

Building Lasting Change – Update on Calgary’s Investments in Sustainable Infrastructure

RECOMMENDATION(S):

That the Standing Policy Committee (SPC) on Utilities & Corporate Services (UCS) recommend that Council approve the proposed amendments to the Sustainable Building Policy (CS005) to ensure the Policy better aligns with the Climate Resilience Strategy.

HIGHLIGHTS

- This report will update Council on performance metrics related to the state of sustainable infrastructure and buildings owned and operated by The City of Calgary, as directed by the Sustainable Building Policy (CS005) (the Policy), where, Administration is to report back to the Standing Policy Committee on Utilities & Corporate Services on a biennial basis.
- This report includes a recommendation to amend the Sustainable Building Policy (Version 2019) to better align the Policy with the Council approved Climate Resilience Strategy and Action Plan (2018).
- What this means for Calgarians is that The City continues to demonstrate value and measurable benefits for investments made in sustainable infrastructure while ensuring Council Policies are equipped to address evolving internal and external drivers, including direction from other levels of government, evolution of building code, emerging funding opportunities, and advancements in technologies and green building practices.
- This report includes a summary of select triple-bottom-line performance metrics providing an assessment of the efficacy and impacts of the Policy.
- The Policy Stewards are responsible for purchasing and managing energy for all users across The Corporation, therefore, this report also includes a performance assessment of investments in energy conservation, efficiency, and distributed renewable energy and provides updates on The City’s electricity and natural gas procurement strategies.
- This report and the associated recommendations are strategically aligned to Council’s Citizen Priorities, including: A healthy and green city
- Attachment 1 provides Background and Previous Council Direction and the proposed amendments to the 2019 version of the Policy.
- Attachment 2 highlights the performance metrics noted above.

DISCUSSION

The Performance of the Sustainable Building Policy

The Policy Stewards work closely with City business units and Civic Partners to provide technical guidance, engineering support, design recommendations, and the oversight of design consultants. The Policy Stewards help ensure that new infrastructure developments and major renovations reflect the objectives of the Council approved Sustainable Building Policy and the associated Sustainability Principles. 2020 performance outcomes include:

- Eight major projects LEED certified in 2020 representing more than 1.2 million square feet bringing The City’s total to 68. The City of Calgary continues to demonstrate leadership in the green building sector, including Canada’s first LEED Version 4 (latest

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version) certified new construction projects: The Calgary Composting Facility and Stoney Bus Maintenance Facility. For more information, visit www.calgary.ca/greenbuildings.

- Sixteen affordable housing units certified under LEED for Homes which is a new certification program being piloted at City of Calgary.
- The annual energy saved by certified green buildings is enough to power more than 8,500 Calgary homes.
- The annual GHG emissions avoided by certified green building is equivalent to taking more than 4,400 vehicles off the road.
- The revised approach to addressing sustainability adopted by the Policy Stewards in 2019 has resulted in a more positive and collaborative relationship with Project Sponsors as well as Calgary's consulting and construction industry, contributing to better performance outcomes.
- Growth over time in the number of green buildings, annual cost avoidance, and GHG emissions avoidance are shown in Attachment 2.

The Performance of Energy Management

The Corporate Energy Management Office (EMO) collectively manages the contract and billing with ENMAX to secure energy supply (natural gas and electricity) and regulate energy cost for the Corporation for all energy commodities.

The City's total energy cost that EMO managed was \$93.5 million in 2020 for electricity and natural gas, with over 1,750 bills processed every month. These bills are reviewed, data consolidated in an energy information system, information is trended with energy use reports distributed to all energy consumers, and corrections are made where required. Seventy-five City buildings also link their energy information through a city-wide public Building Energy Benchmarking program to lead the building disclosure efforts.

As energy and environmental commodities specialists, the EMO also helps generate value for The City, aligning with the Council Priority of a Well-Run City. For example, The City commercialized over \$4.3 million in renewable energy and emissions reduction credits in 2020, generating revenue from Calgary's investments in sustainability. This team continues to support multiple partners in securing grants for sustainable infrastructure projects, including, but not limited to, \$6 million for distributed solar power generation projects, \$7 million for electric/low-emissions vehicles, \$225,000 for EV charging network expansions, and \$3.7 million for landfill gas to power generation systems. Securing funding for net-zero emissions ready buildings, along with investment in renewable energy (development will be the focus of this team into the future.

Collaborating with City businesses and Civic Partners, the EMO identifies and implements cost saving and GHG-mitigating projects A few highlights include:

- \$600,000 in avoided costs in 2020 from power generated across The City's fleet of solar PV power plants with additional work on the development of landfill gas to power and renewable natural gas generation at City landfills underway. Calgary is leading the way in Alberta with solar PV and other renewable energy projects generating enough electricity to power over 1,000 average Calgary homes per year while reducing over 5,000 tonnes of greenhouse gas emissions (tonnes CO₂e) annually;

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- Over \$55,000 in energy cost savings from power factor correction projects at four facilities in 2020 with additional facilities targeted in 2021;
- A building systems tune-up in 2020 (retro-commissioning) at the Southland Leisure Centre is helping save \$70,000 per year by optimizing the sequence of operation and scheduling. Building systems investigations and tune ups were also completed at the Water Centre, helping achieve The City's first Energy Star Certification, demonstrating the outstanding energy performance of Calgary's iconic green building. Building operations and maintenance certifications such as EnergyStar and BOMA Best are being evaluated for other City facilities in 2021 and beyond.
- During the pandemic, EMO was able to identify the monthly/annual utility impacts on different municipal infrastructures and business units to inform future planning. The EMO is currently leading a Solutions for Achieving Value and Excellence (SAVE) project related to energy budgeting, with an anticipated net budget impact of \$1,292,910 in 2021, and \$1,783,050 in 2022.

Future Revisions and Focus

The efforts of our team are guided by an understanding of the trends affecting sustainable infrastructure at The City of Calgary. We seek to develop infrastructure that is equipped to meet the evolving needs of today and is prepared to tackle the challenges of tomorrow. To ensure our infrastructure is equipped to meet the evolving needs of today, we are focusing our efforts on the theme of human-centered design. Key components of this work include:

- Intersectionality – Infrastructure is developed for all Calgarians prioritizing accessibility, diversity, inclusivity, and leveraging approaches such as gender-based analysis (GBA+).
- Health/Wellness – Infrastructure safeguards the physical and mental health of occupants and is prepared to respond to future health challenges taking lessons learned from the COVID-19 pandemic while ensuring the mental health and wellness of occupants is considered.
- Performance – occupant behaviors significantly impact the building operation and energy performance, despite the best design intentions. Sustainable, human-centered design understands tenant preferences, allows for control and flexibility, educates and co-evolves with its occupants.
- At the same time, we strive to build infrastructure that is ready to meet the challenges of tomorrow the focused efforts on cultivating future-facing development. Key components of this work include:
 - Resilience – Infrastructure is built and retrofitted to respond to chronic stresses and acute shocks associated with climate change.
 - Durability – Infrastructure development considers long-term, life-cycle cost impacts of design decisions, and balances the financial impacts today with future requirements.
 - Pathway to Zero Carbon – Infrastructure is designed and retrofitted to enable passive-first designs that support a future transition to low or no-carbon operation.

In response to evolving market conditions and changing demands for energy products (electricity, heat, and liquid fuels), the EMO is actively working on innovative procurement methods to reduce costs, provide greater flexibility to adjust to changing demands, and secure a

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new supply of low-carbon energy sources into the future. In the short term, this will result in reductions in the supply of renewable electricity, as procurement contracts are adjusted to realize budget savings opportunities and prepare for new supply agreements. The EMO forecasts renewable electricity supplies ranging from 25 to 100 per cent of total metered electricity demand for the period spanning 2020 through 2026 as contract negotiations evolve. Updates on The City's electricity and low-carbon energy supply strategies will be provided to Council in early 2022.

STAKEHOLDER ENGAGEMENT AND COMMUNICATION (EXTERNAL)

- Public Engagement was undertaken
- Public Communication or Engagement was not required
- Public/Stakeholders were informed
- Stakeholder dialogue/relations were undertaken

In consultation with the Stewards of the Climate Resilience Strategy and Action Plan and Facility Management, amendments to the Sustainable Building Policy are recommended.

Social

A focus on human-centered design and future facing developments will:

- Enable the best out of our people by creating fantastic built environments, while supporting the short- and long-term health and wellness of our communities;
- Ensure long term performance of buildings and infrastructures by designing for and adapting to the occupants needs;

Environmental

The proposed revisions to the Policy will:

- Strengthen the Sustainability Principles related to energy efficiency, GHG reductions, and designing for resilience to changing environmental conditions; and
- Support The City in meeting climate related goals, including the design and construction of resilient infrastructure and renewable energy systems that address the risks of a changing climate.

Economic

The Policy and The City's approach to sustainable infrastructure will continue to:

- Build and maintain Calgary's sustainable building stock and municipal infrastructure, and stimulate/diversify the economy as a result;
- Minimize the Corporation's operating and life cycle costs through energy efficiency, renewable generation, and avoided cost of carbon;
- Minimize the cost of future capital renewal by ensuring buildings built today are equipped to perform competitively over their lifespan.

Service and Financial Implications

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Operational savings are generated by investing in energy management and infrastructure sustainability. These benefits are addressed in the budgeting process for infrastructure energy requirements along with SAVE program processes. The capital implications of addressing sustainability in the construction and operations of infrastructure are addressed in the planning and budget setting process with the additional capital required often raised from various grants, incentive programs, and innovative financing arrangements.

RISK

There are no perceived risks associated with the recommendations in this report.

ATTACHMENTS

1. Sustainable Building Policy, CS005 (Version 3, 2019) with recommended 2021 amendments
2. Corporate Analytics & Innovation Energy & Sustainability 2020 Snapshot

Department Circulation

General Manager/Director	Department	Approve/Consult/Inform
Darrel Bell, Director	Facility Management	Consult
Christopher Collier, Director	Environmental & Safety Management	Consult