



ECONOMIC DEVELOPMENT AND PLANNING CLUSTER NEW BUILDINGS: GREEN POLICY

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Policy Mandated by	Head: Development Planning, Management and Environment Unit
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New Buildings: Green Policy

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1. Preamble

This New Buildings: Green Policy (NBGP) is the first of its kind in South Africa, being implemented in parallel with three other South African metropolitan municipalities, specifically for net zero carbon buildings. This policy will create an ‘enabling framework’ to support implementation of the policy goals that would include regulatory elements, awareness, capacity development and net zero carbon design guidance manuals for the public. The eThekweni Municipality aims to ensure that this policy will be responsive to sector needs and contains a process for evaluation and review. As a result, the findings and learnings will be shared with other South African and international cities. Additionally, every effort will be made to improve the ease of doing business in the eThekweni Municipality and for purposes of this policy, this includes the development of building design tools that supports uniformity of application documentation and ease of compliance monitoring

Energy efficiency is a standard that is embedded across national policy documents, such as the National Development Plan (NDP) and the Department of Energy’s National Energy Efficiency Strategy. The NBGP will be complementary to SANS 10400 XA: 2011, prioritising energy efficiency within new buildings in accordance with clause A20 of the National Building Regulations (NBRs). This policy takes cognisance of the backlog in supply of low-income housing and as such will avoid additional requirements on this sector, while encouraging the construction of highly efficient and quality housing that reduces the energy burden on poor households.

The building sector provides a scaled opportunity to more effectively control greenhouse gas emissions (GHGs) and to manage resource efficiencies through its end-users. While this policy primarily focuses on GHG mitigation potential through controls for new buildings, this policy further encourages the building sector to be cognisant of their impact on natural resources through their usage and resilience to the impacts of climate change.

Consequently, the purpose of this policy is to establish minimum energy efficiency requirements for new buildings and buildings undergoing major refurbishment so as to work towards reducing buildings’ energy use intensity to zero. Firstly, this is achieved through reducing energy consumption through building design and system improvements. This cannot however on its own reduce the energy use intensity to zero; as a result, the generation of renewable energy is required. Adoption of the policy is an important component of addressing climate change and reducing GHG emissions in new building developments.

This policy has been mandated by the Head: Development Planning, Environment and Management Unit and authority to draft was initially granted through a council resolution tabled on the 27th of June 2019.

2. Purpose of the Policy

The purpose of this policy is to ensure:

- 1) the establishment of minimum energy efficiency requirements for new buildings and buildings undergoing major refurbishments in the eThekweni Municipal Area (EMA) by 2030, that may go beyond the NBRs;
- 2) that renewable energy, from either on-site and/or off-site systems, supplements a highly energy efficient building so as to achieve net-zero carbon principles in the most cost-effective pathway;
- 3) buildings become a priority area for addressing climate change, building city resilience, and reducing GHGs;
- 4) that the development of high performance and resource efficient buildings are encouraged; and
- 5) the operating costs throughout the life cycle of new buildings are reduced.

3. Legal Framework

The following documents are relevant and were used as key inputs for this policy:

- 1) Constitution of Republic of South Africa, 1996;
- 2) Department of Energy Efficiency Strategy (2015/2016);
- 3) Development Charges Act;
- 4) Durban Climate Change Strategy (2015);
- 5) eThekweni Energy Strategy (2008);
- 6) eThekweni GHG Inventory (2017);
- 7) eThekweni Internal Energy Management Policy;
- 8) eThekweni Municipality Integrated Development Plan;
- 9) eThekweni Rates Policy;
- 10) eThekweni Spatial Development Plan;
- 11) eThekweni Sustainable Energy Plan 2050;
- 12) Integrated Development Plans (Annual);
- 13) Municipal Finance Management Act (2003);
- 14) Municipal Property Rates Act No.6 of 2004;
- 15) National Building Regulations: SANS 10400 XA;
- 16) National Carbon Tax (2013/2014);
- 17) National Development Plan (2012);
- 18) National Development Plan (2013);
- 19) National Energy Efficiency Strategy (2008);
- 20) New Growth Path (2010);
- 21) Post 2015 Draft National Energy Efficiency Strategy (DRAFT);
- 22) South African National Standards (SANS) 10400-XA with SANS 204 (2011);
- 23) The Integrated Resource Plan (IRP) 2010-30 (2019); and
- 24) White Paper on National Climate Change Response (2011).

4. Problem Statement

This policy seeks to address the following problems:

- a) current gaps in the design and construction of new buildings that do not achieve significant GHG abatement, climate change resilience and carbon neutrality;
- b) currently new buildings are not built to maintain high efficiency levels, resulting in an increase in lifecycle costs for the building and in GHG emissions when compared to energy efficient buildings or buildings that require an energy efficiency retrofit;
- c) further action is needed to close the remaining gap to achieving net zero carbon buildings by 2030, as set out in South Africa's National Development Plan; and
- d) lack of innovation and an integrated approach in addressing climate change and building resilience in a likely era of climate change driven investments in the EMA.

5. Definitions and Acronyms

(1) Definitions

Building/s

Includes:

- (a) any structure, whether of a temporary or permanent nature and irrespective of the materials used in the erection thereof, erected or used for in connection with:
 - i. the accommodation or convenience of human beings or animals;
 - ii. the manufacture, processing, storage, display or sale of any goods;
 - iii. the rendering of any service;
 - iv. the destruction or treatment of refuse or other waste materials;
 - v. the cultivation or growing of any plant or crop.
- (b) any wall, swimming bath, swimming pool, reservoir or bridge or any other structure connected therewith;
- (c) any fuel pump or any tank used in connection therewith;
- (d) any part of the building, including a building as defined in paragraph (a), (b) or (c);
- (e) any facilities or system, or part or portion thereof, within or outside but incidental to a building, for the provision of a water supply, drainage, sewerage, stormwater disposal, electricity supply or other similar service in respect of the building;

Building Control Officer	Means any person appointed or deemed to be appointed as building control officer by a local authority in terms of section 5 of the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977) as amended;
Competent Person	Means a competent person as contemplated in the National Building Regulations and Building Standards Act, 1977 (Act No.103 of 1977) as amended;
Developer	Means an individual or organization that is erecting a new building/s on a land parcel or improving an existing building;
Erection	In relation to a building, includes the alteration, conversion, extension, rebuilding, re-erection, subdivision of or addition to, or repair of any part of the structural system of, any building; and
Erect	Shall have a corresponding meaning;
Energy Use Intensity	Means the total sum of energy consumed on-site divided by the building gross floor area;
Energy Performance Certificate	Means a rating scheme to summarise the energy efficiency of buildings;
Green Certified Building	Means a building that has been validly accredited with either a Green Star, EDGE, Net-Zero or Net-Positive certification by the Green Building Council of South Africa;
Energy	In terms of this Policy, refers to electricity and energy consumption within a land parcel.
eThekwini Municipality	Refers to the eThekwini Municipality, as an organ of state, a category A Municipality as envisaged in terms of section 155(1) of the Constitution of South Africa;
eThekwini Municipal Area	Means the area in respect of which the eThekwini Municipality has executive and legislative authority as determined by the Constitution and the National legislation and the area as demarcated by the Demarcation Act (Act 27 of 1998);
Green Building Council	Means to the Green Building Council South Africa, a nonprofit organisation as defined in the Nonprofit Organisations Act, 1997 (Act No.71 of 1997);
Green Economy	Refers to an economy that results in improved human well-being and social equity, while significantly reducing environmental

risks and ecological scarcities. It is low carbon, resource efficient, and socially inclusive (UNEP, 2011);

Greenhouse Gases Emissions

Refers to gases that result from anthropogenic activities and which contribute to the Greenhouse Effect;

Nett Floor Area

the sum of the roofed area of a building at each floor level and includes wall thickness but excludes:-

a) any basement used exclusively for the parking of motor vehicles and service installations;

b) covered parking;

c) in the case of fuelling and service stations, the areas covered by canopies;

d) staircases, lift shafts/lift motor rooms;

e) corridors that are open to the elements to at least one side;

f) port cocheres; and

g) balconies, verandahs, porches and similar type of structures that are roofed but open to the elements on at least one side.;

Net Zero Carbon Building

A building that is highly energy-efficient, as-built, with the energy used drawn from renewable energy sources, whether on-site or off-site, so that there are zero net carbon emissions on an annual basis. To illustrate: $0 \text{ kWh/yr} = (\text{Energy consumed (100,000 kWh/yr)} - \text{energy efficiency interventions (60,000 kWh/yr)}) - \text{Renewable Energy supplement (on/off site) (40,000 kWh/yr)}$; and $\text{NZC (tCO}_2\text{e)} (0 \text{ tCO}_2\text{e)} = (\text{total energy emissions (100,000 kWh/yr} \times 1,02 \text{ (emissions factor for electricity)} - \text{emissions reduction from energy efficiency interventions (60,000 kWh/yr} \times 1,02 \text{ (emissions factor for electricity))}) - \text{emissions reduction from renewable energy supplement (40,000 kWh/yr} \times 1,02 \text{ (emissions factor for electricity))}$;

National Building Regulations

Means the national building regulations made in terms of section 17 of the National Building Regulations and Building Standards Act,1977 (Act No.103 of 1977) as amended;

Net Zero Positive

A net zero positive carbon building is one that is highly energy-efficient, and the remaining energy use is from renewable energy, preferably on-site but also off-site where necessary, so

that the energy from renewable energy results in more energy being produced than what is used on site (Net Positive);

New Building

In terms of this Policy, a new building refers to the construction of a facility which did not previously exist or making major improvements and/ or refurbishments to such a facility;

Operational Load

Is the full energy load in the building (i.e. electricity meter reading if the only energy source). It is made up of base building loads (e.g. HVAC, hot water, lighting, etc.) plus tenant plug loads.

Owner

In relation to a building or land, means the person in whose name the land on which such building was or is erected or such land, as the case may be, is registered in the deeds office in question: Provided that if:

(a) such person, in the case of a natural person, is deceased or was declared by any court to be incapable of managing his own affairs or a prodigal or is a patient as defined in section 1 of the Mental Health Act, 1973 (Act 18 of 1973), or if his estate has been sequestrated, the executor or curator concerned, as the case may be;

(b) such person, in the case of a juristic person, has been liquidated or placed under judicial management, the liquidator or judicial manager concerned, as the case may be;

(c) such person is absent from the Republic or if his whereabouts are unknown, any person who, as agent or otherwise, undertakes the management, maintenance or collection of rentals or other moneys in respect of such building or land or who is responsible therefor;

(d) the local authority in question is unable to determine the identity of such person, any person who is entitled to the benefit of the use of such building or land or who enjoys such benefit, shall be deemed to be the owner of such building or land;

Refurbishment

The upgrading of either (or both) a building's fabric and services which triggers the legal need for a 'Plan Submission'. Where a building, or portion of a building, is vacated. (Adapted from the Green Building Council of South Africa).

Resilient Building	A building that is designed and constructed in a manner that can withstand the changing climate within the EMA, without negative impact to relevant stakeholders;
Resource Efficient Building	A building that consumes minimal energy and water and decreases waste from the building, offering positive impacts to relevant stakeholders;
Off-site energy generation	Renewable Energy (RE) from sources outside the boundaries of the land parcel (Example: The building in question is being constructed/refurbished is located on 251 Anton Lembede Street, Durban, but the renewable energy system is located anywhere except 251 Anton Lembede Street, Durban – such as 166 K E Masinga Road, Durban, or even in another City or Province);
On-site energy generation	Energy generated from renewable sources produced at the land parcel;
Plug Load	The energy used by products that are powered by means of an ordinary AC plug (e.g., 100V, 115V, or 230 V). This term generally excludes building energy that is attributed to major end uses (Heating, Ventilation and Air-Conditioning (HVAC), lighting, water heating, etc.);
Renewable Energy	Energy generated from renewable resources, as may be determined from time to time, which are naturally replenished on a human timescale, by sunlight, wind, rain, tides, waves and geothermal heat, by photovoltaic systems, solar thermal power plants, geothermal power plants, and wind turbines. This also includes biogas production from organic waste;
Site	Includes multiple erven forming the subject of a building plan submission; and
Small-Scale Embedded Generator	Power generation under 1MW/1000kW, which are located within the distribution network and produce for own their own use or feed excess back into the grid.

(2) Acronyms

C40	C40 Climate Leadership Group
GBCSA	Green Building Council South Africa
DCCS	Durban Climate Change Strategy
EO	Energy Office (eThekweni Municipality)
EE	Energy Efficiency
EI	Energy Intensity
GHG	Greenhouse Gas Emissions
HVAC	Heating, Ventilation and Air Conditioning
IDP	Integrated Development Plan
LTMS	Long Term Mitigation Scenarios
KZN	KwaZulu-Natal
NCCRS	National Climate Change Response Strategy
NBGP	New Buildings: Green Policy
NBRs	National Building Regulations
NDP	National Development Plan
NZC	Net Zero Carbon
RE	Renewable Energy
SDF	Spatial Development Framework
SOP	Standard Operating Procedure
SPLUMA	Spatial Planning and Land Use Management Act

6. Policy Rules and Provision

This policy applies to all new buildings and buildings undergoing major refurbishment in the EMA that fall within clause A20 of SANS 10400 XA: 2011. It should be noted the typology of buildings that are currently excluded include Low-Cost housing and Industrial Buildings. All Public Buildings are not excluded, and need to comply with the New Buildings: Green Policy. The Municipal Manager may determine from time to time, at least every three years, if further exemptions should apply in order to remain consistent with affordable housing criteria.

All new buildings must comply with the requirements and criteria of this Policy which is further detailed in Annexure 1. The design of new buildings must also consider the broader resource efficiency benefit and resilience aspects as described in Annexure 2.

6.1 The Head: Development Planning, Environment and Management Unit must:

- (a) ensure adherence to this policy.

6.2 The Deputy Head: Climate Change Department must:

- (a) ensure that this policy is implemented.

6.3 The Developer and owner must:

- (a) obtain authorization/ clearance from eThekweni Municipality's Energy Office as per pre-scrutiny processes before submitting building plan to eThekweni's Development Management Department;
- (b) ensure that the minimum requirements of the National Building Regulations and Building Standards Act (Act 103 of 1977) (NBR & BS Act) are complied with; and
- (c) comply with the requirements and criteria of the eThekweni Municipality's NBGP which is further detailed in Annexure 1 and Annexure 2.

6.4 Energy Office: Energy Efficiency Project Officer Must:

- (a) assess all plans received from the Applicant to ensure NBGP compliance is achieved before issuing authorisation/clearance;
- (b) annually report on applications received and processed, outcomes and amount of energy and GHGs that are being saved to the Energy Efficiency Manager and /or Deputy Head: Climate Change Department; and
- (c) Reassess any issues clearance reports, as requested by officials from Development Management Department.

6.5 Development Management, Environment and Planning Unit: Development Management Department: Development Applications and Approvals Branch: Plans Assessment Officers must:

- (a) ensure no application shall be permitted to be submitted without the clearance/authorisation from the Energy Office;
- (b) ensure the clearance/authorisation from the Energy Office is included with their recommendation for the Decision Maker to consider the application for approval under other applicable laws as per Section 7 of the NBR&BSA;
- (c) ensure compliance is achieved with the minimum criteria of the NBR&BSA which is SANS 10400 XA;
- (d) ensure that the plan application complies with any other Acts, Regulations and Municipal By-laws, not related to energy efficiency, which remain legally enforceable; and
- (e) Request a reassessment of the data, from the Project Officer, should there be any uncertainty with compliance with the NBRs and eThekweni NZC requirements.

7. Policy Procedures

Building plan submissions to Council (eThekweni Municipality) must demonstrate that the proposed development will comply with the mandatory standards outlined in the NBGP and if possible, to the voluntary measures in Annexure 2. Compliance with mandatory standards should be demonstrated through the submission of completed forms (Which can be found on www.durban.gov.za) and any other required supporting documentation. Complete and correct documentation must be provided; if not, the submission will not be assessed and will be returned.

Submissions of building plan applications must be made by a competent person. A competent person is defined as a built environment professional as defined by the application requirements. Meeting the mandatory requirements will require an integrated design approach; specifically, with regards to integrating energy efficiency into the design process and providing supporting documentation meeting the City's requirements.

It should be noted that submission requirements may be amended from time to time by the Council in order to support ongoing performance improvement in the built environment. It is the responsibility of persons wishing to submit applications for building plan approval to check that they are using the latest, and current, submission forms.

7.1 The Developer and / or owner must:

- (a) submit information relating to the design of the new building/s in accordance to the minimum energy efficiency requirements of SANS 10400XA:2011 and in line with this policy, in addition to all relevant existing required documentation for building plan submissions to the eThekweni Municipality's Development Planning, Environment and Management Unit; Environmental Planning and Climate Protection Department: Energy Office;
- (b) obtain authorization/ clearance from the Energy Office as a pre-scrutiny prior to any application being submitted to Development Management Department;
- (c) must be responsible for the registered competent person who represents the proficiency to undertake the proposed work and that their registration with the regulatory body is current prior to appointing the registered person. Failure to ensure that the appointed competent person has the required level of competence or valid registration may result in the refusal of the building application by the local authority; and
- (d) be responsible for signing all necessary appointment forms.

7.2 Energy Office: Energy Efficiency Project Officer must:

- (a) develop and update a database of all received applications and outcomes;
- (b) assess the application of the building plan, in accordance to the NBGP criteria, set out in Annexure 1 and Annexure 2;
- (c) communicate the outcome of assessments to the relevant Developer / Owner, after approval of the Energy Efficiency Manager or Deputy Head: Climate Change Department;
- (d) develop a report and provide monthly, quarterly and yearly updates to Energy Office: Energy Efficiency Manager and /or Deputy Head: Climate Change Department, as needed;
- (e) monitor the annual energy consumption of all new buildings through municipal billing systems; and
- (f) annually report on applications received, outcomes and amount of energy and GHGs that are being saved to Energy Efficiency Manager and /or Deputy Head: Climate Change Department.

7.3 The Developer and / or owner must:

- (a) thereafter submit information relating to the design of the new building/s the eThekweni Municipality's Development Planning, Environment and Management Unit; Development Management Department: Development Applications and Approvals Branch.

7.4 Development Management, Environment and Planning Unit: Development Management Department: Development Applications and Approvals Branch: Plans Assessment Officers must:

- (a) ensure authorisation/clearance is obtained from the Energy Office regarding compliance with the NBGP, upon formal submission by the Developer / Owner;
- (b) ensure that the Building application comply to SANS 10400XA:2011; and
- (c) ensure the authorization/clearance from the Energy Office is included in their recommendation to the Decision Maker who will review the recommendation and clearance under other applicable laws in terms of Section 7 of the NBR&BSA.

8. Policy Evaluation and Review

(1) Evaluation

The Energy Office: Energy Efficiency: Project Officer must produce an evaluation report on an annual basis to the Head: Development Planning, Environment and Management Unit. The Head: Development Planning, Environment and Management Unit will evaluate the report.

(2) Review

The Head: Development Planning, Management and Environment Unit (or a delegated representative) must undertake a review of this policy annually to stay responsive to the dynamic nature of property investment, and to allow for changes based on the shifting needs of developers, the investment climate, and legislation.

ANNEXURE 1: Technical Requirements of the Policy

1.1 Routes to compliance: targets for achieving net zero carbon principles

Occupancy	Class of Occupancy or building	Occupancy Description	Energy Intensity (EI) kWh/m ² /annum						
			2011	2020	2022	2025	2030	2040	2050
			SANS 10400 XA: 2011		With compulsory EUI reporting	+ 30% EE	+ 45% EE	+ 55% EE	+ 65% EE
Offices	G1.1	Large multistorey office buildings	190	95	95	67	43	33	24
	G1.2	Standalone buildings in Office parks	190	80	80	56	36	28	20
	G1.3	Call Centres	190	145	145	102	65	51	36
Retail	F1	Large shop >250m ²	245	145	145	102	65	51	36
	F2	Small shop <250m ²	-	80	80	56	36	28	20
Schools	A3.3	Urban, suburban and rural locations	400	55	55	39	25	19	14
Hospitals	E2.1 & E2.2	Large hospital & medium short stay	-	175	175	123	79	61	44
	E2.3 & E2.4	Day hospitals and clinics	-	90	90	63	41	32	23
Hotel	H1.1	Hotel	600	145	145	102	65	51	36
Domestic houses	H4.1	Subsidised housing < R450k value	-	70	70	70	70	70	70
	H4.2, H4.3, H4.4	Middle income and luxury houses >R450k value	-	70	70	49	32	25	18

Figure 1: Energy Intensity Targets required for new buildings in the eThekweni Municipal Area

Occupancy	Class of Occupancy or building	Occupancy Description	Renewable energy kWh/m ² /annum						
			2011	2020	2022	2025	2030	2040	2050
				voluntary installation			compulsory to meet net zero requirement, but additional voluntary if City able to accept "prosumption"		
Offices	G1.1	Large multistorey office buildings					43	33	24
	G1.2	Standalone buildings in Office parks					36	28	20
Retail	F1	Large shop >250m ²					65	51	36
	F2	Small shop <250m ²					36	28	20
Schools	A3.3	Urban, suburban and rural locations					25	19	14
Hospitals	E2.1 & E2.2	Large hospital & medium short stay					79	61	44
	E2.3 & E2.4	Day hospitals and clinics					41	32	23
Domestic houses	H4.1	Subsidised housing < R450k value					0	0	0
	H4.2, H4.3, H4.4	Middle income and luxury houses >R450k value					32	25	18

Figure 2: Renewable Energy targets recommended for new buildings in the eThekweni Municipal Area, displayed as intensity targets to become mandatory in 2030 and beyond

1.1 Background: Routes to Compliance

Every type of building has a prescribed energy consumption intensity, and this is currently listed in SANS 10400XA:2011. The purpose of this policy is to lower this intensity, ideally to zero. As such, the Council of the eThekweni Municipality will ensure that the design of net-zero carbon building shall be achieved using complementary approaches, to be employed to the maximum extent feasible, in the following order:

- A. Reducing building energy demand for heating and cooling using passive design and improved envelope performance techniques;
- B. Reducing total building energy demand and operational building use energy demand through the installation of high efficiency mechanical, lighting and power systems, and energy efficient appliances;
- C. Supplying remaining building energy needs from a renewable source of energy, (on-site to the extent possible and optimal and then off-site) where necessary from 2030 onwards, using the lowest cost pathway; and
- D. Monitoring ongoing electricity usage and demand of applicable and relevant buildings to ensure high levels of energy efficiency is maintained throughout the buildings' life.

1.2 Determination of Energy Use Intensity

To determine whether a building's energy consumption is zero (excluding with the use of renewable energy facilities), a buildings annual energy consumption relative to its gross floor area is calculated using the formula kWh /m². The mandatory energy consumption intensity standards for each type of building are set out in Figure 1, using modelled pathways to achieve Net Zero Carbon in new buildings by 2030.

Once the total building energy demand has been reduced to the prescribed level (through design and system improvements), on-site and/or off-site renewable energy facilities should generate sufficient energy to lower the building's overall energy consumption intensity to zero, with recommended generation targets set out in figure 2 that will become mandatory in 2030 and beyond.

It is important to reiterate that the year: 2022 is voluntary, and the EUI will be enforced from 2025 onwards.

1.3 Description of Figures 1 and Figure 2

1.3.1 The approved SANS 10400XA:2011 energy efficiency standards, as part of the National Building Regulations, forms the base of the current energy intensity (EI) values.

1.3.2 The SANS 10400XA:2011 will require a significant improvement of energy efficiencies and future updates should include additional categories of buildings targeted in order to meet national targets.

1.3.3 The energy intensity target for years inclusive of 2020-2024 will include plug loads i.e. there are no additional energy efficiency requirements but there may be a requirement to reporting on the energy intensity (EI) of the building (i.e. kWh/m²/annum that is the total of operational load and including plug load figures). This will allow developers to become acquainted with the design tools and the reporting requirements. From 2025 onwards, the EI will include plug loads.

1.3.4 As seen in Figure 1, the pathway 2025 EI target is 30% off the 2020 figures and covers total operational load.

1.3.5 The pathway 2030 EI target is the 2025 EI target plus a further 25% off and covers total operational load. As way of an example, the renewable energy requirement that must be met by 2030 will require a 55% improvement and renewable energy increment.

1.3.6 The pathway 2040 and 2050 targets are a further 10% improvement on the 2030 targets. However, these EI targets are indicative only and will be reviewed at a later date based on technology and material development.

1.3.7 As seen in Figure 2, the pathway 2030 target value is the amount of renewable energy (preferably on-site) that is required to make the building Net Zero Carbon. This will be voluntary until 2030, when the requirement to achieve a Net Zero Carbon status becomes mandatory for applicable and relevant buildings.

1.3.8 Embodied energy is not currently part of the requirements. However, the eThekweni Municipality encourages that lifecycle cost is considered in the extraction of materials, manufacturing, design, construction and operation and demolition of new developments.

1.3.9 Multi-unit residential will be classified as the equivalent stand alone residential classification, i.e. low or middle/upper multi-unit residential.

1.4 Standard Operating Procedures for achieving net zero carbon targets

The specific procedures and processes are as per the compliance requirements to receive a Permission to Build application for applicable buildings. This is a legal requirement applicable throughout South Africa. Section 4(1) of the National Building Regulations and Building Standards Act states the following: *“No person shall without the prior approval in writing of the local authority in question, erect any building in respect of which plans, and specifications are to be drawn and submitted in terms of this Act.”*

1.4.1 Standard Operating Procedure for developing new buildings as net zero carbon

1.4.1.1 Net Zero Carbon building requirements are applicable to all new buildings as per clause A20 of the National Building Regulations and exempted from the general rules set out in this policy include public, low income, and social housing.

All applicable buildings must:

- i. improve its energy efficiency performance and reduce the maximum energy demand from the site. This policy refers to the energy use intensity that is the total energy used by the building in its operation, including plug loads, divided by the gross floor area; and
- ii. meet residual electricity requirements through provision of renewable energy that will be made mandatory from 2030 onwards for applicable and relevant building categories within the threshold as outlined in Figure 2.

1.4.1.2 The proposed minimum energy use intensity for building use (independent of renewable energy) has been set to ensure maximum energy efficiency. This means the following must be considered:

- i. All building applications must meet or exceed (i.e. achieve a lower metric) the energy use intensity (in kWh/ m² per annum) according to their building type (refer to Figure 1);
- ii. The maximum energy use intensity values are per Building type. The values are based on a modelled pathway to achieve Net Zero Carbon by 2030. This requires progressively higher standards for new buildings erected during specific time periods. In addition, these energy use values include both base and operational loads (refer to Figures 1 and 2, where Figure 2 is only applicable from 2030 onwards);
- iii. The maximum energy use intensity values so determined by Class of occupancy or Building Type will be as per the table listed above in Figure 1; and
- iv. Building Energy Use Intensity is to conform to the tabled figures from Figure 1 (excluding renewable energy requirements from Figure 2 until 2030).

ANNEXURE 2: Supporting environmental sustainability in the building sector

1.1 The potential of the building sector to influence broader resource efficiency in the EMA

Buildings within the EMA provides an opportunity to influence existing environmental sustainability, resource management and resilience efforts within the Municipality. Citizens spend most of their lives within buildings, this makes buildings a significant consumer of city resources and services.

Current operational service delivery to buildings includes, but is not limited to;

- (a) provision of electricity;
- (b) provision of water;
- (c) wastewater and storm-water; and
- (d) waste collection;

Enhancing the efficiencies of managing the abovementioned services will result in a sustained and healthier quality of life of all citizens in the EMA. These services are vastly dependent on environmental resources and will leave be briefly described:

- (a) provision of electricity: the provision of electricity to citizens is an important indicator of a healthy city, however incurs a significant cost to authorities. It is economically and environmentally more feasible to reduce end-use demand of electrical services than to increase the capacity of electrical resources and distribution;
- (b) provision of water: in a water scarce country, reducing the end-use demand of water will directly reduce the demand on water resources and municipal infrastructure and will incur less disruptions to an essential service and the costs thereof;
- (c) wastewater and storm-water elimination: reduction of water consumption may reduce effluent and stormwater discharge, reducing the pressure on municipal infrastructure; and
- (d) waste collection: increased recycling will result in less waste sent to landfill that will reduce costs of maintaining and opening new landfills in municipal areas. Additionally, less waste to landfill will free up limited landfill spaces.

1.2 The primary objective remains net zero carbon

It is important to note that the primary objective of the NBGP is to ensure that all new buildings are net zero carbon buildings. However, the eThekweni Municipal takes a broader view to buildings and has incorporated building environmental sustainability and Resilience matters into the objectives, specifically for the EMA. The addition of these sustainability aspects also became vital as loss of life and damage to property is becoming more frequent in the EMA due to storms and impacts of climate change, making sustainability a form of enhancing resilience of the building stock, to a future climate.

1.3 Resource Efficiency

This section highlights further aspects that all new buildings should be guided by, to complement the Energy Efficiency and Renewable Energy considerations. The additional aspects are:

1.3.1 Water:

- i. Appliances and technologies, especially for portable use, within the building should conform to the flush-levels as per the eThekweni Municipality's Water Supply By-Law (2015); and
- ii. Where the land parcel requires landscaping, potable water consumption for landscape irrigation must be reduced by at least 50% or plants chosen that require no additional watering after being planted.

1.3.2 Waste management:

- i. Where a dedicated storage area is maintained for the separation and collection of waste materials and is accessible for collection by recycling companies. Waste materials for recycling should include separate collection bins/ areas for: cardboard/paper; glass, plastics and organic waste.
- ii. In many instances erven do not have access or connections to municipal stormwater. In such cases the onus is placed on the developer to manage the excess stormwater resulting from any hardening of the site area. Municipal infrastructure generally provided stormwater systems designed on the basis that not more than 40% of the area of residential properties would be hardened. As such, any development in such areas in excess of a 40% limitation naturally implies that the developer must be held responsible to manage the excess runoff from such a site for the proportion of hardening in excess of 40%. Adherence to eThekweni's 2008 Design Manual: Guidelines and Policy for the Design of Stormwater Drainage and Stormwater Management Systems is vital and includes recommendations for the sizing and design of stormwater soakpits, attenuation structures/ponds, outlet discharge controls/overflows, kerb inlets, manholes, road edge channels, watercourses, underground pipelines and small channels. These must be designed to effectively collect, control and convey run-off from storms to larger or major drainage systems.

1.3.3 Clean construction:

- i. Where possible, the building re-uses a proportion of the total existing façade of the building, by vertical area;
- ii. Where the building is comprised of reused/reclaimed/recycled materials that is equal to or more than 1% of the project's total contract value; and
- iii. Where there are enhanced efforts to improve the primary health of construction workers by enhancing current laws and standards, promoting better safety practices in the construction industry and among design teams.

1.3.4 Embodied Energy:

Embodied energy is the total energy consumed in the life-cycle of a product, from “cradle to grave” – that includes the energy associated with extraction, manufacturing, transportation, construction, maintenance, and disposal. Therefore, the focus will be on alternative building materials (new aluminum, glazing, steel, and cement for example have intense embodied energy) and methods of construction. The focus will need to move to reused materials and the selection of materials with lower embodied energy. NZC is ultimately part of the journey to net zero embodied energy & carbon which is required to mitigate the threat of climate change.

1.3.5 Alternative vehicles:

- i. The building should make provision for charging points for at least 2% to 5% of total parking spaces that are available; and
- ii. The building should make provision for bicycle parking spaces.

1.3.6 Ecology:

- i. All building plan applications must comply and align with D'MOSS provisions in Schemes and other environmental legislation.

1.3.7 Local Procurement:

- i. At this stage, local procurement is not being monitored but will likely be phased in with forthcoming revisions to the NBGP. Therefore, all building professionals and property owners are strongly encouraged to seek out and support local business that manufacture and/or sell the require goods and/or services that will contribute to buildings meeting the criteria that is set out in this NBGP.

1.4. Thought leadership

This Annexure provides broad categories that should be considered when designing and constructing net zero carbon or green buildings.

As this current policy is the first iteration, focus has been to lay the foundations to achieve the core objectives that initiated this policy, i.e. carbon neutrality in buildings' operations.

As a result, thought leaders should be consulted for detailed guidance on including elements, mentioned in this annexure, into all buildings being designed and constructed. For the purposes of this policy iteration, the recognized thought leader is the Green Building Council of South Africa.

ANNEXURE 3: Forthcoming processes

The following major points should be noted:

1. This Policy was developed with information and knowledge available to the team from 2017 to 2021. It is naturally that any critique and review of this policy in forthcoming years will yield areas for improve.

This Policy was developed with the following forward plan in mind. This is due to the fact that while the Policy is being adopted in 2021, the mandatory implementation of the Policy starts from 2025 (as a transition to net-zero carbon), and only from 2030 will net-zero carbon be a mandatory requirement.

1. 2021 to 2023. The Job Description and creation of the cost of ‘Energy Assessment’ Officer needs to be completed. Thereafter recruitment of a suitable candidate needs to commence. The Standard Operating Procedure for the New Buildings: Green Policy needs to be developed and finalized.
2. 2024 to 2025. Review and updating of the Policy. As technology, laws and regulations are constantly evolving, this policy should be reviewed an updated before the first phase of mandate requirements.
3. 2024 to 2025. The Standard Operating Procedure has to be updated, to take changing institutional structures and other elements into account, and operationalization needs to begin.
4. 2025 the relevant bylaw has to be Gazetted.
5. 2028 to 2029. The final review of the policy needs to be undertaken, in preparation of the 2030 mandatory net-zero carbon requirements. The standard Operating Procedure should also be updated, as well as the possibility of more ‘Energy Assessment’ Officers which would be dependent on historic and projected work load.
6. 2028 to 2029, the Bylaw should also be updated and Gazetted.