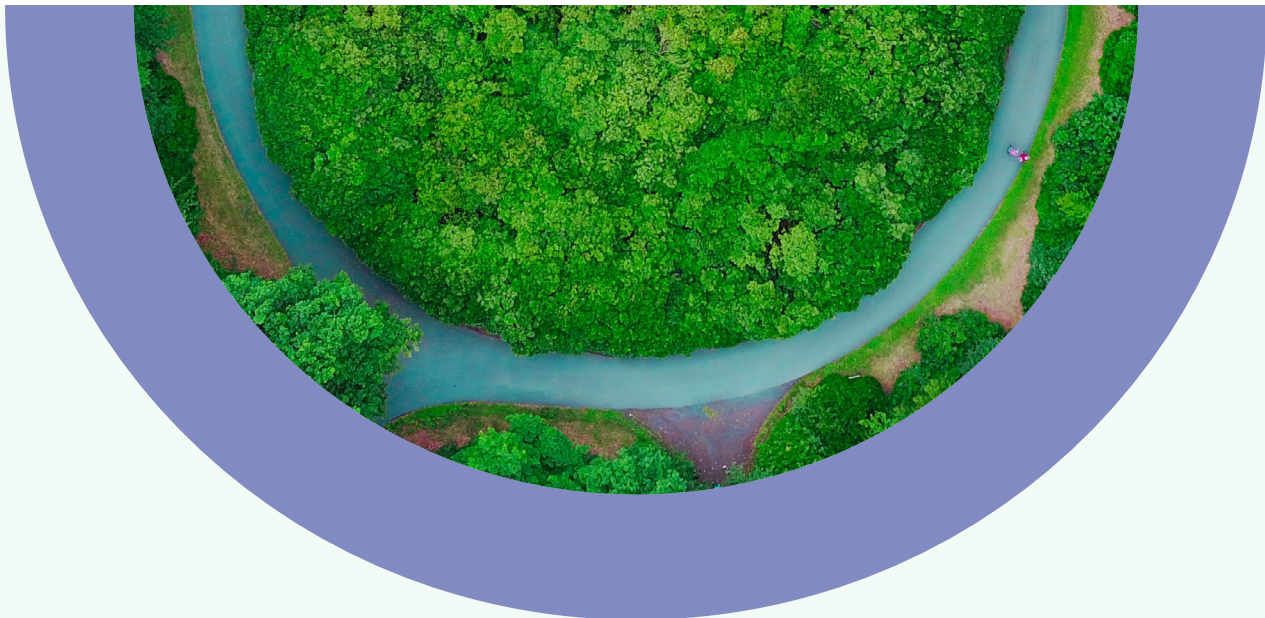
WorldGBC has developed the Net Zero Carbon Buildings Commitment to recognise and promote advanced climate leadership from business, organisations, cities, states and regions in decarbonising the built environment, to inspire others to take similar action and remove barriers

to implementation. It aims to maximise the chances of limiting global warming to below 2°C and to reduce operating emissions from buildings (currently 40% of energy-related CO₂ emissions¹) by calling on industry to reach net zero operating emissions in their portfolios by 2030, and to advocate for all buildings to be net zero carbon in operation by 2050. Since this is a global challenge, the five components of the Commitment framework are prescriptive where necessary while allowing for creative and flexible solutions at asset and portfolio level, as outlined within this document: commit, disclose, act, verify and advocate.

The Commitment has been developed under the EP100 campaign, led by The Climate Group, and is recognised as a new pathway to EP100 membership (business only). It was officially launched at the Global Climate Action summit (GCAS) in San Francisco on 13 September 2018. The Summit brought together leaders who showcased climate action taking place around the world, and aimed to inspire deeper commitments from industry and national governments in support of the Paris Agreement.



¹Data from the Global Status Report 2018, Global Alliance for Buildings and Construction & the International Energy Agency



How was it developed?

The Commitment was developed using the guiding principles of the [Advancing Net Zero Framework](#) and in conjunction with focused and dedicated industry expertise coming from both within the Green Building Council community and wider industry stakeholders. After a thorough and extensive development process, the Commitment was released for external consultation to C40 cities, The Climate Group states and regions, GBCs and their members, the WorldGBC Corporate Advisory Board and other industry partners.

Who can sign up for the Commitment?

Entities seeking to become a signatory must demonstrate a level of ambition and impact equivalent to the leadership required by this Commitment. Signatories may demonstrate this ambition and impact through:

- international presence to stimulate global markets
- significant presence in their country
- significant capacity to influence the built environment
- high level of carbon emissions within their sector relative to an average entity, **and/or**
- high potential for advocacy to increase uptake within industry

Eligibility will be assessed by local GBCs (where possible) and finalised by the Advancing Net Zero team of WorldGBC during the recruitment process. Where necessary, eligibility will be further determined by members of the Taskforce of the Net Zero Carbon Buildings Commitment.

Please note: Entities must sign the Commitment for every component of all streams (ie cities, states and regions, owner, tenant, developer) as relevant to entity operations and must include all assets within their portfolio under their direct control (see definitions section).

Benefits of being a part of the Commitment

The Net Zero Carbon Buildings Commitment demonstrates proactive climate leadership to ensure the carbon emission reduction goals of the Paris Agreement are achieved through urgent and immediate action. It provides business, organisations, cities, states and regions with the opportunity to future proof their operations and creates a unique platform for vocalised action. By setting ambitious 'absolute' targets, the Commitment gives a framework for entities to develop globally ambitious yet locally relevant, flexible and universally viable solutions for their assets and portfolio to both reduce energy demand and achieve net zero carbon emissions. By becoming a signatory and leveraging the vast experience of The Climate Group, C40 Cities, World Green Building Council and member Green Building Councils, participants can demonstrate to industry the level of action required to achieve decarbonisation, and stimulate wider uptake.

The Commitment has been designed to facilitate genuine action towards decarbonisation of the built environment. Signatories must therefore commit to several fundamental principles, including:

Measurement

You can't manage what you can't measure. Measurement from both public disclosure of building performance metrics and verified reporting helps to create transparency across both asset and portfolio levels. Measurement of performance helps to identify data and performance gaps and potential solutions for decarbonising an entity's assets and portfolio. Through verified reporting, entities are showing they are meeting their Commitment milestones and demonstrating climate leadership.

Energy efficiency and renewables = net zero carbon

The Commitment is the first in the world to require both reduction in energy demand via energy efficiency and the procurement of zero carbon electricity at a global portfolio level. Energy efficiency measures could contribute a 48% reduction in global emissions by 2030, with 43% of those coming from buildings². They also are a significant source of cost reductions while contributing to increased resilience, durability and productivity. In conjunction with renewable energy, the largest growing energy power source globally, and offset programmes where appropriate, these components represent the solution to achieving net zero carbon at both an asset and portfolio level.

Why third party certification/market mechanisms?

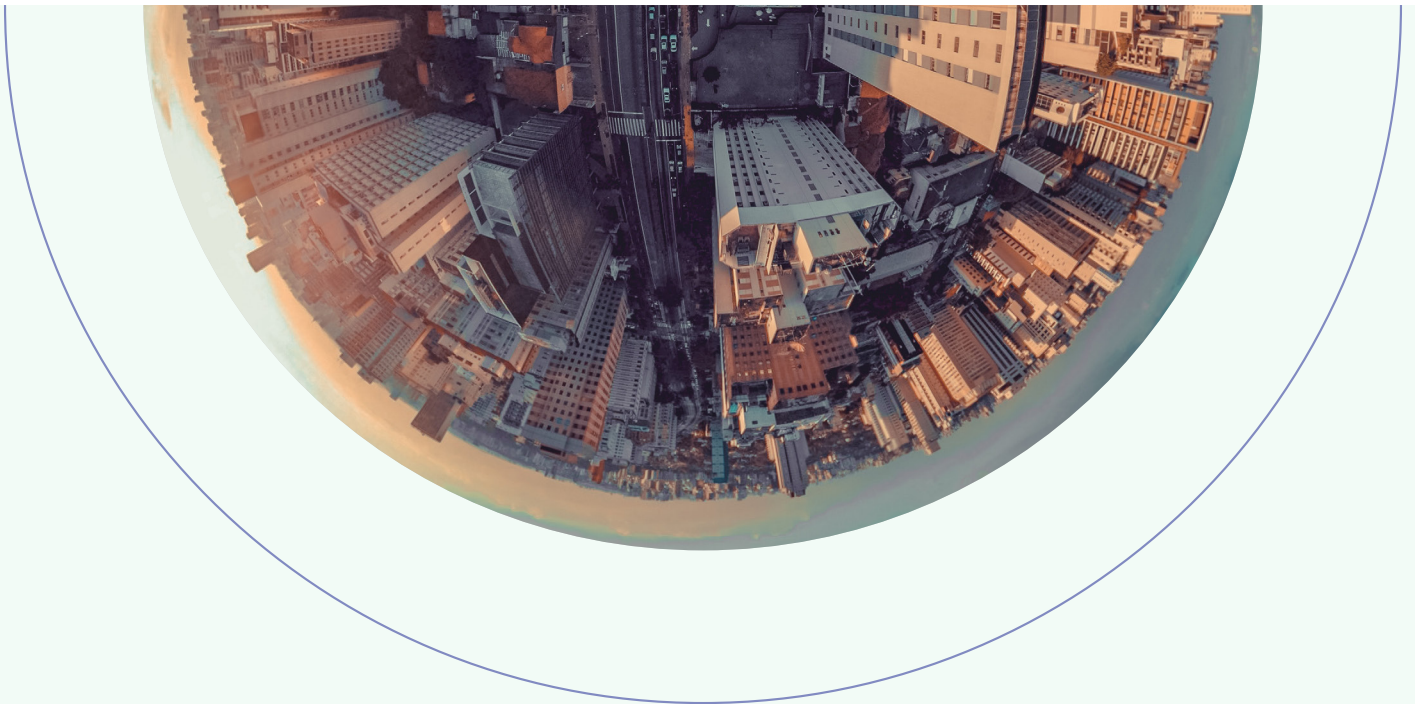
Aligning with recognised and industry leading local third-party certification schemes/market mechanisms often removes the need for additional assurance processes, and provides geographically and climatically relevant prescriptive pathways which in some cases are able to meet the energy efficiency requirements of the Advancing Net Zero Framework. Currently, several member Green Building Councils participating in the global Advancing Net Zero project and other organisations around the world provide (or are developing) asset and portfolio level tools to address the challenges of achieving a carbon neutral environment. Further information on these tools can be found [here](#).

Interested in signing up?

Currently, there are no joining fees to be part of the Commitment or EP100. If you are interested in signing up, please visit the [website](#) for further information or contact anzproject@worldgbc.org.



²International Energy Agency – Meeting Climate Change Goals Through Energy Efficiency



2.2 List of definitions

■ **Asset** An asset is considered to be a building, or a part of a building, which is owned, occupied or developed by the entity and under its direct control and influence (see definition below for relevant control levels). All assets (regardless of operation) are to be included and considered part of its portfolio except for the following exclusions:

1. co-working spaces where an entity rents only a desk and is not considered a tenant
2. materiality can be applied both within an asset or for an asset within a portfolio (For more information, see chapter 10 of [The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard](#))
3. process loads from manufacturing and industrial processes

■ **Base building** The base building is considered to be the aspects of the building systems and services under the control (see direct control) of the building owner. This can include but is not limited to structural elements, building envelopes, and all mechanical, hydraulic and electrical systems up to the tenant space. Base building exact definitions may change from region to region. Consult your local GBC, or appropriate code of practice for more information. Where unclear, the measure of direct control applies.

■ **Building measures to decarbonise grid** Please see further guidance section on page 29 for relevant definition.

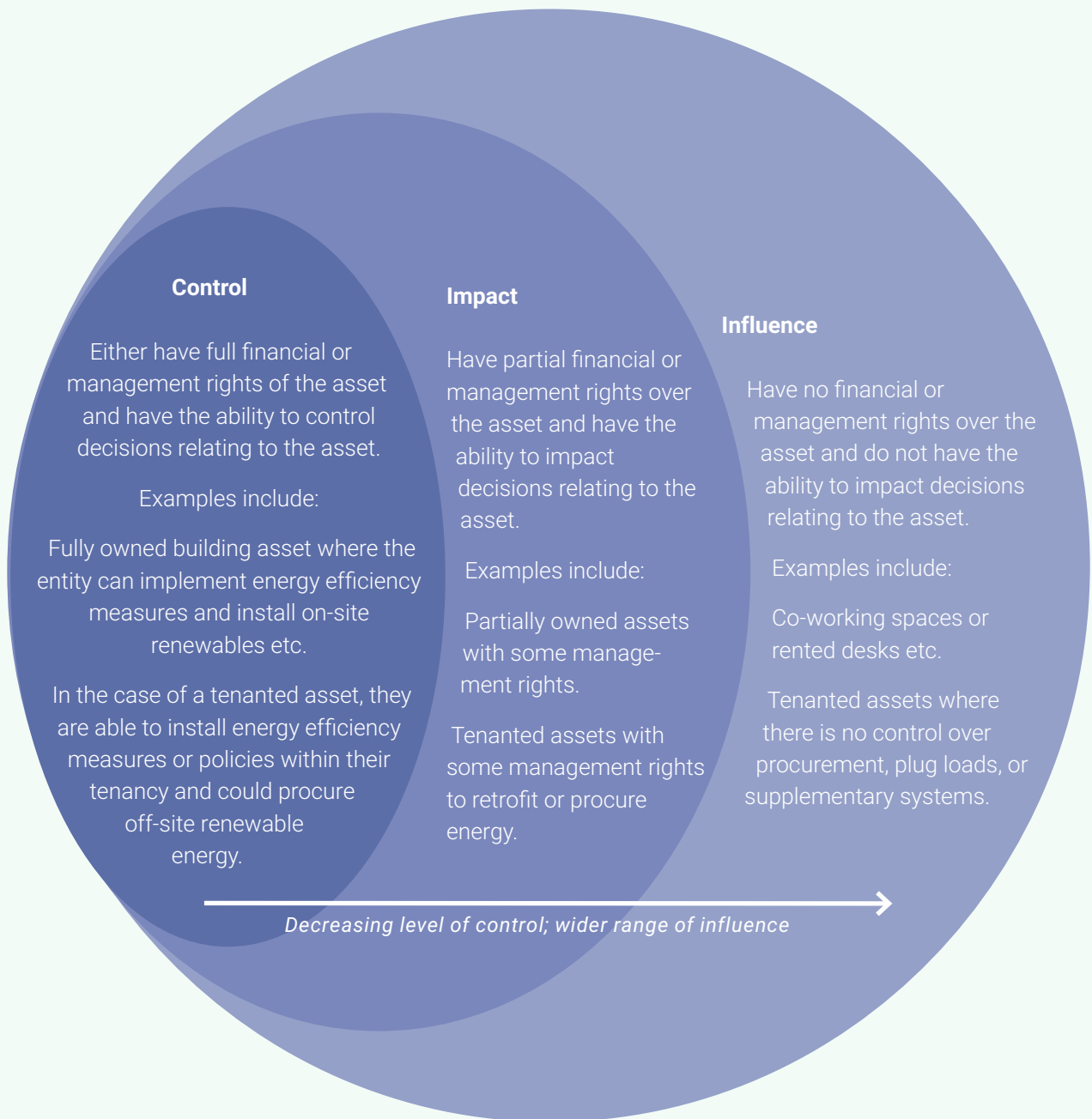
■ **Carbon dioxide equivalence (CO₂e)** Please see further guidance section on page 21 for relevant definition.

■ **Decarbonisation** Decarbonisation is a decline in average carbon intensity of primary energy over time³. The concept of decarbonisation applies to many aspects of the building and construction sector including buildings and energy grids. For the purpose of this document, it is the decline in average carbon intensity of primary carbon emissions to zero by the timeframes in the Commitment that the entity commits to.

■ **Decarbonisation roadmap** Please see further guidance section on page 29 for relevant definition.

■ **Direct control** This concept is central to whether the asset in question will be included in the entity's portfolio. Where the asset is under direct control of the entity as per the table below (ie control and/or impact), then it must be included in the portfolio and in the carbon inventory of the Commitment. Where the asset is not under the direct control of the entity (ie influence), then the occupying entity must exercise its advocacy responsibilities under this Commitment towards the entity that controls the asset. The concept is illustrated on page 10.

³Climate Change 2007: Working Group III: Mitigation of Climate Change, 3.4.1 Carbon-free energy and decarbonization



■ **Entity** For the purpose of this document, any potential applicant is considered an 'entity'. These applicants can be whole companies, businesses, institutions, cities, or states, but where this is not possible can also be divisions (regions included) or departments within a parent entity (eg division within a organisation). All entities⁴ must have an identifiable business registration and clear operational structure. Should entities that are part of a parent entity sign up to the Commitment, they will be required to:

- demonstrate how they meet the eligibility requirements of the Commitment through the operations of this entity (eg division of an organisation as opposed to the entire organisation)
- justify with sound reasoning why other entities within the organisation could not join the Commitment at this time
- advocate the benefits of joining to their parent organisation

⁴Individual operational departments of entities (eg human resources department) are not eligible.

For example, the following entities can sign up to the Commitment:

- private public partnerships
- listed company⁵
- a division within a company
- a property fund or REIT
- urban regeneration projects
- city or local council
- city department
- university
- university department
- joint venture
- regional or state government
- department within a government
- government or delivery authority
- land authority

■ **Green Building Councils** Please see Green Building Councils section on Page 4 for relevant definition.

■ **Implementation plan** Please see further guidance section on page 29 for relevant definition.

■ **Market mechanisms** A market mechanism is generally considered to be a financial mechanism whereby an environmental benefit is achieved. These can be legislative or regulatory (eg carbon price, carbon emissions trading) but also can be born out of voluntary or social mechanisms. Through social and financial mechanisms, renewable energy procurement and energy efficiency technologies have become more widely available.

For the purposes of this document, all market mechanisms are voluntary or social mechanisms which achieve an environmental benefit (eg wellness in buildings, investor led sustainability benchmarking, transparent data). While having a positive financial impact, these mechanisms have created transparent platforms which are creating positive environmental benefits throughout the building and construction industry (eg CDP, GRESB etc). Therefore, signatories are encouraged to align with existing market mechanisms to meet the action, reporting and verification requirements of the Commitment.



⁵These companies will automatically become members of EP100 through becoming a signatory of this Commitment.



■ **Net zero carbon** Net zero carbon is when the amount of carbon dioxide emissions associated with building operations on an annual basis is zero or negative. Using WorldGBC's definition, a net zero carbon building is highly energy efficient and fully powered from on-site and/or off-site renewable energy sources and offsets.

■ **Net zero energy** Net zero energy is where the amount of renewable energy produced on-site on an annual basis is equal to or more than the amount of energy consumed over the same period.

■ **Portfolio** A portfolio is the total group of assets within the direct control or impact of the entity. Portfolio level information is aggregated data from all of the available assets.

■ **Predicted operational costs** Please see further guidance section on page 25 for relevant definition.

■ **Process loads** For the purposes of this document, process loads are the load on a building resulting from the consumption or release of energy consumed in support of a commercial process other than conditioning spaces and maintaining comfort and amenities for the occupants of a building⁶. Examples of process loads in buildings are:

- computers and similar IT equipment in office-type work environments

- domestic appliances and equipment loads
- IT and communications equipment in server rooms, data centres and communications rooms
- specialist healthcare equipment such as MRI, CT, PET and X-ray imaging equipment
- commercial catering operations
- commercial laundry operations
- operation of freezer rooms, cool rooms and hot rooms in laboratories, warehouses or similar
- refrigerated display cabinets in food retail premises
- heating and cooling of plunge pools, saunas and steam rooms in leisure facilities

As per the above definition, process loads cover a wide range of applications with varying degrees of energy consumption and carbon emissions. Overall, process loads are expected to grow to 35% of total commercial building energy use by 2025 and they can range from roughly 10% up to 60% of all energy use depending on the type of commercial asset⁷, let alone other typologies.

Therefore, all above listed process loads must be included for the purposes of the Commitment, provided they fall under the control of the entity.

⁶Adapted from ASHRAE. (2010). ANSI/ASHRAE Standard 90.1-2010: Energy Standard for Buildings Except Low-Rise Residential Buildings.

⁷US Department of Energy, Decision Guides for Plug and Process Load Controls, December 2015

Industrial and manufacturing loads

Industrial and manufacturing process loads are often independent of the activities in the building. For example, processing of aluminium is an activity that happens within a building, but does not serve building occupants, nor is related to how the building operates. As such, industrial and manufacturing loads are currently not required to be included in the Commitment.

All sectors need to move to complete decarbonisation by 2050 and so WorldGBC strongly encourages all process loads from industrial manufacturing applications to be net zero carbon in operation by 2050. Currently, methodologies and technologies are limited in how to reduce these loads and there is no clear

pathway forward to meet the 2050 target. To facilitate the required market transformation, all entities are strongly encouraged to plan how to reduce the carbon emissions and develop roadmaps for improving energy efficiency and carbon intensity in these processes. Manufacturing entities are encouraged to undertake available certification or voluntary initiatives (eg Better Plants Challenge) and advocate for this goal where possible to generate momentum and inspire action.

WorldGBC aims to include industrial and manufacturing loads in future iterations of the Commitment when the right methodologies become available. WorldGBC actively encourages entities to plan how they can incorporate this challenge going forward.

■ **Regulations and planning policies** These refer to mandatory requirements for building design and construction to improve energy performance that are referred to using terms such as building energy codes, standards, regulations, ordinances, by-laws or planning policies.

■ **Renewable energy**⁸ Energy sources that can be used without depleting their reserves. Common sources of renewable energy are bioenergy⁹, geothermal, hydropower, ocean, solar and wind (Further information on some of these sources can be found [here](#)).

■ **Scope 1 emissions** Please see further guidance section on page 21 for the relevant definition.

■ **Scope 2 emissions** Please see further guidance section on page 22 for the relevant definition.

■ **Third-party certification** Evaluation of a building against a defined set of criteria for enhanced green performance, as verified by an independent third-party, for example a Green Building Council or other non-GBC entities such as ILFI or BRE.

■ **Third-party verification** An independent third party with relevant and extensive experience which is able to conduct carbon accounting in accordance with approved greenhouse gas reporting protocols and in line with verification or assurance standards. A third-party verifier may be a market mechanism, accounting/assurance firm or an independent experienced sole operator.

⁸See Appendix B: Guidance for Procurement of Renewables and Offsets for more information about the rules and guidance on procurement of renewables and offsets in the Commitment.

⁹Criteria for bioenergy to be followed is as per Biofuels: Sustainability Criteria of the European Commission

Commitment – further guidance 3.0

3.1 Determining portfolio and streams

For cities, states and region entities

To be considered for the city, state or region stream, the entity must meet the following definition:

City, state or region A municipality which has regulatory or planning policy powers over a predefined geographical boundary, be it a city, state or region.

There are two commitment pathways available for the cities, states and regions stream: the policy pathway and the municipal/government buildings pathway. An entity may follow one or both of the pathways depending on the level of direct control they have, with actions appropriate to their status.

Next steps: nations

This Commitment is initially targeting corporate and sub-national government entities. In future iterations it is intended to also be applicable to national strategies, to highlight the action being taken to facilitate wider uptake through federal leadership.

Policy pathway

This pathway is for entities who are able to enact regulations and planning policy at an authority level. This is a highly ambitious pathway that will create significant impact, and unequivocally generate momentum within the wider community, globally signifying to all other governments and organisations the climate leadership being undertaken to secure our future on the planet.

Portfolio: For this pathway, the entity 'portfolio' refers to all buildings within the geographical boundary of the signatory municipality over which the entity has regulatory or planning policy powers. For the Commitment, the entity must follow all the requirements for the policy pathway stream.

Municipal/government buildings pathway

This pathway is to encourage cities, states and regions, as entities with their own buildings over which they have direct control, to ensure they operate at net zero carbon by 2030 (both new and existing).

Portfolio: For this pathway, the entity portfolio will include all assets under their direct control as per the owner, tenant and developer definitions. For the Commitment, the entity must follow all the requirements for the municipal/government building pathway stream.

Why both?

In order to maximise impact, and where within direct control of a city, state or region, it may be appropriate for an entity to follow both pathways. This demonstrates commitment towards own occupied buildings, and leverages influence over planning policy and regulations to enable uptake across all sectors. This ultimately supports rapid decarbonisation and maximises benefit to public and private sectors.



For all other entities

In signing the Commitment the entity will be committing to one or a combination of owning, occupying, and/or developing buildings that operate at net zero carbon by 2030. Entities will determine their commitments by declaring all of the streams that are applicable to them:

Owner

The entity is considered an owner for assets of which they are the owner/part owner and have financial responsibility regardless of whether they occupy it or not. For buildings which are owned, the entity will include all relevant building scope 1 and 2 operational energy related emissions which are under their direct control or are part of the base building scope. The base building scope may differ from region to region and should be adjusted accordingly.

Tenant

The entity is considered a tenant for buildings when they do not own the building in which they have operations, but have a contractual tenancy agreement/lease for part or the whole of the building. The entity will include all relevant building scope 1 and 2 operational energy related emissions that are directly related to their tenancy.

Portfolio For owners and tenants, the portfolio consists of all of the assets under the direct control of the entity

and relevant to business operations that form part of their portfolio. Any entity undertaking the Commitment cannot split up their portfolio and must include all assets and related streams that are relevant to business operations, and all included energy loads and carbon emissions as per this Commitment.

Developer

The entity is considered a developer for buildings where they purchase land and build a new building for sale and/or purchase an existing building and renovate it for sale.

Portfolio For developers, the portfolio will consist of any new buildings that are developed or designed on or after the signing of the Commitment. For buildings that are undergoing design or development at the time of signature, these should be evaluated against the aims of the Commitment and should be included where the performance outcomes are able to be influenced.

Double counting

Double counting may occur in the case of joint ownership and direct control of an asset, or in the case of offsets being counted twice.

For joint ownership

Where two or more entities are part of a joint ownership of an asset(s) and both have direct control then the equity share approach of [The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard](#) should be followed to determine relevant GHG emissions contribution for each entity of that asset, according to its equity share and/or percentage of ownership of the asset.

Changing asset mix of portfolio

Where an entity:

- sells an asset: they must exclude the asset from their portfolio and the Commitment
- buys/leases an asset: they must include the asset as part of their portfolio and the Commitment in accordance with the asset transition guidelines below

The intention of the Commitment is to reach net zero carbon in operation. As such, it is expected that entities will develop a clear strategy and guideline for procurement/purchase of buildings so as to meet and sustain the overall goals of the Commitment.

Asset transition guidelines

The Commitment sets transition guidelines for all buildings procured from 2028 onwards. By providing these guidelines and allowing for a transition period, poor performing buildings are encouraged to be procured for improvement. Energy efficiency can continually be prioritised and large scale offsetting can be minimised. The transition guidelines are as follows:

For buildings procured after 2028

The procured asset has three years from the date of procurement to meet the requirements of the Commitment as part of the portfolio. All requirements of the Commitment for the procured asset remain the same and the asset should become net zero carbon as soon as possible. For instance, where an asset is procured in July 2029, it will have until July 2032 to demonstrate that it has met the requirements.

Where an asset is procured after 2028 and the entity believes they need a longer transition period then they are to contact the WorldGBC team to apply for an extension. The entity will be required to submit evidence demonstrating why they are unable to meet the three year timeline and what the new timeline is. Evidence can be in the form of project schedule, architectural drawings, existing legal agreements etc. The NZCB Taskforce will determine the final outcome of the transition extension for the asset. Reasons for an extension can include, but are not limited to, deep renovation/retrofit and/or heritage requirements.





3.2 Commit

Commit to all new and existing buildings within direct control of the entity to operate at net zero carbon by 2030 for business and organisations, and 2050 for existing buildings under the cities, states and regions: policy pathway.

Aim

To recognise entities that are committed to owning, occupying and developing buildings within their control that operate at net zero carbon by 2030.

For cities, states and regions that are following the policy pathway; enacting regulations and/or planning policy will globally signify the influence of those entities to enable all buildings within their jurisdiction to operate at net zero carbon by 2050.

Requirements

Cities, States and Regions	Policy Pathway Enact regulations and/or planning policy within jurisdictional control to ensure new buildings operate at net zero carbon by 2030 and all buildings by 2050	and/or	Municipal/Government Buildings Pathway Commit to owning, occupying and developing only assets that are net zero carbon in operation by 2030
Owner	Commit to owning only assets that are net zero carbon in operation by 2030		
Tenant	Commit to occupying only assets that are net zero carbon in operation by 2030		
Developer	Commit to developing only assets that are net zero carbon in operation by 2030		

Further guidance

Why carbon?

WorldGBC recognises that in most situations, net zero energy buildings, (ie buildings that generate 100% of their energy needs on-site) are not feasible. However, buildings that are energy efficient, and supply energy needs from renewable sources (on-site and/or off-site) are a more appropriate target for the mass scale of energy demand and global emissions reduction required to achieve the Paris Agreement.

By using energy as the only source of measurement, the full impact of emissions to the environment cannot be determined. Therefore the definition from the Advancing Net Zero Framework¹⁰ is applied and focuses on operational carbon emissions¹¹ (scope 1 and 2 energy-related emissions). Carbon is the ultimate metric to track the impact of greenhouse gas emissions from buildings. By implementing a renewable energy hierarchy in conjunction with promotion of energy demand reduction, the aim is to encourage local sourcing and cost effective solutions to reduce carbon emissions to net zero or as much as possible. For the remaining carbon balance, offsetting can be used to reach net zero.

Why operational energy-related carbon emissions?

Buildings and their construction combined are globally responsible for 40% of energy-related total direct and indirect CO₂ emissions¹². Operating emissions comprise the majority of these emissions at 28%. The industry has proven solutions to achieve net zero operating emissions at individual building level, and therefore the Commitment calls on businesses, organisations, cities, states and regions to advance and scale this action to their portfolios by 2030, to assist with reaching decarbonisation. Therefore, energy-related operational carbon emissions forms the universally viable baseline for the Commitment.

Next steps: embodied carbon

While addressing operational energy-related carbon emissions through the Commitment, WorldGBC also acknowledges that emissions from building and construction also comprise 11% of energy-related emissions, in particular from the extraction and manufacturing of materials.

Due to the complex nature of standards related to embodied carbon (for existing assets in particular), WorldGBC does not currently require these to be included within the Commitment. Complexities include, but are not limited to: limitations in calculation methodology for global portfolios; influence of other certifications, programmes and supply chain mechanisms; and the over-reliance on offsets as a solution. WorldGBC strongly encourages entities to plan, monitor and report embodied carbon emissions as they become proportionately more significant and ultimately are required to reach zero emissions by 2050.

¹⁰The WorldGBC definition of a net zero carbon building is a building that is highly energy efficient and fully powered from on-site and/or off-site renewable energy sources.

¹¹Carbon emissions are measured in carbon dioxide equivalence (CO₂e). For more information, please see the further guidance of the Disclose section.

¹²Data from the Global Status Report 2018, Global Alliance for Buildings and Construction & the International Energy Agency

While embodied carbon is not included in the Commitment it remains a priority, and WorldGBC aims to showcase the leadership of portfolios which have included their embodied carbon emissions as part of their advocacy activities, highlighting and recognising how the inclusion was achieved to support industry advancement in the future.

WorldGBC aims to include embodied carbon emissions in future iterations of the Commitment, and actively encourages entities to plan how they can incorporate this challenge going forward.

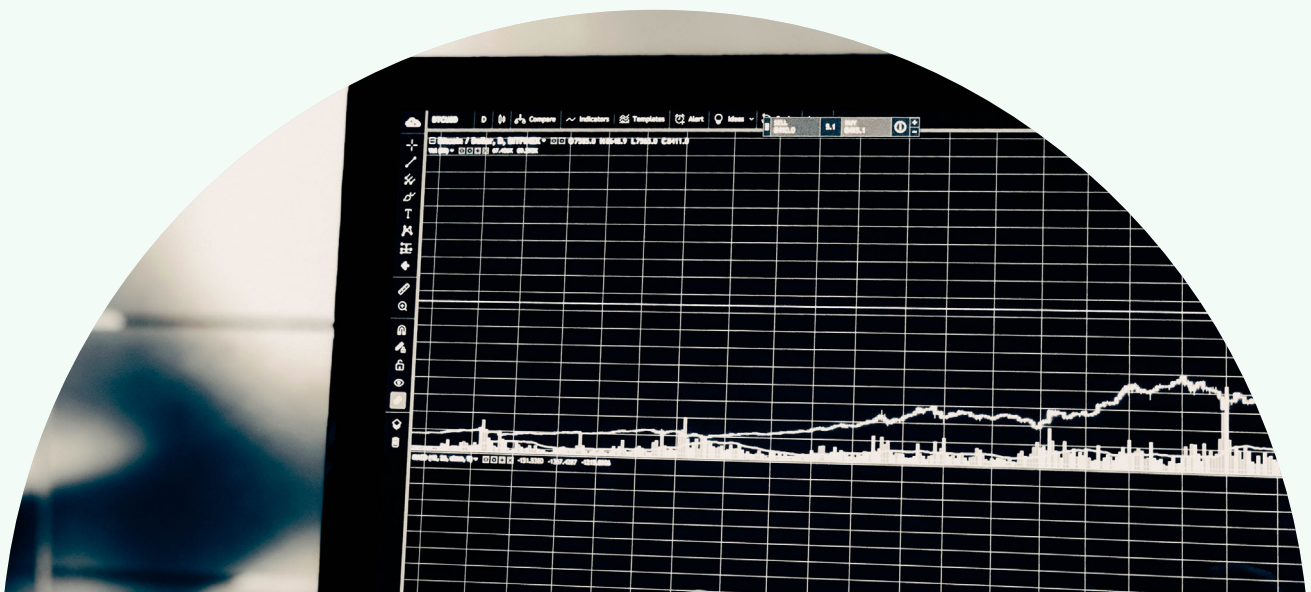
Next steps: refrigerant emissions

In the majority of cases, emissions from refrigerants are responsible for other greenhouse gas emissions which have a high potential for ozone depletion and global warming potential, such as hydrofluorocarbons (HFCs). Due to varied reporting methods for these emissions, lack of technology for sequestration and often being more associated with manufacturing and maintenance, refrigerant emissions are not currently required in the Commitment¹³. While having a large global warming potential (GWP), emissions from refrigerants vary globally and are therefore not currently included in the universally viable baseline addressing energy-related carbon emissions.

However, WorldGBC encourages entities to monitor refrigerant (and indeed other GHG) emissions and minimise potential impacts.

Next steps: other operational emissions

Furthermore, additional emissions, including transport, water and other greenhouse gas emissions including scope 3, are encouraged to be monitored and included in reporting as part of advocating for further reductions, and demonstration of market willingness to address these issues. The use of GBC certification tools encourages and recognises a holistic approach to sustainable development which can incorporate other sources of emissions.



¹³Direct Fugitive Emissions from Refrigeration, Air Conditioning, Fire Suppression, and Industrial Gases, EPA Centre for Corporate Climate Leadership

3.3 Disclose

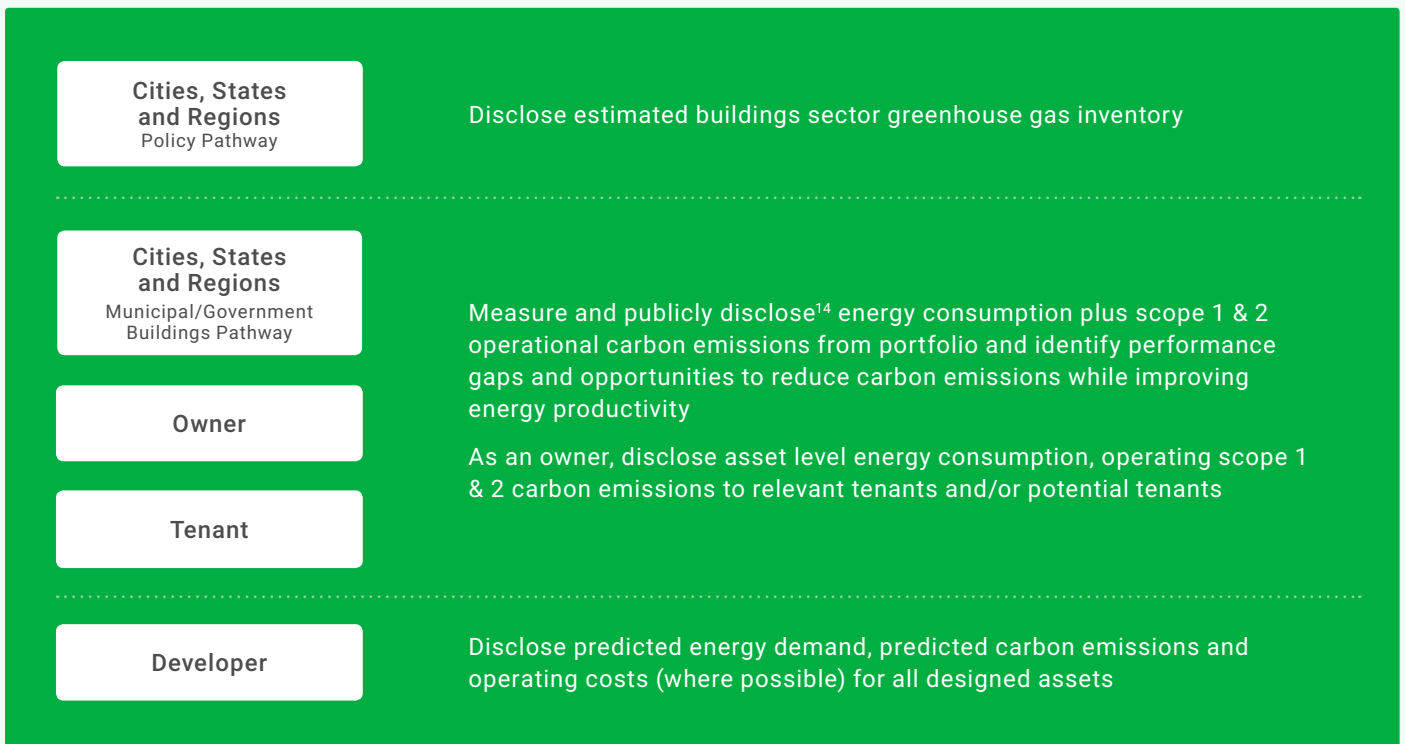
Measure, disclose and assess annual asset and portfolio energy demand and carbon emissions

Aim

To create transparent building performance metrics through measurement and monitoring so as to readily compare and evaluate across asset and portfolio level. Disclosure of building performance metrics related to energy consumption and operational carbon emissions is intended to generate easily digestible and publicly available information (for consumers, employees etc) at portfolio level and to establish the portfolio working baseline; and identify performance gaps and opportunities for energy efficiency improvements at both asset and portfolio level. These will inform the implementation plan and decarbonisation roadmap.



Requirements



¹⁴The portfolio working baseline needs to be disclosed publicly through corporate social responsibility (CSR) reporting, the entity's website or market mechanisms. The asset level data forming the working baseline must be submitted to WorldGBC directly or through their verification partners for publication of aggregated data. All carbon emissions are to be measured using carbon dioxide equivalence (CO₂e) in tonnes (t) and over a single continuous 12 month interval.

Further guidance

Carbon dioxide equivalence (CO₂e)

Carbon dioxide equivalence (CO₂e) equates greenhouse gases with a common unit of carbon dioxide. Through multiplying each greenhouse gas (GHG) by a global warming potential (GWP) factor the result is the equivalent amount of carbon dioxide (CO₂) from that GHG.

The relevant 100 year GWP factors to use can be found through the GHG Protocol website which has been adapted from the IPCC Fifth Assessment Report, 2014 (AR5)¹⁵.

Emissions factors should come from relevant local and national sources which are based on measured carbon emissions of the electricity grid that is updated by the source annually (eg UK Government). Where this is not possible, regional emission factors should be followed (eg EU Covenant of Mayors) and finally global emission factors from the IPCC Emissions Factor Database.

By using carbon dioxide equivalence (CO₂e), entities are able to include a wider range of GHG's (eg methane, nitrous oxide) therefore capturing other energy sources (eg natural gas) and achieving more accurate asset and portfolio carbon emission levels. Furthermore, by using carbon dioxide equivalence, entities are also able to include other emissions currently not in the Commitment (eg refrigerants) to demonstrate leadership within their sector and industry. Where these emissions are included they must meet the requirements of the disclose and verify sections and be easily distinguishable from the emissions included within this Commitment. This will allow for ease of reference in terms of marketing and allow for robust best practice information.

Scope of emissions

Scope 1 emissions: The definition for scope 1 emissions varies depending on which pathway the entity pursues, adapted from the following standards of the Greenhouse Gas Protocol:

1. [Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard](#)
2. [Greenhouse Gas Protocol: Community Scale Greenhouse Gas Emissions Inventories](#)

Policy pathway GHG emissions from sources located within the city, state or region boundary.

Municipal/government building pathway/owner/tenant/developer Direct emissions from owned or controlled sources relating directly to operational energy consumption¹⁶ of the building.

¹⁵Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

¹⁶The Commitment is about operational energy-related emissions and does not include water or transport at this stage.

As such, all emissions related to construction processes, fleet vehicles or industrial and manufacturing loads are currently not required but are strongly encouraged to be disclosed, tracked and reported.

Scope 2 emissions: The definition for scope 2¹⁷ emissions varies depending on which pathway the entity pursues, adapted from the aforementioned Greenhouse Gas Protocol standards.

Policy pathway: GHG emissions occurring as a consequence of the use of grid-supplied electricity, heat, steam and/or cooling within the city, state or region boundary.

Municipal/government building pathway/owner/tenant/developer Indirect emissions from the generation of purchased energy.

Greenhouse gas accounting

Overall, the intent of disclosure is to determine and disclose publicly the portfolio working baseline. The baseline is intended to inform the decarbonisation and implementation plan in the act requirement of the Commitment.

The portfolio working baseline is the total energy consumption for the entity's portfolio for a continuous 12-month period and the resultant scope 1 and scope 2 operational energy-related carbon emissions.

Simply put, the portfolio working baseline is the direct emissions (scope 1) plus the indirect emissions (scope 2) minus the avoided emissions (renewables and offsets).

For a small-scale organisation with a few buildings, a theoretical calculation involving emissions factors, energy bills and benchmarking may suffice, but, due to the complexities that are encountered with high volumes of data by large-scale businesses, organisations, cities, states or regions, it is recommended that an internationally recognised greenhouse gas accounting standard or reporting protocol where requirements and recommendations for design, development, management, reporting and verification of an organisation's GHG inventory can be followed.

Due to the wide range of scale associated with the type of entities signing up to the Commitment, the chosen method for greenhouse gas accounting to demonstrate the portfolio working baseline can vary substantially and is often dependant on magnitude of scale, financial or legislative constraints.

The following guidance is intended to provide different options for using a greenhouse gas accounting standard or reporting protocol depending on the type and size of the organisation. This list is not exhaustive or restrictive and other protocols or standards may be used.

¹⁷Scope 2 emissions claims for renewable energy in accordance with the GHG Protocol also require zero emissions at point of generation.

Standard	Business/ Organisations	City	States/ Regions
<p>Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard. GHG Protocol supplies the world’s most widely used greenhouse gas accounting standards with 92% of Fortune 500 companies responding to the CDP using GHG Protocol directly or indirectly through a programme based on GHG Protocol¹⁸.</p>	○		
<p>Greenhouse Gas Protocol: Community Scale Greenhouse Gas Emissions Inventories. World Resources Institute, C40 Cities Climate Leadership Group and ICLEI – Local Governments for Sustainability (ICLEI) have partnered to create a GHG Protocol standard for cities. The standard provides a robust framework for accounting and reporting city-wide greenhouse gas emissions¹⁹.</p>		○	
<p>International Emissions Analysis Protocol (IEAP) The IEAP consists of the general principles and philosophy that any local government, regardless of location, should adhere to when assessing GHGs from its government operations and community as a whole²⁰.</p>		○	
<p>2006 IPCC Guidelines for National Greenhouse Gas Inventories²¹. The 2006 IPCC Guidelines for National Greenhouse Gas Inventories were produced at the invitation of the United Nations Framework Convention on Climate Change (UNFCCC).</p>		○	○
<p>ISO 14064-1:2006 Greenhouse gases - Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals. ISO launched the development of the ISO 14064 set of standards as a solution to the problems posed by the fact that governments, business corporations and voluntary initiatives were using a number of approaches to account for organisation- and project-level GHG emissions and removals with no generally accepted validation or verification protocols.</p>	○	○	○

Measuring emissions

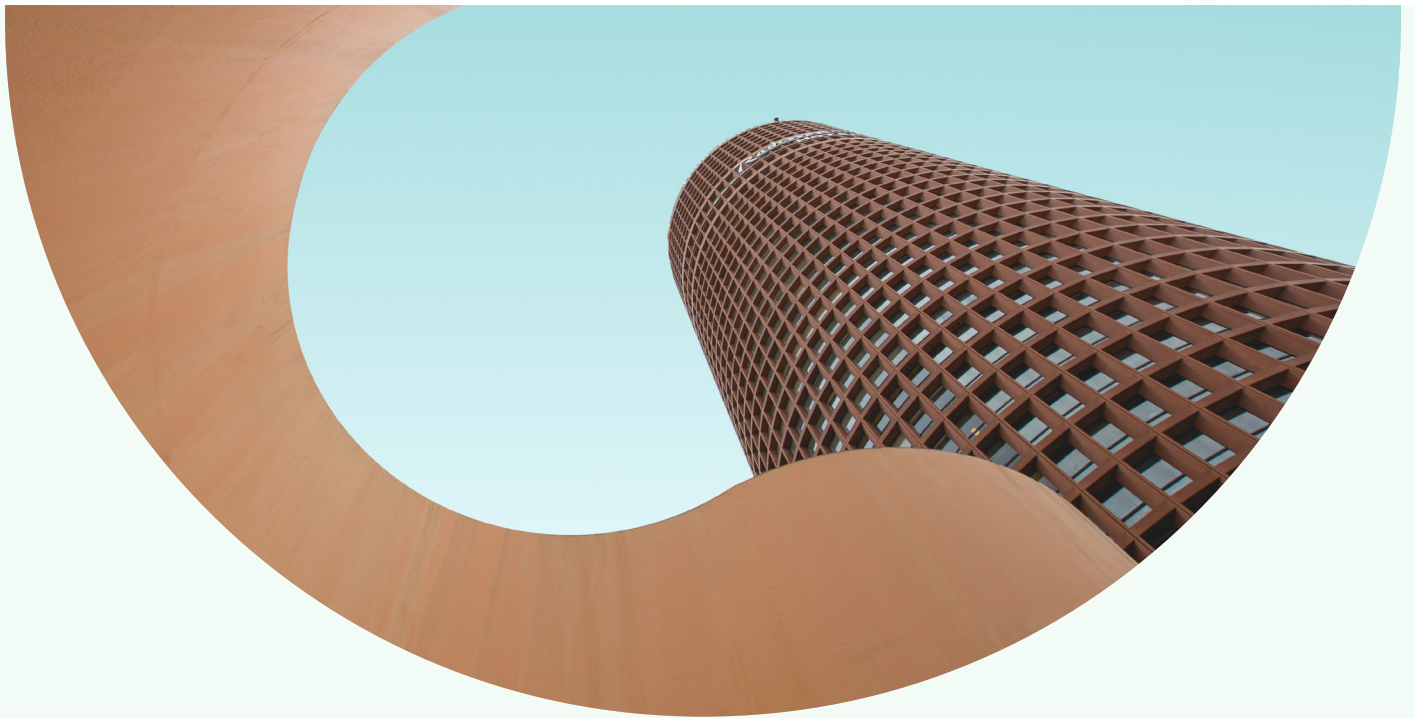
For disclosure, entities are required to measure their portfolio working baseline. As each portfolio may have a unique mix of existing buildings and planned buildings the way to measure each may vary when determining the baseline. The following guidance details how measurements should be conducted for these building types:

¹⁸<https://ghgprotocol.org/companies-and-organizations>

¹⁹<https://ghgprotocol.org/countries-and-cities>

²⁰<http://archive.iclei.org/index.php?id=ghgprotocol>

²¹Does not report in scopes, must convert into scope 1 and scope 2 emissions. When undertaking verification, this can only be completed after verification has been completed.



Existing buildings For as many existing buildings as possible, measurements should be from historical data collected monthly over a continuous 12-month period. Common sources of data suggested to form these measurements are energy bills, meter readings or monitoring platforms. Where energy consumption is not known, please read the performance gap section for guidance on how to address this issue.

Planned buildings Planned buildings are buildings under construction or design and post-planning permissions. The building performance metrics for these buildings and use within the portfolio working baseline should be determined from predicted energy consumption and operational carbon emissions. The guidance outlined within the data/performance gaps section details how to determine energy consumption and carbon emissions through a theoretical analysis. Entities may also pursue a modelled approach using locally relevant industry standards to determine these metrics. Entities should consult their local GBC for more information.

Data/performance gaps

A data gap refers to an asset or number of assets within an entity's portfolio whereby building performance metrics are unknown, wholly or partly. This can be due to unattainable measurements or lack of historical data from either meter readings or utility bills etc.

Where a data gap is known be it for the whole of the/part of the disclosure/reporting period, the entity must estimate the amount of carbon emissions the asset would emit, using benchmarking to a relevant industry standard. This benchmarking needs to be inclusive of climatic factors and activity based historical factors where possible to give the most accurate representation. If benchmarking is not possible or there is only small partial performance gaps (less than four months total, no more than two consecutive months) for the

asset, then an interpolation and estimate based on climatic factors, available historical data for the asset and from locally relevant data should be used.

Through either data gaps, poor building management or unintended performance a difference between predicted or expected annual energy demand and that which is observed may occur. This is known as a performance gap.

Once a data or performance gap has been identified, the entity must take corrective action for the asset and include it in the implementation plan. For data gaps, this should include an adequate metering and monitoring strategy among other relevant measures. The entity must be able to measure and track appropriate carbon emissions data for the asset(s) as far as possible. Where this is not possible, appropriate estimations based on best practice industry standards can be used. The entity is encouraged to monitor their emissions as well to make measurement and tracking easy and robust.

Developer stream only: predicted energy use and operating costs

There are two key building performance metrics for disclosure across all relevant streams:

- energy consumption (kWh)²²
- operational carbon emissions (tCO₂e)²²

For the developer stream, entities are encouraged to provide predicted operational costs from the two key building performance metrics for the asset. This is intended to create transparency around the impact of design decisions on the performance of buildings, and resultant carbon emissions.



²² For developer stream or new buildings within other streams, these are to be predicted energy consumption and predicted operational carbon emissions from a modelled or theoretical analysis of the asset. The metrics are to be determined over the course of a continuous 12-month time period.



3.4 Act

Develop and implement a decarbonisation roadmap outlining key actions and milestones

Aim

To develop, maintain and update an implementation plan for achieving the Commitment, aligned with the Advancing Net Zero Framework. The building performance metrics from the disclosure process are key to achieving this outcome. Through developing this plan, the entity will identify and implement energy efficiency measures and renewable energy targets and milestones demonstrating a decarbonisation trajectory for their assets and portfolio, which are technically feasible, economically viable, substantive and verifiable to achieve the goals of the Commitment.

Requirements

**Cities, States
and Regions**
Policy Pathway

Develop, maintain and update an implementation plan (for policies and regulations) demonstrating a decarbonisation roadmap trajectory for all new and existing buildings

**Cities, States
and Regions**
Municipal/Government
Buildings Pathway

Develop, maintain and update an implementation plan demonstrating a decarbonisation roadmap trajectory for all new and existing buildings within portfolio

Owner

Develop and implement a carbon emissions reduction strategy that includes energy demand reduction targets, building measures to decarbonise grids, and renewable energy procurement at both the asset and portfolio level

Tenant

Developer

Further guidance

Energy efficiency measures

The Commitment values energy efficiency as a fundamental requirement of reaching net zero carbon for buildings and a necessary first step towards decarbonisation. Energy efficiency allows for a decoupling of economic growth from energy consumption²³, offers greater flexibility in decarbonisation strategies and has high positive societal impacts²⁴. Globally, energy efficiency measures could contribute a 48% reduction in global emissions by 2030, with 43% of those coming from buildings, resulting in cumulative savings of \$2.5 - \$2.8 trillion USD⁶.

A holistic conceptual analysis is encouraged at both asset and portfolio level to give an accurate picture of what energy efficiency solutions are appropriate to the entity, technically feasible and economically viable. These asset and portfolio energy efficiency measures should be further developed, evaluated and detailed through the course of the implementation plan and are expected to contribute significantly towards the goal of achieving net zero carbon emissions by reducing operational costs, limiting reliance on renewable energy and minimising excessive loads on grid infrastructure, where reasonable.

The chosen framework or evaluation metric is entirely up to the entity and based on their own strategic analysis of their business. The energy efficiency measures can also be determined from third-party certification (eg BREEAM, DGNB, Green Star, HQE, LEED etc) whereby they contain locally relevant and best practice building energy efficiency requirements. Locally relevant standards, targets or energy use intensities (EUI's) for energy efficiency of net zero buildings can be used to inform the measures that would be appropriate and contribute significantly to reducing energy demand for the entity's assets and portfolio. Where asset certification is not used, the entity must detail through corporate social responsibility (CSR) reporting how the energy efficiency measures have contributed to the trajectory of the decarbonisation roadmap.



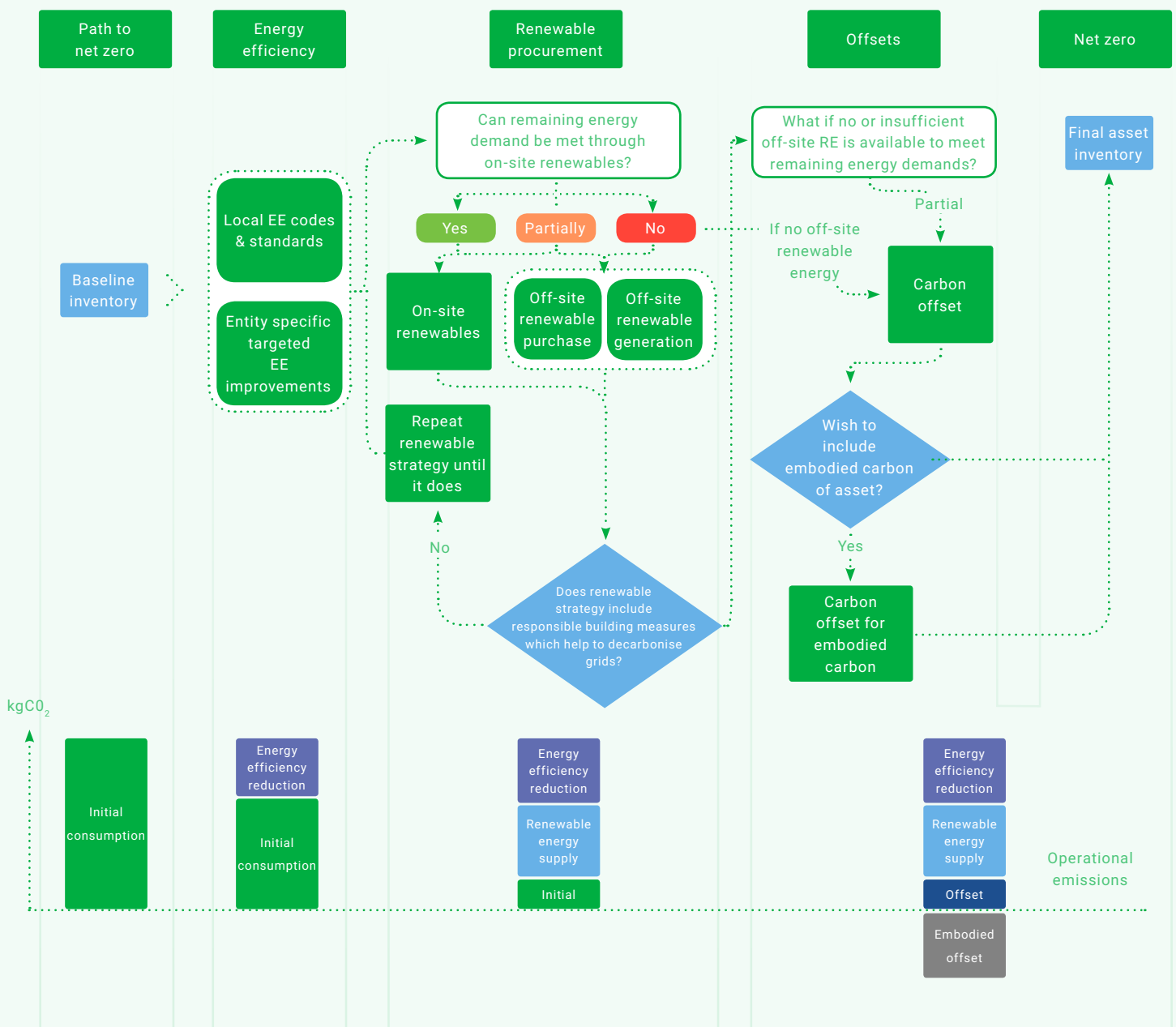
²³International Energy Agency – Meeting Climate Change Goals Through Energy Efficiency

²⁴Fraunhofer – How Energy Efficiency Cuts Costs for a 2 Degree Future

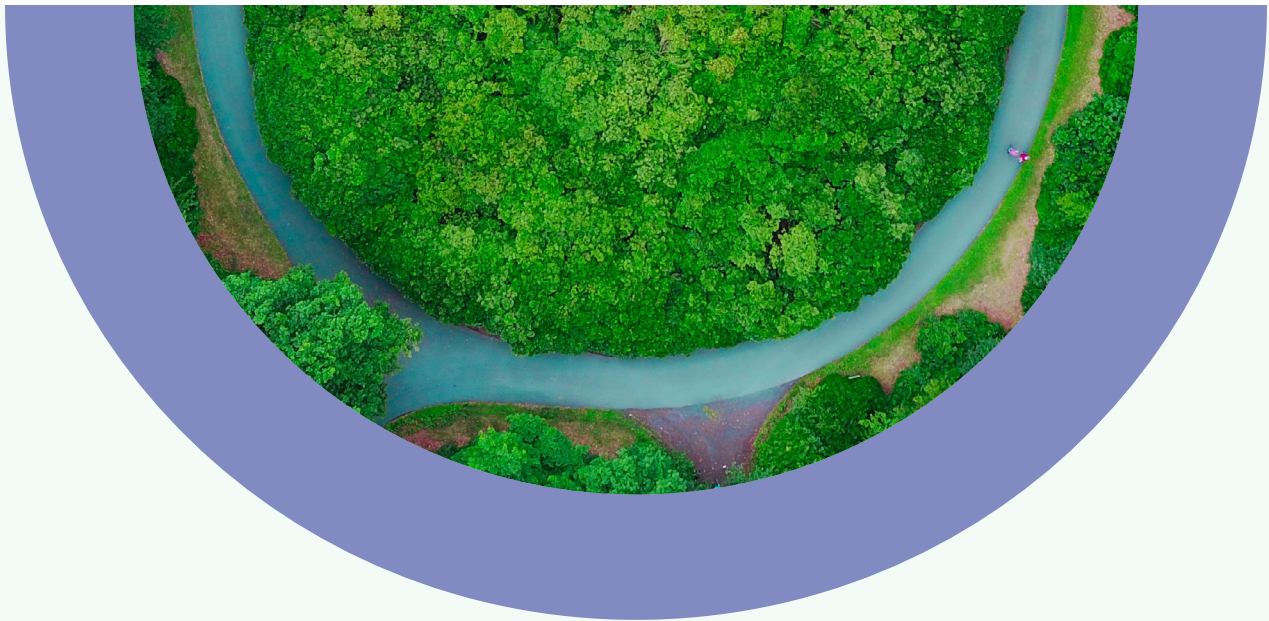
Renewable energy procurement and building measures which decarbonise grids

As entities develop the implementation plan embedding energy efficiency and renewable procurement targets, careful consideration must be given to the implementation of building measures which will minimise adverse effects on the grid. It has been shown that a large proportion of on-site renewables in certain regions can lead to curtailment effects on local grids²⁵.

The Commitment is not prescriptive about which solutions should be embedded in the roadmap or what process should be followed as this is intended to be determined by the entity. While the Commitment allows for flexibility with this approach, some guidance for renewable procurement and building measures is provided below to assist decision-making for the implementation plan. The decision tree shown below demonstrates a general process for evaluating the renewable and building measure strategies needed to achieve net zero carbon:



²⁵NREL – Overgeneration from Solar Energy in California: A Field Guide to the Duck Chart



Renewable procurement As per principle three of the Advancing Net Zero Framework, entities should follow a renewable hierarchy where feasible. This includes renewable electricity, produced either on-site or off-site, or by offsets; with generating supply to the local grid. Furthermore, this must be complementary with building measures which serve to decarbonise the grid as much as possible. Entities should include the best possible renewable hierarchy for their portfolio to reduce associated offset costs and maximise the decarbonisation of grid.

Please see Appendix B: Guidance for Procurement of Renewables and Offsets for more information.

Building measures to decarbonise grids An entity will determine what building measures in the form of initiatives (eg peak demand reduction) and technologies (eg battery storage) are appropriate to be incorporated into their implementation plan for the asset(s) and portfolio. Entities should evaluate the inclusion of building measures based on whether they contribute to creating a more integrated system, which improves energy efficiency and minimises the cost and amount of renewable energy procured.

Decarbonisation roadmap and implementation plan

Decarbonisation roadmap A decarbonisation roadmap is the projected timeline of the Commitment and will identify key milestones to determine actions and timeframes for strategies within the implementation plan, based on the unique portfolio working baseline. Milestones could relate to the entity's energy efficiency and renewable energy targets and by when they will be met.

Implementation plan An implementation plan is a document that is to be developed, maintained and updated during the Commitment. It should contain the relevant entity's strategies to achieve the milestones laid out in the decarbonisation roadmap, their impact (in terms of cost, tCO₂e) and relevant

time frames for implementation. Through verification as outlined in the Commitment, these metrics are intended to feedback into this document to inform an update to the plan and realign the strategies and workflow. The plan is intended to be applicable to all associated building occupants (eg tenants, managers etc) to detail the actions that will be relevant to their operations.

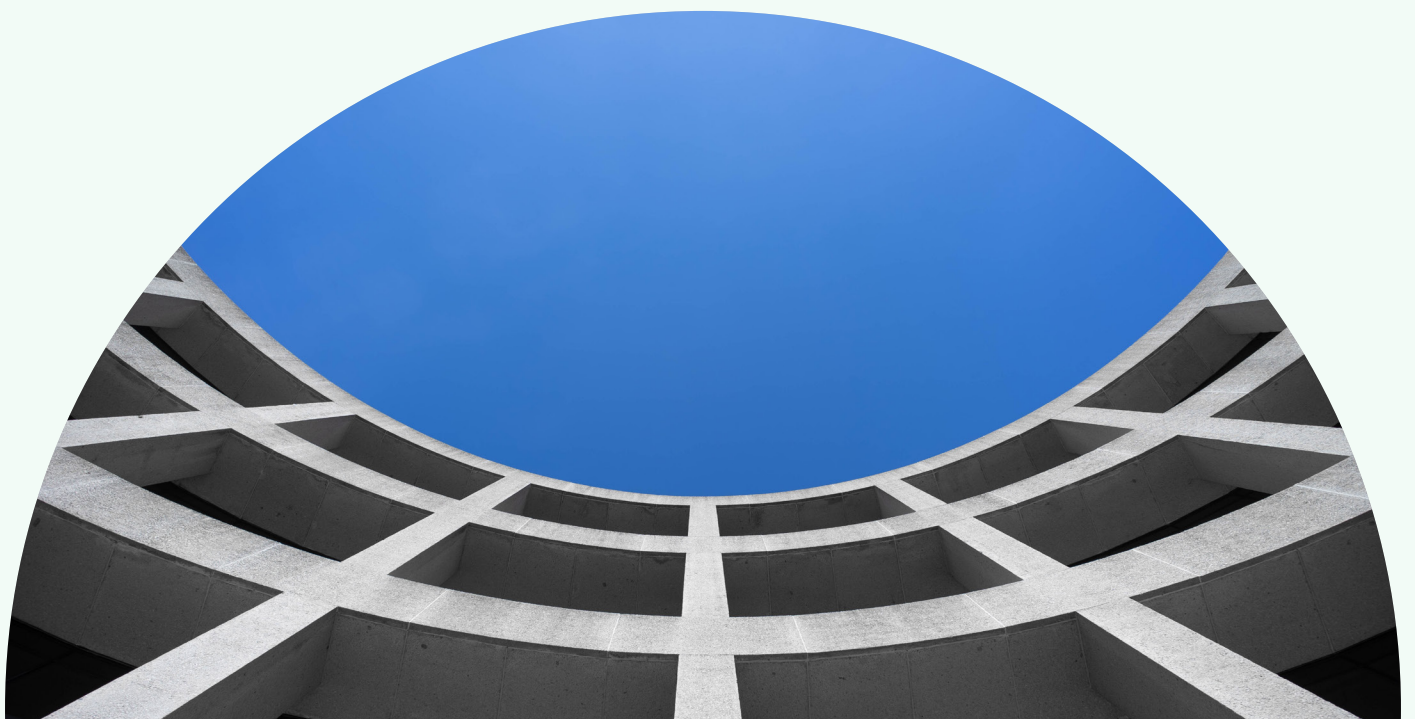
It is recommended that the roles and responsibilities are laid out clearly for each strategy. For example:

1. owner: sign off on more efficient heating, ventilation and air conditioning (HVAC) system
2. facilities manager: operations training, training in best practice efficiency and maintenance processes, provide tenant with user guide
3. tenant: attend session on efficient use of control system. Receive user guide. Alert facilities manager to any sub-optimal performance

Eligible carbon offsets (emission reductions)

Appendix B contains a list of eligible carbon offsets which can be used by an entity to help to achieve a net zero carbon balance at asset level. The Commitment has determined a hierarchy of eligible offsets, so as to prioritise offsets from renewable offset sources first and foremost followed by other non-renewable offset sources if necessary.

Offsets must also be procured from the same region as the asset is based in as much as possible to reduce adverse emissions impacts and create regional imbalance as per the principles of appendix B.



3.5 Verify

Provide accurate and reliable data that demonstrates enhanced energy performance, reduced carbon emissions, and progress towards net zero carbon assets and portfolio

Aim

Report, disclose and verify annually on the progress of each asset and the portfolio towards achieving the outcomes of the Commitment through locally relevant third-party certification, third-party assurance or market mechanisms. For entities undertaking the policy pathway, the impact of the enacted policies and regulations on their greenhouse gas inventories will need to be disclosed using internationally recognised reporting protocols and market mechanisms.



Requirements

Cities, States and Regions
Policy Pathway

Report progress of regulations and policy implementation

Disclose buildings sector greenhouse gas inventory and progress against decarbonisation targets using market mechanisms and internationally recognised reporting protocols

Cities, States and Regions
Municipal/Government
Buildings Pathway

Annually disclose energy consumption and carbon emissions data using market mechanisms at asset and portfolio level

Develop a verification roadmap and establish milestones to achieve full third-party verification (including certification and assurance) of all assets and the portfolio by 2030

Owner

Publicly report progress annually against targets using locally relevant verification schemes (including certification and assurance) at asset level and portfolio level

Tenant

Provide verified data using reporting protocols for associated emissions

Developer

Verify predicted performance metrics through appropriate asset verification (including certification) methods

Further guidance

City, state and region verification requirements

As signatories of the Commitment, cities, states and regions must aim to have all data from individual assets and portfolio independently verified. Through extensive consultation with C40 Cities, the Under2 Coalition and the Net Zero Carbon Buildings Taskforce, the following has been developed:

Policy pathway requirements Cities, states and regions should demonstrate that their implemented regulations and planning policies are having an impact on decarbonising buildings within their region. Therefore, cities, states and regions must:

- within two years of signing the agreement, set and report using market mechanisms a baseline of the greenhouse gas emissions inventory data of all buildings within their region. The inventory should be determined using internationally recognised reporting protocols
- no more than every four years from setting the baseline, report as above on any progress to reduce greenhouse gas emissions across all buildings within their region

Cities, states and regions should also consider:

- tracking and addressing other emission sources beyond those covered by the Commitment (eg refrigerants, transport, or other)
- developing, or introducing, verification process for the data being collected

Municipal/government building pathway requirements Cities, states and regions are expected to demonstrate that their building and tenancy assets have been independently verified to be net zero by 2030 or earlier.

Recognising the extent, diversity, and number of asset classes that are under ownership and management of cities, states and regions, the signatories are expected to:

- within two years of signing the Commitment, disclose asset level annual energy consumption and carbon emission data using market mechanisms and to WorldGBC. This data must be updated every year to 2030
- within two years of signing the Commitment, develop and submit a verification roadmap

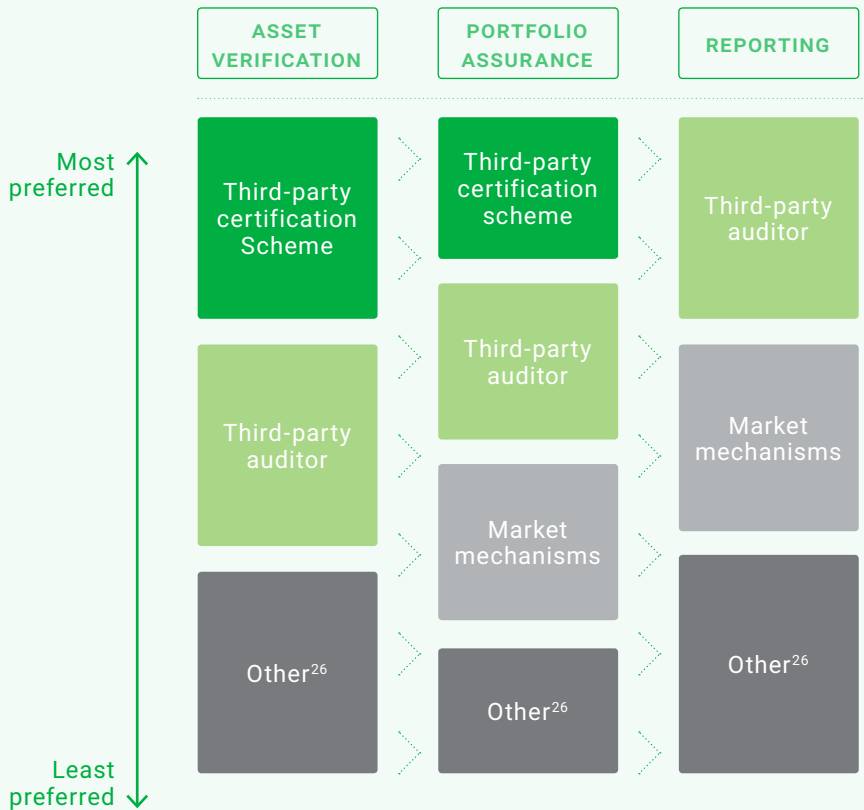
The verification roadmap details the transition from current practices towards the goal of full verification for all assets owned by the entity. The roadmap will need to include key milestones to ensure the goal of full verification can be met. Milestones can be set by each entity and should determine actions and time frames appropriate to the scale of the portfolio. For example, the entity may choose to start by looking at the most intensive energy consuming buildings, and move towards less intensive assets over time.

The goal of the verification roadmap is to ensure the entity is able to deliver robust verification for each asset as they meet the target in this Commitment by 2030 or earlier. It also aims to ensure cities, states and regions are meeting the same level of rigour as that which is being asked of the private sector.

It is recommended that verification will also assist entities to inform building level improvement and procurement decisions, to better manage progression along their decarbonisation roadmap and gain greater certainty and confidence in achieving the goals of the Commitment.

Verification pathway selection

The Commitment encourages entities to undergo the highest level of verification possible for both asset and portfolio level but understands that this may not be possible due to financial, geographical or political constraints. The process of ensuring the appropriate requirements for asset verification, portfolio assurance and reporting for their assets and portfolios will follow a combination of the methods outlined below. The below figure is indicative and provides guidance as to the combination that each entity may use to achieve the requirements of the verification section. For example, an entity may choose to complete third-party certification at both asset and portfolio level and then report or, alternatively, use third-party auditor verification at asset level and complete portfolio level assurance and then report.



²⁶Where an entity or an auditor has other equivalent verification standards they wish to pursue then these must be submitted to the Advancing Net Zero team and eligibility will be determined by the NZCB Taskforce

Why third-party certification? (asset level)

Aligning with recognised and industry leading local third-party certification schemes (eg BREEAM, DGNB, Green Star, HQE, LEED etc) removes the need for undergoing additional assurance processes, and provides geographically relevant prescriptive pathways for meeting the energy efficiency requirements of the Advancing Net Zero Framework. Currently, member Green Building Councils and other existing programmes around the world provide (or are developing) asset and portfolio level tools to address the challenges of achieving a carbon neutral environment which can provide viable quality assured pathways for contributing towards the aims of this Commitment. As well as fulfilling this pathway, certified assets and portfolios are proven to result in:

- reduced operating costs
- higher return on investment
- enhanced marketability across the portfolio
- reduced liability and risk
- healthier, more energy efficient and comfortable spaces

The Commitment strongly encourages all assets to certify as net zero carbon. Other green building certification tools can also be used to demonstrate enhanced levels of energy efficiency beyond local regulatory requirements and therefore contribute towards the decarbonisation roadmap.

Third-party verification requirements (asset and portfolio level)

Third-party certification schemes are the preferred delivery method of verification for the Commitment. For more information, please read 'why third-party certification' above.

Where certification schemes are not available or feasible, then third-party verification can be used at asset and portfolio level. Third-party verification is where an independent third party with relevant and extensive experience is able to conduct carbon accounting in accordance with international recognised greenhouse gas accounting standards and verification or assurance standards in line with the requirements below. A third-party verifier may be a relevant market mechanism or an accounting/assurance firm. Third-party verification can be a good way to achieve either verification or assurance outcomes to demonstrate the assets and portfolios are on track to meet the goals of the Commitment where third-party certification is not available.

Third-party asset verification requirements are as follow:

- the third-party auditor must demonstrate a level of competence in handling the verification from extensive previous experience
- the third-party auditor must be independent of the entity undergoing verification, so as to verify the accuracy of the greenhouse gas inventory. Internal verification is not acceptable

- the third-party auditor must conduct a whole verification whereby all assets within the entity's portfolio are verified and must follow one of the standards listed under the verification guidance section of the CDP website.
- when undertaking the verification, the third-party auditor should use one of the following reporting protocols or accounting standards²⁷:
 - 2006 IPCC Guidelines for National Greenhouse Gas Inventories
 - International Emissions Analysis Protocol
 - Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard
 - Greenhouse Gas Protocol: Community Scale Greenhouse Gas Emissions Inventories
 - ISO 14064-1:2006 Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals

Third-party portfolio assurance requirements are as follows:

- the third-party auditor must demonstrate a level of competence in handling the assurance from previous experience in both practice and application
- the third-party auditor must be independent of the entity undergoing assurance. They must be able to reach and publish an objective and impartial opinion or conclusions on the published report
- the third-party auditor must conduct assurance of the portfolio performance using one of the following standards
 - ISAE 3000 (as done by a finance professional)
 - AA1000AS (conducted with the requirements of the Commitment as a relevant stakeholder)
- issue a publicly available written report about the portfolio level performance of the entity with regards to the goals of the Commitment. The report must include an opinion or set of conclusions, description of responsibilities of the relevant parties involved and summary of work involved relevant to the applied assurance standard
- assess whether the report provides a reasonable and balanced presentation of performance, taking into consideration the veracity of data in the report as well as the overall selection of content

²⁷The selection of protocol should be the same as that of the entity for accuracy



Market mechanisms (reporting platforms) requirements (portfolio level)

The market mechanism must be independent of the entity undergoing reporting.

- reporting must be publicly available annually and must detail the portfolio performance requirements required by this Commitment including percentage energy efficiency improvement, tCO₂e of carbon emissions and energy demand intensity
- The reporting platform must demonstrate that the data submitted to it has been assured to one of the standards highlighted above

Additionally, where no asset level verification has been conducted for the portfolio:

- the reporting platform must require the entity to verify the asset level data using an appropriate greenhouse gas accounting process and to the relevant verification standard as outlined in the verification guidance section of the CDP website

Developer stream only: verification of predicted emissions

Developers should verify predicted emissions using locally relevant third-party certification schemes which provide appropriate methodology for calculating predicted energy consumption and emissions and, where possible, verify against actual consumption and emissions. Where local third-party certification is not available, then an applicable international third-party certification scheme should be used.

These methodologies should use energy modelling to simulate important climatic, occupant, passive and active design elements of the asset over a 12-month period to produce robust, accurate and reliable energy calculations.

Energy modelling can also be used to examine different strategies for asset design, energy efficiency goals and renewable energy implications.

Where possible, actual performance data should be collected post occupancy and compared against the predicted data. This will identify any potential performance gaps and help to validate or correct design and construction decisions for the next project.

Alignment

The Net Zero Carbon Buildings Commitment has been created by WorldGBC with NZCB Taskforce, C40 Cities GCAS Working Group and with WorldGBC corporate partners. This extensive and broad collaboration has created an initiative which is ambitious yet flexible and able to align with many different certifications or reporting mechanisms.

A number of Green Building Councils globally have net zero carbon certification schemes which can be used as a verification pathway for the Commitment. Some Green Building Councils have both asset and portfolio level options for verification which include energy efficiency requirements.

Next steps: approved verification providers

WorldGBC will be working with the Taskforce to create an approved list of providers for third-party certification schemes, third-party verification and market mechanisms for ease of reference for the different pathways. The approved verification providers list will include providers that meet the requirements set out in this section or an approved equivalent level of verification. To nominate to be recognised as an approved provider, please contact the Advancing Net Zero team through anzproject@worldgbc.org.





3.6 Advocate

Demonstrate leadership to support the transition towards net zero carbon buildings

Aim

To demonstrate leadership through core business activities and non-regulatory incentives and programmes which will be a catalyst for further action within their respective supply chains. Through initiatives such as voluntary programmes (eg community greening), incentives (eg energy efficiency rebates/retrofit financing) or contractual agreements (eg green leases etc), each stream has the potential to facilitate more momentum towards achieving the target of carbon neutrality by 2050.

Requirements

Cities, States and Regions
Policy Pathway

Cities, States and Regions
Municipal/Government Buildings Pathway

Develop a suite of supporting non-regulatory incentives and programmes to help non-public sector achieve their commitment

Owner

Tenant

Demonstrate leadership through core business activities, to facilitate the wider uptake of net zero carbon buildings through supply chain

Developer

Enable and encourage all sold and leased assets to operate at net zero carbon

Further guidance

Why advocacy?

Advocacy has the potential to influence supply chains and change perceptions about the achievability of the targets set out by the Paris Agreement; as well as highlight the diverse and unique solutions that entities are embarking on to contribute to the common goal of decarbonisation. Advocacy is the clearest and loudest message to wider industry, to develop the key enablers to facilitate mass market transformation, and overcome specific technical challenges to transition towards a zero carbon emissions future. Advocacy initiatives are encouraged to be promoted through the regular CSR reporting cycle.

Sold and leased assets (for developers only)

For developers, the intent is to pass on to the prospective tenant or owner of the developed assets the importance, opportunities and information needed to operate the asset at net zero carbon. This is intended to help drive uptake and momentum of the Commitment or equivalent decarbonisation action. Once the asset(s) have been sold or leased, the onus and responsibility no longer resides with the developer.

Excluded assets and no direct control

For the assets that have been excluded, or where there is no direct control, it is expected that the entity will be advocating to the main controlling entity or entities the benefits and necessity of operating at net zero carbon. The expectation is that they are supplied with sufficient supporting information and materials to be able to effectively evaluate the benefits and give direction on a way forward if they so choose.





APPENDIX A

The Commitment

COMMIT	DISCLOSE	ACT	VERIFY	ADVOCATE
Advanced trajectory for all new AND existing buildings, within direct control of the entity to operate at net zero carbon	Measure, disclose and assess annual asset and portfolio energy demand and carbon emissions	Develop and implement a decarbonisation roadmap outlining key actions and milestones	Demonstrate enhanced energy performance, reduced carbon emissions & progress towards net zero carbon assets and portfolio	Demonstrate leadership to support the transition towards net zero carbon buildings
On sign-up	Within two years	Annually	Annually	Ongoing
Cities, states and regions Policy pathway Enact regulations and/or planning policy within jurisdictional control to ensure new buildings operate at net zero carbon by 2030 and all buildings by 2050	Disclose estimated buildings sector greenhouse gas inventory	Develop, maintain and update an implementation plan for policies and regulations demonstrating a decarbonisation roadmap trajectory for all new AND existing buildings	Report progress of regulations and policy implementation Disclose buildings sector greenhouse gas inventory and progress against decarbonisation targets using market mechanisms and internationally recognised reporting protocols	Develop a suite of supporting non-regulatory incentives and programmes to help non-public sector achieve their commitment
and/or Municipal/ government buildings pathway Commit to owning, occupying AND developing only assets that are net zero carbon in operation by 2030	Measure and publicly disclose energy consumption plus scope 1 & 2 operational carbon emissions from portfolio and identify opportunities to reduce carbon emissions while improving energy productivity	Develop, maintain and update an implementation plan demonstrating a decarbonisation roadmap trajectory for all new AND existing buildings within portfolio Develop and implement a carbon emissions reduction strategy that includes energy demand reduction targets, building measures to decarbonise grids, and renewable energy procurement at both the asset and portfolio level	Annually disclose energy consumption and carbon emissions data using market mechanisms at asset and portfolio level Develop a verification roadmap and establish milestones to achieve full third-party verification (including certification and assurance) of all assets and the portfolio by 2030	
Business & organisations Owner Commit to owning only assets that are net zero carbon in operation by 2030 Tenant Commit to occupying only assets that are net zero carbon in operation by 2030	Disclose predicted energy demand, carbon emissions and operating costs (where possible) for all designed assets	Develop and implement a carbon emissions reduction strategy that includes energy demand reduction targets, building measures to decarbonise grids, and renewable energy procurement at both the asset and portfolio level	Report progress annually against targets using locally relevant verification schemes (including certification and assurance) at asset and portfolio level Provide verified data using local relevant reporting protocols for associated emissions	Demonstrate leadership through core business activities, to facilitate the wider uptake of net zero carbon buildings through supply chain
Developer Commit to developing only assets that are net zero carbon in operation by 2030			Verify predicted performance metrics through appropriate asset verification (including certification) methods	Enable and encourage all sold and leased assets to operate at net zero carbon

APPENDIX B

Guidance for procurement of renewables and offsets

Guidance for procurement of renewables and offsets in the Commitment

Introduction

This document aims to provide guiding principles and methods for procuring renewables and offsets for the Commitment. The guidance described in this document will help to facilitate best practice data and tracking, and to implement a hierarchical approach of self-generated renewable energy, followed by purchased renewable energy and, finally, carbon offsets. It is a live document that will incorporate any relevant new principles or methods which may represent best practice procurement. New guidelines on procurement will be determined by the NZCB Taskforce.

Alignment

This document aligns with the principles of the Advancing Net Zero Framework and incorporates definitions and principles from the following publications:

- Renewables and Offsets in Green Star (Green Building Council Australia)
- RE100: Making Credible renewable electricity usage claims (April 2016)
- RE100: Technical Criteria (January 2018)

These publications are representative of best practice procurement guidelines for renewables and offsets. For further explanation of some of the concepts that are referenced in this document, please consult the relevant publications.

Hierarchy

The principles of the Advancing Net Zero framework require entities to follow a renewable hierarchy where feasible. This includes renewable electricity, either on-site or off-site, or by offsets; with generating supply to the local grid and sufficient building measures which serve to decarbonise the grid as much as possible.

The guidance in this document also places emphasis on using renewable sourced offsets before non-renewable sourced offsets as much as possible. This is to maximise market transformation and accelerate decarbonisation of the grid.

RE100

Where an entity is part of RE100, then the requirements for procurement of renewable and offsets become those requirements outlined within RE100. Due to the best practice procurement guidelines outlined within the RE100: Technical Criteria and the well-aligned principles and methods for renewables and offsets, the RE100: Technical Criteria is considered as being equivalent for the purpose of this document.

Regional context

Entities are advised to consult their local GBC for further guidance on specific regional context in relation to these rules and methods. Where a local GBC or regulatory authority has differing principles and methods for procurement of renewables and offsets, these take precedence over the principles and methods listed below.

Alternative claims

Where an entity cannot comply with the rules and methods prescribed in this document in a country or certain market, then the entity may submit an alternative claim to follow a different pathway to the WorldGBC Advancing Net Zero team. This claim will be reviewed by the NZCB Taskforce as to its validity for best practice procurement of renewables and offsets in the nominated market and/or country.

List of definitions

Additionality A quality criterion for GHG emissions reduction (carbon offset) projects stipulating that the project would not have been implemented in a baseline or 'business-as-usual' scenario.

Attribute aggregation The extent to which electricity generation attributes are transacted together or are included in a single instrument.

Contractual allocation Allocation of specified generation to specific grid consumers based on contractual instruments.

Electricity attribute certificates Certificates that embody the generation attributes of one megawatt-hour (MWh) of renewable electricity.

Electricity market A system enabling the purchase and sale of electricity as a commodity.

Grid Shared distribution network for electricity at a regional or national level, with many different connected generation sources.

Carbon offset (emission reductions) An offset (emission reduction) is where a reduction, removal, or avoidance of a GHG emission is used to offset a GHG emission that occurs elsewhere. Offsets can be traded in the form of credits that typically represent one metric ton of carbon dioxide equivalent emission reductions (or enhanced carbon sequestration).

Off-site Renewable energy that is produced outside of the boundary of the asset which consumed it. The off-site renewable energy is often produced by a supplier or a generator, but, can also be produced by the entity that controls the asset. Off-site renewable energy can be directly supplied to the asset or be supplied to the grid, which in turn distributes energy to the asset.

On-site Renewable energy that is consumed within the same boundary of the asset by which it was produced. They are often owned and controlled by the entity that controls the asset and are generally small, modular, decentralised, grid-connected or off-grid energy systems²⁸.

Percent of use claim A renewable energy usage claim in which renewable energy consumption is reported as a percentage of overall energy consumption.

Renewable electricity attributes The characteristics of that electricity source that deem it renewable, for example the fuel type, location, associated GHG emissions – and potentially other environmental and social impacts and benefits of the electricity generation.

Revenue-grade meter An electricity meter that meets the applicable ANSI C-12 Standard or its equivalent.

²⁸Green-e Glossary, <https://www.green-e.org/glossary>

Principles

This section of the guidance details the relevant principles for evaluating the procurement of renewable energy and offsets claims.

Renewable energy procurement

For the purpose of this document, there are two pathways through which renewable energy can be procured. The two procurement pathways are as follows:

1. Self-generated renewable energy: This is renewable energy that is produced from either on-site or off-site facilities which are owned by the entity. These facilities can be either grid-connected or entirely off the grid.
2. Purchased renewable energy: This is renewable energy that is sourced from generators and suppliers in the market which is generally located off-site. It includes direct purchases through the use of contractual instruments (eg power purchase agreement), retail purchase and the purchase of stand-alone unbundled energy attribute certificates.

The principles for each pathway differ and further guidance is provided below.

For self-generated renewable energy Companies shall disclose the amount of renewable energy generated, consumed, and certificates produced. For consumption, companies must retain the certificates from their own generation. In markets without certificate systems, the company shall retain the attributes of generation and ensure no other entity may claim use or delivery of renewable electricity from the facility.

For purchased renewable energy For the purpose of this document, the following principles reflect best practice guidelines with regards to the procurement of renewable energy and renewable offsets purchased from generators and suppliers in the market, irrespective of whether or not they are grid connected.

1. Credible generation data

- Has 'static' information about generation (fuel type, location, date of operation etc) which has been third party verified
- Has 'dynamic' generation data, which is continually tracked using a revenue grade meter

2. Attribute aggregation

- Any claims can be substantiated through documentation of all attributes (renewable energy, plus any environmental or social benefit)
- All attribute certificates must be owned by the same party and none can be sold off
- All renewable energy attribute certificates must be third party verified and adhere to any local policy, laws and regulations pertaining to renewable energy claims

3. Exclusive ownership (no double counting) of attributes

- Exclusive sale verifying exclusive delivery from generators, suppliers to consumer for permanent

end use (specified in contract)

- Legal enforceability of the contract (that is, the user has property rights)
- Tracking – the attributes are reliably tracked from generator right through to the consumer and include standardised certification information, generator information and geographical footprint
- The tracking is independent and transparent

4. Exclusive claims (no double claiming) on attributes

- The buyer cannot claim unless they own and retire the attribute certificates related to the energy use
- If the user is in a location where there are separate certificates for different attributes, renewable energy attributes and carbon attributes must be owned by the same entity

5. Geographic market limitations of claims

- The power purchased must be connected to the same grid

6. Vintage limitations of claims

- The vintage of attributes and certificates must be close to the year of electricity consumption

Further guidance and explanation relating to these principles can be found in the RE100: Making Credible renewable electricity usage claims best practice guidelines.

For carbon offsets

The following principles²⁹ provide best practice guidelines of determining the eligibility of procurement of a carbon offset:

1. Additional

- The offset unit must result in emissions reductions that are unlikely to occur in the ordinary course of events, including due to any existing commitment or target publicly agreed by the entity responsible for issuing the units. It must represent abatement that has not been double counted

2. Permanent

- The offset unit must represent permanent reductions in greenhouse gas emissions. In the case of sinks, this requires that the carbon stored is sequestered and will not be released into the atmosphere for a period of 100 years. Where a period of less than 100 years is applied to sequestration units, an appropriate discount must be applied

3. Measurable

²⁹National Carbon Offset Standard for Precincts.

- Methods used to quantify the amount of emissions reductions generated must be supported by clear and convincing evidence

4. Transparent

- Consumers and other interested stakeholders must have access to information about the offset project that generated the abatement, including the applied methodology and project- monitoring arrangements

5. Address leakage

- The system responsible for generating the offset unit must provide deductions for any material increases in emissions elsewhere which nullify or reduce the abatement that would otherwise be represented by the offset unit

6. Independently verified

- The circumstances responsible for the generation of the unit must be verified by an independent, appropriately qualified third party and not found to be in contradiction with these integrity principles

7. Registered

- The offset unit must be listed and tracked in a publicly transparent registry

8. Local

- The offset must occur within the same national boundary as the entity's asset seeking

Methods

The following is a common list of methods that are recognised as best practice and can be used for both procurement of renewable energy and offsets. The methods in this section are separated into the same categories as for the principles and are as follows:

1. Renewable energy procurement

- a) Self-generated renewable energy
- b) Purchased renewable energy

2. Carbon offsets

The methods are listed in the recommended order of implementation. This order incorporates the hierarchical approach of the Commitment by requiring renewable energy procurement first before renewable energy offsets followed by non-renewable energy offsets. The entity is strongly encouraged to procure renewable offsets as much as possible.

The entity is encouraged to determine from this guidance what is feasible from top to bottom for their assets and portfolio while considering the role selected building measures will need to play to facilitate decarbonisation of the grid. This approach is intended to help to transform away from reliance on fossil fuel intensive utilities, accelerate market transformation and decarbonisation of the grid.

For renewable energy procurement

The hierarchy for procurement of renewables in most cases will follow on-site, off-site and then offset.

Where this is not the case for certain regions, due to grid curtailment effects, the entity should consult their local GBC on the right procurement methods and hierarchy for their region.

For all others, the following hierarchy of methods has been adapted from the RE100: Technical Criteria for maximum alignment with best practice guidelines. To understand the necessary claims needed for each method, see the RE100: Technical Criteria document for further information or consult your local GBC.

Self-generated renewable energy

1. Generation from installations owned by the company

This option includes renewable electricity produced from installations that are owned by the entity, on-site or offsite, connected to the local grid or entirely off-grid. For this option, an entity shall disclose the amount of renewable electricity generated, consumed, and certificates produced.

Purchased electricity

2. Purchase from on-site installations owned by a supplier

In this option, electricity generated from on-site facilities owned and operated by a supplier is consumed by the company. The renewable electricity consumption claimed by an entity using this option shall be backed by an electricity supply contract with the supplier.

3. Direct line from an off-site generator with no grid transfers

This option includes renewable electricity produced from off-site installations owned and operated by a third party and delivered to the entity via a direct line, with no grid transfers. The renewable electricity consumption claimed by an entity using this option shall be backed by an electricity supply contract with the project owners and operators.

4. Direct procurement from offsite grid-connected generators

A direct procurement contract, also known as power purchase agreement (or PPA), is an agreement signed between a purchaser (the entity buying the energy) and a power producer. The contract ensures the purchase of electricity generated by a specific renewable project with renewable attributes.

5. Contract with suppliers (green electricity products) definition

In a contract for electricity procurement the supplier (a utility, or other power developer or market entity) matches the electricity consumed by the entity and delivered through the grid with renewable electricity produced or purchased from a variety of sources and projects, or a specified project or set of projects. Contracts can be structured in different ways with respect to the quantity and quality of renewable electricity offered to the consumer. Certain contracts of this kind are known as green electricity products (or tariffs). Consult your local GBC for a list of providers in your region.

6. Unbundled energy attribute certificate purchase definition

Entities are encouraged to procure PPAs where possible but, in other circumstances, entities can claim the environmental benefits of renewable energy production by acquiring electricity attribute certificates issued by renewable electricity generators operating within the same market boundary as the claimant. Entities may purchase unbundled certificates like RECs (North America), Guarantees of Origin (Europe) and I-RECs (other regions) separately from electricity to match with their electricity consumption from non-renewable sources.

For carbon offsets: emissions reductions

The following offset units³⁰ can be used as part of the Commitment:

1. Renewable sources

- Certified Emissions Reductions (CERs) issued as per the rules of the Kyoto Protocol from Clean Development Mechanism projects, with the exception of:
 - long-term (ICERs) and temporary (tCERs); and
 - CERs from nuclear projects, the destruction of trifluoromethane, the destruction of nitrous oxide from adipic acid plants or from large-scale hydro-electric projects not consistent with criteria adopted by the EU (based on the World Commission on Dams guidelines)
- Verified Emissions Reductions (VERs) issued by the Gold Standard
 - Abatement recognised by the Gold Standard may be subject to the possibility of double counting; for example, where the abatement occurs in a host country or region that is affected by international or national emissions trading, cap and trade or carbon tax mechanisms. Please see the Gold Standard's Double Counting Guideline for full details
 - Where the additionality of a VER is ensured through the cancellation of an Eligible Cancellation Unit (as defined by the Gold Standard), that VER is only eligible for use in this Commitment where the applicable Eligible Cancellation Unit would also have been eligible under this Commitment

2. Emission reduction schemes

- Verified Carbon Units (VCUs) issued by the Verified Carbon Standard
- Removal Units (RMUs) issued by a Kyoto Protocol country on the basis of land use, land-use change and forestry activities under Article 3.3 or Article 3.4 of the Kyoto Protocol

Where a carbon offset is not part of the above list but an entity believes that it can be used, then it must comply with and be verified against the principles for carbon offsets outlined above and then be submitted as an alternative claim.

³⁰Entities must check with the offset unit supplier for assurance of what exact source the offset unit is from.