Sustainable Facilities Policy
Revision Date Effective: Council adopted on _____

POLICY STATEMENT

The City of Charlotte is committed to operating its buildings and facilities responsibly and sustainably. The City of Charlotte City Council unanimously passed the city's Strategic Energy Action Plan (SEAP) in December 2018. The SEAP is the City's plan to reduce its carbon footprint through a number of actions, including those focused on buildings and energy generation. The Sustainable and Resilient Charlotte resolution states:

"NOW, THEREFORE, BE IT FURTHER RESOLVED that the City of Charlotte will strive to source 100% of its energy use in buildings and fleet from zero carbon sources by 2030."

In order to meet the goal of the resolution, the SEAP identified five stages to advance the city to a zero carbon future by 2030:

1. Shifting energy demand;
2. Reducing energy consumption;
3. Changing the energy the City consumes away from fossil fuels;
4. Generating energy on-site; and
5. Meeting the remainder through energy purchases.

The revised Sustainable Facilities Policy (SFP) is intended to direct City departments to design, construct, and operate City buildings in a manner aligned with stated 2030 SEAP goals. The focus of this revised policy builds on the elements of the original policy and subsequent updates (*established in 2009, revised in 2016, and revised in 2021*) and incorporates new topic areas that further reduce energy usage, facilitate more renewable energy generation and use on-site, prepare for growth in electric vehicle (EV) use, and provide a mechanism by which progress toward the 2030 zero carbon buildings goal can be regularly and accurately measured.

The revised SFP is organized into the following sections:

I. Overview
II. New Construction & Renovation
III. Operations & Maintenance

IV. Reporting & Certifications

V. Exceptions & Compliance

VI. Definitions

Technical details supporting specific policy elements have been included in a supplemental SFP Guidance Document. Compliance with the SFP necessarily means compliance with the SFP Guidance Document. Note that federal and state regulations supersede the provisions of this policy in the event of a conflict.

POLICY

I. Overview:

1) This Policy shall be guided by the City's sustainability priorities and the relevant goals of the SEAP, including:

a. Development of Smart Data Approaches
b. 100% Zero Carbon Municipal Buildings by 2030
c. 100% Zero Carbon City Fleet by 2030
d. Facilitating the Rapid Uptake of Sustainable Modes of Transportation
e. Development of a Green Workforce Pipeline in Support of Energy Transition

2) This Policy encourages any staff member with facility construction and/or renovation responsibilities to pursue the LEED Green Associate credential or other relevant credentials in the area of sustainable facilities. This Policy encourages any staff member with facilities operations and maintenance responsibilities to pursue relevant credentials in the area of energy efficient building operations, specifically encouraging pursuit of a Professional Energy Manager (PEM) certification.

3) The SFP will be reviewed annually to determine the need for revisions due to changes in Council's sustainability priorities or goals, the availability of tools for designing sustainable facilities, the roles prescribed by the SFP, and other relevant factors. The SFP Guidance Document will also be reviewed and revised as needed to ensure the intent of the SFP is accurately reflected within operational considerations and measures.

4) The SFP includes a substantive focus on building performance benchmarking, reporting, and goal tracking. As such, the SFP also includes elements that standardize creation and collection of building attribute data and ensures the data is accurately maintained.

5) This Policy allows for exemptions if compliance with one or more policies is demonstrated as uniquely cost prohibitive, however value-engineering that would increase the energy usage of the building is strongly discouraged. Requests for exemptions shall be made following guidance in *Section V: Exceptions and Compliance*.

II. New Construction & Major Renovations

1) All City-owned and City-managed new construction and major renovation of regularly occupied building projects *(see Section VI: Definitions, for what qualifies as a major*

renovation) will be designed and constructed to be formally LEED certified as well as achieve Designed to Earn ENERGY STAR® Certification (*where applicable*). Green Globes Certification is an acceptable substitute for LEED. Refer to *Section V: Exceptions and Compliance* for details on documentation submission requirements for project teams pursuing LEED/Green Globes certification as well as details on how project teams can seek exemptions from LEED/Green Globes certification.

2) Commissioning is required for all new construction projects and must include commissioning of mechanical, electrical, plumbing, building envelope, and renewable energy systems in the scope. Refer to *Section V: Exceptions and Compliance* for commissioning submittal requirements.

3) This Policy shall emphasize a site location and selection process that considers the adaptive re-use of existing City-owned and community resources (existing structures, available infrastructure, and brownfield/grayfield real properties) over the development of new facilities/structures and the development of greenfield sites. Project teams must also look for opportunities to co- locate facilities in an effort to minimize land disturbance. Project teams should seek innovation points for site selection and co-location if pursuing LEED or Green Globes certification.

4) All new construction and building addition projects for regularly occupied facilities and spaces > 5,000 square feet (*and also are 'opted in' to the Duke Energy EE Rider*) as well as all major renovation projects (*refer to Section VII: Definitions*) involving gutting and equipment replacement must utilize the Energy Design Assistance services offered by Duke Energy (or comparable program if Duke Energy's offering changes). Refer to *Section V: Exceptions and Compliance* for details on complying with this policy element.

5) Employee and municipal fleet vehicle parking areas of newly constructed facilities as well as qualifying renovation projects are required to provide electrical vehicle supply equipment (EVSE) infrastructure at a level consistent with our municipal fleet transition to electric vehicles and the anticipated 2040 EV market. Qualifying renovation projects are any capital projects where parking spaces are added or where >50% of the existing parking spaces are being repaved. Public parking spaces at municipal facilities are exempt from this policy requirement.

6) All new construction projects for buildings >5,000 square feet as well as all roof replacement projects on buildings of the same minimum size requirements must install cool roofs and include an on-site solar photovoltaic (PV) energy system as part of the capital project scope, so long as the inclusion of solar PV energy system has a net present value (NPV) at least 15% below the initial investment. For instances that an on-site solar PV energy system does not meet the NPV requirement, then the project must, at a minimum, scope the project such that the facility is deemed 'solar ready' upon completion of the project.

7) To maximize the amount of solar energy used on site and to reduce the facility's peak demand, all new construction projects that are installing an on-site solar PV energy system per *Section II.6* above, shall also include energy storage system as part of the capital project scope, so long as the inclusion of the energy storage system has an NPV greater than or equal to zero.

8) All new construction projects for regularly occupied buildings will be required to:

   a. Be all electric. Except for emergency backup generation, all equipment used in the facility shall be powered by electricity. Combustion of carbon-emitting fuel on site shall not be permitted. This includes, but is not limited to, space conditioning, water heating, cooking appliances, and clothes dryers.

   b. Where site conditions permit, utilize geothermal systems for heating and/or cooling.

   c. Include building automation systems(s) to provide visibility and control over the building's systems.

   d. Conduct a preliminary feasibility and cost analysis to determine if net zero energy use can be achieved within the site parameters.

   e. Seek to obtain the LEED Environmental Product Declarations (EPD) credit.

9) To reduce energy use associated with plug and process loads (PPL) through the automatic control of a portion of the circuits that serve plug loads, a minimum of 50% of circuits serving convenience receptacles shall meet the requirements specified in the Plug Load Management Requirements detailed within the SFP Guidance Document. Facilities that operate 24/7 must implement PPL control minimums for that building's load profile.

10) Concrete or other "Smart" surfaces shall be used when constructing site amenities like parking in new construction projects. When existing site amenities are renovated (i.e. repaving), "Smart" surface materials will be considered and utilized if sufficient funding is available.

11) For regularly occupied facilities that meet the Bicycle Network requirement of the LEED Bicycle Facilities credit, new construction projects shall pursue the LEED Bicycle Facilities credit and major renovation projects shall seek to meet the LEED Bicycle Facilities credit's intent.

III. Operations & Maintenance

1) This Policy advocates a "Fix-it-First" focus when addressing repair and replacement of existing equipment and systems in occupied facilities, in accordance with the City's Capital Investment Plan (CIP) Program Policies for developing and implementing the CIP. This allows the City to meet energy reduction and sustainability goals while minimizing the need to build new facilities.

2) All regularly occupied City-owned and City-managed buildings are required to benchmark their energy use intensity (EUI). Benchmarking updates must be made by the end of Q4 each fiscal year. Requests for exceptions shall be made following guidance in *Section V: Exceptions and Compliance*.

3) On an annual cycle, the City will utilize the benchmarking outcomes to (1) identify the least energy efficient facilities and the facilities with the largest potential for carbon reduction, and (2) take data-driven steps to address energy inefficiencies. A *Focus on Efficiency* report will be prepared each fiscal year that highlights the bottom quartile of buildings based on energy performance. Then each building in the bottom quartile will be reviewed and assigned to one of three action categories: (1) Retro-Commissioning, (2) Capital Project Integration, or (3) Deferred Action.

4) An electrification analysis shall be completed for all Heating, Ventilation, and Air Conditioning (HVAC) and water heater replacement projects anticipated for design/construction over the next three fiscal years. Electrification of these systems shall occur when the results of the system analysis meet the requirements set forth in the SFP Guidance Document.

5) For all City-owned and City-managed buildings, temperature set points will be standardized and set according to the ANSI/ASHRAE Standard 55 (Thermal Environmental Conditions for Human Occupancy) and within the range of temperature control as provided by OSHA and the U.S. Department of Labor.

6) The use of space heaters is prohibited. Space heaters are prohibited due to the fact that the devices:

a. Are a fire hazard,
b. Have power demand that causes problems with the electrical circuits which may lead to damage to computers and other equipment, and
c. Waste energy and work against building HVAC systems.

Facilities Management will provide (where deemed necessary) approved space heaters only in those limited instances where the building systems cannot provide temperatures within acceptable variation of the ranges stated above. All other space heaters and/or portable A/C units in any other spaces are subject to removal by the Fire Marshall, Environmental Health & Safety, or Facilities Management. Energy efficient table or pedestal fans are permitted and considered acceptable.

7) Personal-type appliances are not to be used in areas that are not considered as 'common areas.' 'Common areas' are those reasonably designated by the Director/Department Head or Division Head as ones which serve a group of people in the building. Examples include conference rooms, break rooms, kitchens, work areas, and lounges. Personal-type appliances that are affected, include but are not limited to:

a. Coffee makers
b. Refrigerators (mini-fridges)
c. Toaster ovens
d. Microwaves

Personal-type appliances for legitimate medical needs such as nursing mothers and those individuals with prescribed medications requiring refrigeration are exempt from this requirement.

IV. Reporting and Certifications

1) The Office of Sustainability & Resilience will publish an annual benchmarking report that discloses building energy performance publicly.

V. Exceptions and Compliance

1) Exceptions

a. LEED/Green Globes Certification

- Relevant Department head(s) in collaboration with the project management team may request consideration of an exemption. If an exemption is granted, the design and project management team is expected to include as many sustainable features as possible and must submit a LEED or Green Globes scorecard indicating the sustainable features included.
- Departments may request consideration and approval of the use of an alternative rating system to LEED or Green Globes, if appropriate.

b. Temperature Set Points

- Requests for exemptions from this policy must be submitted as described below:
  - Temporary (≤ 1 week) set point adjustments require approval by the relevant building facilities manager.
  - Longer-term (≥ 1 week) set point adjustments require approval by the relevant Assistant City Manager.
  - Permanent set point adjustment requests require approval by the City Manager.

c. Solar PV and Solar PV Ready Roofs

- Projects where solar PV system installations are not feasible due to structural roof constraints or applicable regulations/governing agencies (such as the FAA or other environmental regs) are exempt from this policy. Project managers for exempted projects must document evidence supporting this exemption.
- Roof replacement projects on buildings scheduled to be demolished in less than 10 years are exempt from this policy requirement.

d. Building Performance Benchmarking

- Requests for exceptions to building performance benchmarking, including requests for the use of alternative performance metrics, must be submitted to the Sustainable Facilities Oversight Team.

e. New Facilities Constructed as All Electric

- Exceptions may be granted for industrial processes and equipment essential to the operation of the facility for which there is not an electric powered alternative. Requests for such exceptions must be submitted to the Sustainable Facilities Oversight Team during the initial planning of the facility.

2) Compliance

a. Duke Energy Design Assistance Program (or comparable program if Duke Energy's offering changes)

- Copies of the final Bundle Requirements Document prepared by Duke Energy contractors through the Energy Design Assistance program must be shared with the Sustainable Facilities Oversight Team.

b. Commissioning

- Project teams must submit final reports of the project's Commissioning Agent to the Sustainable Facilities Oversight Team.

c. Annual Benchmarking Report
   - Each year an annual benchmarking report is required that contains, at a minimum:
     - Comparisons of City buildings to relevant national EPA ENERGY STAR® benchmarking averages,
     - Year over year changes in building energy performance,
     - Breakout of percentage of total energy consumption by building classification type, and
     - Energy efficiency project highlights.

d. Uniquely Cost Prohibitive
   - Projects claiming a uniquely cost prohibitive exemption must submit evidence demonstrating a >15% cost premium for SFP compliance.

VI. Definitions

Benchmarking: A method used to determine whether a building is using more or less energy than its peer facilities with similar occupancies, climates, and sizes. Benchmarking is done by taking a buildings total energy use and dividing by the building's total area. This number is frequently referred to as the Energy Usage Intensity or EUI, is then compared to buildings of the same use type to determine how efficiently the building is utilizing energy.

Bicycle Network: As defined by USGBC: a continuous network consisting of any combination of the following 1) off-street bicycle paths or trails at least 8 feet wide for a two-way path and at least 5 feet wide for a one-way path 2) physically designated on-street bicycle lanes at least 5 feet wide 3) streets designed for a target speed of 25 mph or less.

City-owned and/or managed: Facilities owned and/or managed by the City.

Designed to Earn ENERGY STAR®: Recognizes a design project that meets strict EPA criteria for estimated energy performance. It signifies that, once built, the building is poised to achieve top energy performance and will be eligible to earn ENERGY STAR® certification.

Electric Vehicle Supply Equipment (EVSE): Electric vehicle supply equipment (EVSE) supplies electricity to an electric vehicle (EV). Commonly called charging stations or charging docks, they provide electric power to the vehicle and use that to recharge the vehicle's batteries. EVSE systems include the electrical conductors, related equipment, software, and communications protocols that deliver energy efficiently and safely to the vehicle.

Energy Audit: An inspection survey and an analysis of energy flows for energy conservation in a building. It may include a process or system to reduce the amount of energy input into the system without negatively affecting the output. An energy audit is the first step in identifying opportunities to reduce energy expense and carbon footprint.

ENERGY STAR® Certification: Recognizes an existing building that meets strict EPA criteria for estimated energy performance. It signifies the building achieves top energy performance.

Facilities Manager: The designated person at each City building who is responsible for submitting maintenance work orders.

LEED (Leadership in Energy and Environmental Design): Consensus based generalized point rating system for locating, designing, constructing, operating and certifying sustainable

buildings. Rating system addresses environmental predetermined categories that include sustainable sites, water efficiency, energy & atmosphere, materials & resources, indoor environmental quality, and design and process innovation.

Major Renovation: Extensive alteration work in addition to work on the exterior shell of the building and/or primary structural components and/or the core and peripheral mechanical, electrical, and plumbing and service systems and/or site work. A project shall be considered a major renovation when the project work includes at least 2 of the following: HVAC, roof replacement, 50% or more of gross floor area, 50% or more of lighting fixtures, or 50% or more of the building's exterior wall envelope. See guidance document for specific exceptions.

Net Present Value (NPV): Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is used in capital budgeting and investment planning to analyze the profitability of a projected investment or project. The SFP Guidance Document will specify the cash flows to be included on applicable projects including, but not limited to, rebates, grants, and other incentives.

New Construction: City-owned buildings and facilities that are to be planned and constructed on a new or existing site, including, but not limited to, new office, arena, and fire and police stations.

Occupied facility/space: A facility or enclosed space providing for human activity on a regular basis, including parking decks.

Retro-commissioning: the application of the commissioning process to existing buildings. Retro-commissioning is a process that seeks to improve how building equipment and systems function together. Depending on the age of the building, retro-commissioning can often resolve problems that occurred during design or construction, or address problems that have developed throughout the building's life. In all, retro-commissioning improves a building's operations and maintenance procedures to enhance overall building performance. Retro-commissioning work should follow ASHRAE Guideline 0.2-2015, Commissioning Process for Existing Building Systems and Assemblies.

Uniquely Cost Prohibitive: A cost premium greater than 15% of the total project budget due to the inclusion of sustainable features and associated design fees per certification of new and existing facilities. The cost premium calculation shall include the Total Cost of Ownership of the sustainable features. Cost premiums can occur due to site constraints, building or zoning regulations, or other unique conditions that cannot be reasonably overcome.