# Procedure

## Climate Resilient Existing City Buildings

This procedure falls under C627 *Climate Resilience Policy*.

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| **Program Impacted** | Environmental Stewardship<br>*The City of Edmonton's operations and service delivery sustains and conserves the environment.* |
| **Approved By** | City Manager |
| **Date of Approval** | September 3, 2024 |
| **Approval History** | June 10, 2021<br>This is a new Administrative Procedure with content formerly in:<br>May 9, 2017 (C532 *Sustainable Building Policy*)<br>April 10, 2007 (C532 *Sustainable Building Policy*) |
| **Next Scheduled Review** | May 2, 2026 |

### 1. Application

This procedure applies to existing City Owned, Occupied Buildings and City Leased, Occupied Buildings where the City has full Operational Control over the Building and Authority to Complete Work.

There are two sections to this procedure:

1.1. The *All Existing Buildings* section shall have a default application to all existing City Buildings as identified above.

1.2. The Energy Retrofit and Building Renewals section shall include Infrastructure Asset Renewal and any additional Building Energy Retrofit work outside of the existing Asset Renewal process, initiated after the approval of this procedure.

### 2. Governance

2.1. The Deputy City Manager (DCM)(s) who has (have) oversight of Building planning, design, construction, operation, maintenance, renewal and demolition of City Owned Buildings shall be accountable for ensuring that City  Buildings comply with this Administrative Procedure.

2.2. The business sections responsible for each section in this procedure shall develop, implement, and revise applicable programs or guidance that supports the procedure and decision making (see *Figure 1. Climate Resilient Buildings Procedures Responsibility Assignment Matrix)*. This work of the responsible business sections shall include:

2.2.1. Developing guidance documents such as procedures, standards, guidelines, best practices, manuals, and tools.

2.2.2. Outlining requirements for use or participation if not already existing within Administrative Procedures.

2.2.3. Communications to or training of appropriate parties that shall use these guidance materials or participate in these programs.

2.2.4. Developing and prioritizing capital and operating budget profile(s) that are impacted by this Administrative Procedure.

2.2.5. Through training and recruitment, ensuring there is sufficient internal expertise related to Climate Resilient Building Practice, to support effective and efficient procedure implementation (e.g. Key Procedure users shall be supported in the application and maintenance of LEED or other green professional accreditations).

2.2.6. Annual, or as requested, reporting to the Climate Resilient Building Committee on program or guidance status including above mentioned items.

2.3. The responsible business sections may ask the Climate Resilience Building Team for technical expertise support for program or guidance development if required.

| | | Business Sections that are Responsible for: | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Procedure Section | Program or Processes | Facility Planning and Design | Facility Engineering Services | Facility Maintenance | Utility Supply | Environmental Strategy | Life Cycle Management | Communications | Facility Operations (Operational area within the facility) | Environmental Management | M&V Working Group | Real Estate |
| 3.1.1 | Energy Benchmarking | | | | C | R | | | | I | | C |
| 3.1.2 | BOMA BEST | | | C | | R | C | I | C | C | I | C |
| 3.1.3 | Renewable Energy Plan | C | C | C | C | R | C | C | C | C | I | C |
| 3.1.4 | Corporate GHG Inventory | | | | R | C | | | | I | | C |
| 3.1.5 | Recommissioning and Continuous Optimization | I | C | R | | I | C | | C | I | I | I |
| 3.1.6 | Project Specific Carbon Accounting Process | R | C | C | | C | C | | | I | | |
| 3.1.7 | Measurement and Verification Program | C | C | C | C | C | C | | C | C | R | C |
| 3.1.8 | Energy Communications | | | | | C | | R | | I | | |
| 3.2.1 | Emissions Neutral Portfolio Plan and Decision Making Framework | C | C | C | C | C | R | | C | I | I | I |
| 3.2.2 | Energy Auditing | I | C | I | C | I | R | | C | I | | I |
| 3.2.3 | Climate Risk Assessments | I | C | | | C | R | | C | I | | C |

R = Responsible (Red), A = Accountable - for all programs and processes the DCM that oversees the responsable area is ultimately accountable., C= Consulted (Blue), I= Informed (Green) - In all cases the Climate Resilient Building Team must be informed of progress.

***Figure 1. Climate Resilient Buildings Procedures Responsibility Assignment Matrix***

2.4. A Climate Resilient Building Team shall exist for the purpose of oversight, as outlined in their Terms of Reference. Oversight by the Climate Resilient Building Team includes the following;

2.4.1. Policy implementation, including ensuring that the appropriate business section(s) develop and maintain guidance documents such as procedures, standards, guidelines, best practices, manuals, and tools. This will include communications to or training of appropriate parties on the use of these policy implementation tools;

2.4.2. Policy evaluation in the form of compliance reporting: annual reporting to the City Manager and City Council on policy compliance, including all exceptions to the Policy and related Administrative Procedures; and

2.4.3. Periodic evaluations of the appropriateness and effectiveness of the Policy and Administrative Procedure, and Climate Resilient Building Team membership.

## 3. Requirements

3.1. The City will strive to continuously reduce energy use and greenhouse gas emissions in its existing Buildings in support of long-term corporate, community, provincial and national climate change targets and priorities.

3.1.1. All existing City Owned, Occupied Buildings, that also meet the size eligibility requirements for the City's Building Energy Benchmarking Program's, shall participate in the City of Edmonton's Building Energy Benchmarking Program.

3.1.2. The City shall demonstrate excellence in Climate Resilient practices in existing City Owned, Occupied Buildings through certifying buildings in the City's BOMA BEST certification program.

3.1.2.1. The business section responsible for running the centralized corporate BOMA BEST program will develop a list of eligible Buildings over 1000 sq.m (or as defined eligible by the current BOMA Canada guide) and will be required to work in conjunction with each operational area to provide implementation support for the City's BOMA BEST certification.

3.1.2.2. The business section responsible for running the centralized corporate BOMA BEST program will work together with the Building's primary operational area to identify and develop a specific funding profile(s) or source(s) for BOMA BEST Certification for each budget cycle. The initial year of certification and related costs not otherwise covered by existing programs at the City (i.e. energy and water audits, waste audits, hazardous building material assessments) will be paid for by the business section responsible for running the centralized corporate BOMA BEST program. Ongoing certification and related costs noted above, also including

ongoing implementation of some improvement measures as identified by the BOMA BEST team within that Building, will be covered by the Building's primary operational area.

3.1.3. The City will improve the integration and accountability with the Corporate Climate Management Plan including a renewable energy plan that aligns with budget cycles, outlines proposed renewables installations, provides project-specific details and anticipated lifecycle cost benefits.

3.1.4. All Buildings that the City has Operational Control over will participate in the City's Corporate Greenhouse Gas Inventory.

3.1.5. A Recommissioning and Continuous Optimization program for existing Buildings shall be developed and prioritized as part of the City's Emission Neutral portfolio plan and decision making framework. This work will support ongoing optimal performance management of the Building, and ensure persistence of the carbon reducing benefits built into the Building. This will be enabled through technology use for continuous optimization of the Building.

3.1.6. Carbon accounting process will be established for any energy retrofit project, routine lifecycle replacement, and capital rehabilitation planning processes that claim energy savings.

3.1.7. Measurement and Verification shall be completed to help verify persistence of energy savings over time on specific projects.

3.1.7.1. The specific projects to undergo Measurement and Verification will be selected using the City's measurement and Verification Guidelines.

3.1.7.2. Measurement and Verification will inform the implementation of any energy savings reserve fund at the City.

3.1.8. Public communications will be developed to communicate the buildings' climate resilient features, as well as the energy saving practices of its operations/maintenance. This may include Building signage and online information, as well as engagement with the public through the Change Buildings for Climate program.

3.2. Energy Retrofit and Facility Renewals

3.2.1. An Emissions Neutral portfolio plan and decision making framework will be developed and used to identify the type and depth of Climate Resilience upgrades that will be applied to a specific Building.

3.2.1.1. This framework shall result in a clear process for classification of each asset, develop timelines for implementing this work, and lead to an understanding of the cost and carbon implications for this work and plan for how to fund it.

3.2.1.2. This framework shall result in a pathway for projects undergoing energy retrofit and facility renewals to achieve Emissions Neutrality with an additional allowance for high quality carbon offsets.

3.2.1.3. This framework shall result in clarification of how and when energy modeling, energy audits, lifecycle cost benefit analysis, Recommissioning and Continuous Optimization, internal review of the best emission neutral pathway for that building with appropriate stakeholders, and climate risk assessment methodologies should be integrated into this work.

3.2.1.4. All Energy Retrofit and Facility Renewal work should meet the timelines and scope of work identified in the plan.

3.2.1.4.1. If a project deviates from the plan and decision making framework it shall be reviewed to determine how the deviation will impact carbon emissions reductions for the City. The Climate Resilient Building Team shall be informed and may provide a recommendation as to what alternative or amended mitigation process could be implemented as part of a formal exception process if required.

3.2.2. Energy audits will be conducted to identify opportunities for improvement.

3.2.2.1. Energy audits will be completed by the Life Cycle Management section for three primary purposes, although they may be completed for other reasons as well.

3.2.2.1.1. Acquisitions of new Buildings to understand potential GHG impact to the City and costs associated with reducing those emissions.

3.2.2.1.2. Select eligible Buildings to aid in planning for energy retrofits as outlined in the framework.

3.2.2.1.3. Existing Buildings as required for BOMA BEST certification and recertification.

3.2.3. A climate adaptation and risk assessment guidance process will be developed and used to identify a method for building climate resilience into Facility Assets.

## 4. Exceptions

4.1. Buildings that meet the application criteria (Section 1: Application) of this Administrative Procedure, but for some extraordinary reason cannot meet the Administrative Procedure requirements, may apply for an exception. Exceptions should only be requested as an absolute last resort. A request for exception *may* be considered where the cost to achieve all, or a portion, of the Administrative Procedure outweighs the expected benefits, as demonstrated by a Lifecycle Cost-Benefit Analysis.

4.2. If a project manager is unsure if a formal exception request is appropriate or would appreciate feedback from the Climate Resilient Building Team they may request an informational meeting with the Climate Resilient Building Team.

4.3. A request for an exception shall be made as follows:

4.3.1. A summary of the issue, reasoning for the exception request, and supporting documentation shall be submitted to the Climate Resilient Building Team. This request must be signed by the appropriate General Supervisor and/or Director.

4.3.2. The Climate Resilient Building Team will review the documentation and will:

4.3.2.1. First: Provide a recommendation to the project team for additional steps or opportunities to be investigated that could improve project alignment with the Administrative Procedure requirements. The project team will implement the suggestions and report back to the Climate Resilient Building Team with the results if still not compliant with the Administrative Procedure. Then;

4.3.2.1.1. Agree with the submitted analysis and recommend that the project is granted an exception (with or without conditions). Or;

4.3.2.1.2. Disagree with the submitted analysis and recommend that the project is not granted an exception (either in full or part). Providing a recommendation for how the project could meet the Administrative Procedure requirements.

4.3.3. Once the Climate Resilient Building Team provides a decision on the project's request for an exception, the Climate Resilient Building Team will submit the request and their recommendation to the DCM(s), whose business unit(s) are responsible for achieving the specific policy standard(s) via the appropriate protocols. The DCM's approval is required to formally authorize an adjustment to the policy standards through an exception to the Administrative Procedure(s).

4.4. If not communicated directly to the Climate Resilient Building Team the project manager shall submit the formal decision of the DCM to the Climate Resilient Building Team for tracking and reporting purposes.

## 5. Evaluation of Alternative Certification Options

5.1. Alternative certification systems may be used if the alternative is shown to be:

5.1.1. More appropriate for the type of Building,

5.1.2. Equivalent or better than the required certification with regards to energy and greenhouse gas performance.

5.2. The alternative certification option with the justification noted above will be submitted to the Climate Resilient Building Team for review, discussion, and recommendation and will either be

approved or rejected as an acceptable alternative. No additional DCM approval will be required if approved.

**Definitions**

Unless otherwise specified, words used in this procedure have the same meaning as defined in the C627 Climate Resilient Policy.

- ***Asset Renewal*** Investment in-existing infrastructure to restore to its former condition and may extend its service life. (See C598 *Infrastructure Asset Management Policy*). Capital investment in renewal extends the period of service potential but does not change the replacement value, and so does not increase the size of the infrastructure asset portfolio. Renewal includes rehabilitation and replacement:
    - Rehabilitation: The action of restoring or replacing parts or components of an infrastructure asset to a former condition or status. Generally involves repairing the asset to deliver its original level of service without resorting to significant upgrading or renewal, using available techniques and standards.
    - Replacement - The action of replacing an infrastructure asset so as to provide similar, or an agreed alternative, level of service.
- ***Authority to Complete Work*** The full authority to introduce and implement asset improvement or construction at the Building (e.g. renovations, additions).
- ***BOMA BEST*** A voluntary certification program that provides a framework for assessing the environmental performance and management of existing Buildings. The rating system assesses ten key areas including: energy, water, air, comfort, health and wellness, custodial, purchasing, waste, site and stakeholder engagement. Refer to external BOMA BEST resources for more information.
- ***Buildings*** As defined by the National Building Code (Alberta Edition).
- ***Climate Resilient Building Practice*** Identified processes, practices or systems widely recognized as ways of improving Building resilience. Such practices extend beyond green Building certification that is based on initial Climate resilient design and construction, and emphasizes Climate resilient practices throughout the entire Building lifecycle.
- City Owned Buildings: Buildings that are legally owned by the City including arenas, pools, leisure centres, libraries, fire stations, police stations, administration Buildings, maintenance and shop facilities.
- ***City Leased Buildings*** Buildings that are legally owned by someone other than the City but that the City leases as a tenant.

- ***City of Edmonton's Building Energy Benchmarking Program*** A voluntary energy benchmarking program run by the City of Edmonton that uses Energy Star Portfolio Manager as the enabling tool.
- ***Continuous Optimization*** An iterative process of tracking and implementing measures to ensure the persistence of energy saving benefits.
- ***Emissions Neutral/Emissions Neutral Building*** An Emissions Neutral Building is a Building that is highly energy efficient and:

  a) uses only Renewable Energy for its operations on an annualized average basis (this may include either on or offsite generated Renewable Energy),

  OR

  b) produces and supplies onsite Renewable Energy in an amount sufficient to offset the annual greenhouse gas emissions associated with the energy consumed for its operations.

- ***Energy Retrofits*** Capital projects that can deliver significant, long-term improvement in energy efficiency, carbon emissions reductions, or cost savings/avoidance.
- ***Climate Management Plan for Civic Operations*** A City plan that sets goals, strategies, action plans and budgets for reducing greenhouse gas emissions in City operations.
- ***Leadership in Energy and Environmental Design (LEED) Certification*** A Building rating system that provides independent, third-party verification that a Building, home or community was designed and built using strategies aimed at achieving high performance in key areas of human and environmental health: sustainable site development, water efficiency, energy efficiency, materials selection and indoor environmental quality. Refer to external Canada Green Building Council and LEED resources for more information.
- ***Lifecycle Cost*** The total cost of ownership of an asset over its life. Lifecycle cost takes into account all costs of acquiring, owning, operating, maintaining and disposing of an asset in order to maximize return on investment and achieve the highest, most cost-effective performance.
- ***Lifecycle Cost-Benefit Analysis (LCBA)*** The analysis entails an assessment of key Building elements on a 30-year lifecycle, apply net present value methodology, include energy costs and maintenance costs (above business-as-usual), include element replacement costs over the 30-year lifespan, and apply a City-approved discount rate. Refer to the City's Facility Design and Construction Consultant Manual(s).
- ***Operational Control*** The full authority to introduce and implement its operating policies at the operation. As further defined by The Climate Registry. Local Government Operations (LGO) Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories (Version 1.1, May 2010).
- ***Occupied Building*** A Building that is regularly occupied by staff, contractors or visitors. Occupied Buildings exclude: LRT stations; conditioned storage Buildings; pump stations; power substations;

Buildings that are not occupied by individuals year-round (e.g., a seasonal park pavilion, outdoor pool, etc.).

- ***Renewable Energy*** Energy that is obtained from natural resources that can be naturally replenished or renewed within a human lifespan (i.e., the resource is a sustainable source of energy). These resources include moving water, wind, biomass, solar, geothermal, and ocean energy. Biomass is a renewable resource only if its rate of consumption does not exceed its rate of regeneration. Ground source/sink heat pumps, and the associated shallow geothermal fields are not considered Renewable Energy.
- ***Recommissioning (RCx)*** The process of optimizing Existing Buildings to improve occupant comfort and save energy.
- ***Resilience/Resilient*** The concept of Resilience covers the proactive capacity of public, private, and civic sectors to withstand disruption, absorb disturbance, act effectively in a crisis, adapt to changing conditions including climate change, and grow over time.

**References**


- The Climate Registry. 2010. Local Government Operations (LGO) Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories (Version 1.1, May 2010)
- City of Edmonton Measurement and Verification Guideline
- Measurement and Verification Implementation Procedure(s)
- City's Facility Design and Construction Consultant Manual(s): Consultant Manual (2019): Volume 1 - Design Process and Guidelines, latest edition
- City's Facility Design and Construction Consultant Manual(s): Consultant Manual (2019): Volume 2 - Technical Guidelines, latest edition
- City of Edmonton Solar Voltaic Program Design Guideline
- BOMA Requirements
- Climate Resilient Buildings Team - Terms of Reference
- National Building Code (Alberta Edition)