



The Corporation of the City of Courtenay

Staff Report

To: Council

File No.: 5335-20

From: Director of Infrastructure and Environmental Engineering

Date: November 5, 2025

Subject: Corporate Facility Energy Management Update

PURPOSE:

To update Council on the development of the Corporate Facilities Energy Management Plan and seek direction on the pace of building retrofits and upgrades.

BACKGROUND:

The Corporate Facilities Energy Management Plan (CFEMP) is a strategic roadmap to plan building upgrades and retrofits to meet provincially legislated greenhouse gas (GHG) reduction targets and improve building comfort. It identifies specific projects to improve energy efficiency, reduce energy consumption, and move away from fossil fuels where possible. The CFEMP is one component of the Corporate Climate Action Plan update.

In March 2021, the province legislated a building sector emission reduction target of 59-64% below 2007 levels. In 2007, City of Courtenay buildings emitted approximately 504 tonnes of CO₂. To meet the reduction target, buildings must emit no more than 206 tonnes of CO₂ by 2030. Utility usage data from 2024 indicates building emissions were ~462 tonnes of CO₂ equivalent. These targets are summarized in the reference table below.

Year	Provincially Legislated Target	City of Courtenay target GHG emissions from buildings (tonnes of CO ₂ equivalent)
2007	Baseline	~504
2030	Buildings and Communities sector target of 59-64% below 2007 levels	181 - 206
2050	80% below 2007 levels	101

Prism Engineering (Prism) was selected to develop the Corporate Facility Energy Management Plan through a competitive RFP process and has worked closely with City staff in developing a plan. The project scope included all facilities owned and operated by the City of Courtenay (29 buildings) and organized the portfolio into two main studies, each with a different grant funding source. This approach aligned the level of analysis with the complexity of the building, and the standards defined by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), that are widely referenced in Building Codes across Canada.

Large buildings with complex energy systems, and high GHG emissions underwent detailed ASHRAE Level 2 energy assessments. This ensured the City has the information required to proceed with retrofit projects that offer the greatest GHG reductions. 11 buildings were assessed to this level of detail, including: Lewis Centre & Courtenay and District Memorial Outdoor Pool, Native Sons Hall, Firehall, Vancouver Island

Regional Library, Courtenay and District Museum and Palaeontology Centre, Centre for the Arts, Sid Williams Theatre, Florence Filberg Centre, LINC Youth Centre, City Hall, and Public Works Yard. This study was funded by the Community Buildings Retrofit Initiative offered by the Federation of Canadian Municipalities Green Municipal Fund.

Small buildings, with simple energy systems and significantly fewer GHG emissions, underwent less detailed ASHRAE Level 1 energy assessments. This study included 18 smaller facilities such as park buildings, washroom buildings, and storage buildings, and was funded by the BC Hydro (BCH) Integrated Energy Audit program.

To meet the reporting requirements of each funding authority, two summary reports were created. These summary reports compile findings from individual building assessments that identify all opportunities for energy improvements. These summary reports are provided in Attachments 2 and 3. These reports will advise the creation of the City's CFEMP implementation report that will prioritize all identified opportunities across the City's portfolio of buildings with estimated budgets and recommended scheduling.

DISCUSSION:

Methodology

The development of the CFEMP involved monitoring utility data, the completion of energy and emissions building audits, the review of existing documentation (building condition assessments, building plan drawings, past studies, energy consumption records, etc.), and consultation with City staff.

Energy and carbon building audits were used to assess HVAC equipment and building controls with the aim of identifying energy and carbon emission reduction measures. As part of the audits, building energy models were developed to establish energy end-use-breakdowns, energy impact of building envelope improvements and to assess the potential for solar photovoltaics (solar PV).

City staff and building operators were consulted during site visits so their knowledge and expertise about the City's buildings and operations could be gathered. Three follow-up workshops with City staff were used to draw on the in-house knowledge, experience and expertise to:

- Inform energy and carbon reduction measure identification and refinement
- Select key parameters and priorities to include in the pathways modelling
- Discuss challenges and opportunities for project implementation

Prism's method for developing energy and carbon reduction measures was guided by a philosophy of first reducing energy consumption and emissions through optimizing existing building systems. This is followed by avoiding energy consumption through heat recovery and reuse strategies. Then, finally replacing equipment with low-carbon electric technologies and/or renewable energy sources to achieve further GHG emissions reductions.

Key Findings

An analysis of emissions from each facility is illustrated in Figure 1 below. This emissions profile was generated by compiling annual electric and gas consumption data from across all City of Courtenay facilities.

The largest emitters were found to be Lewis Centre, Public Works Yard, Native Sons Hall, Vancouver Island Regional Library, Comox Valley Centre for the Arts, Firehall #1, and Memorial Outdoor Pool. These facilities

are responsible for 80% of greenhouse emissions from City of Courtenay buildings. The group of eighteen smaller facilities are responsible for 10% of GHG emissions from buildings, and the remaining 10% of emissions are attributed to a combination of the Sid Williams Theatre, the Florence Filberg Centre, LINC Youth Centre, City Hall, Courtenay & District Museum and Lewis Park.

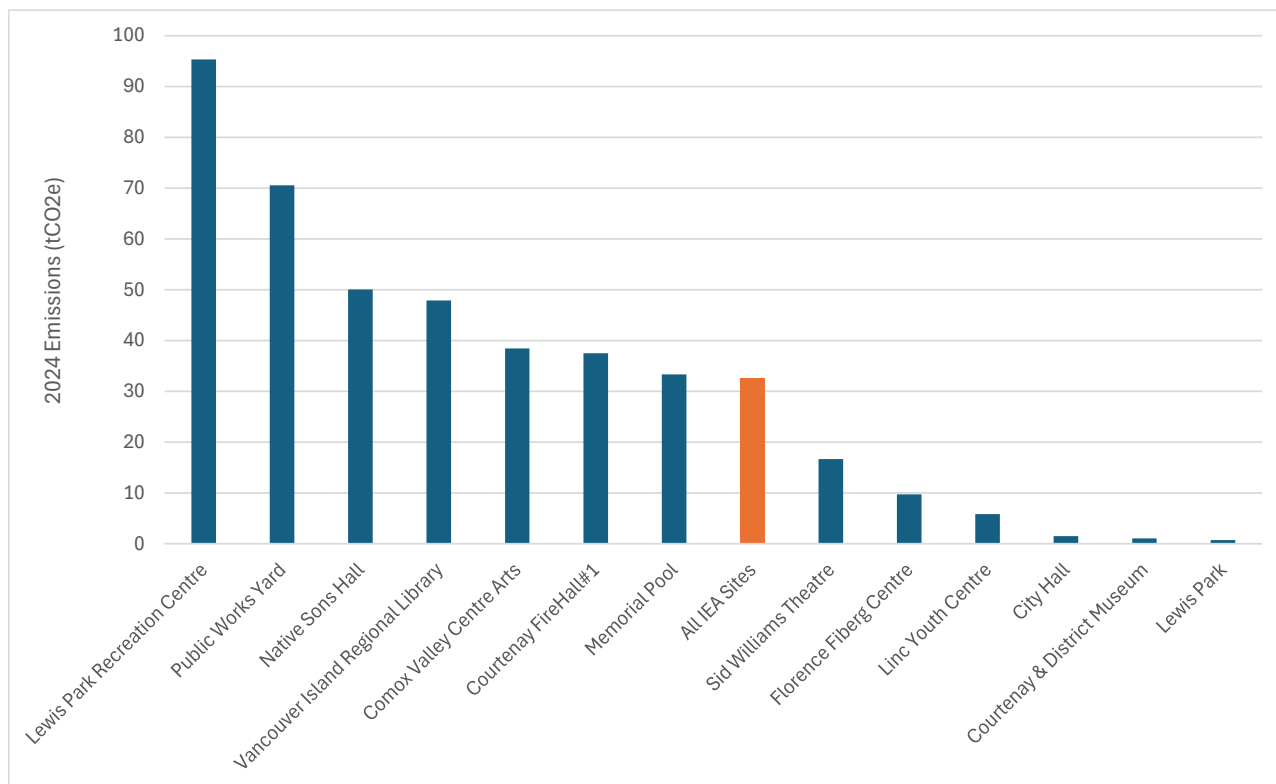


Figure 1: Annual greenhouse gas emissions (reported in tonnes of CO₂e) from each facility

This analysis demonstrated that emissions are directly related to the volume of natural gas consumed by equipment in the buildings. Emissions are not related to the age of the building – for example, the museum built in 1925, had very low emissions because the equipment in the building was electric.

Several specific projects required to update equipment and improve building performance were identified. Workplans for each building were created, and proposed upgrades were organized into pathways, which represent different options to achieve reductions. A summary of the specific upgrades proposed is presented in Appendix B of Attachment 2.

Reduction Pathways

Prism organized the proposed building upgrades and retrofits into three pathway scenarios. Each pathway prioritizes identified energy and carbon reduction measures as described below:

1. **Business-as-Usual (BAU):** includes “like-for-similar” replacement of equipment as it reaches the end of its service life. Modest energy efficiency is expected as new equipment is expected to perform better than older equipment.
2. **GHG Emissions Targets:** achieves provincial GHG emissions reduction targets while minimizing impacts on the City’s annual budgets and staff capacity.

3. **Aggressive Decarbonization:** maximizes cumulative GHG emissions reductions by prioritizing projects with high fuel saving potential.

The financial implications and annual GHG reductions were modelled for each pathway, and the findings are summarized in Figure 2 below.

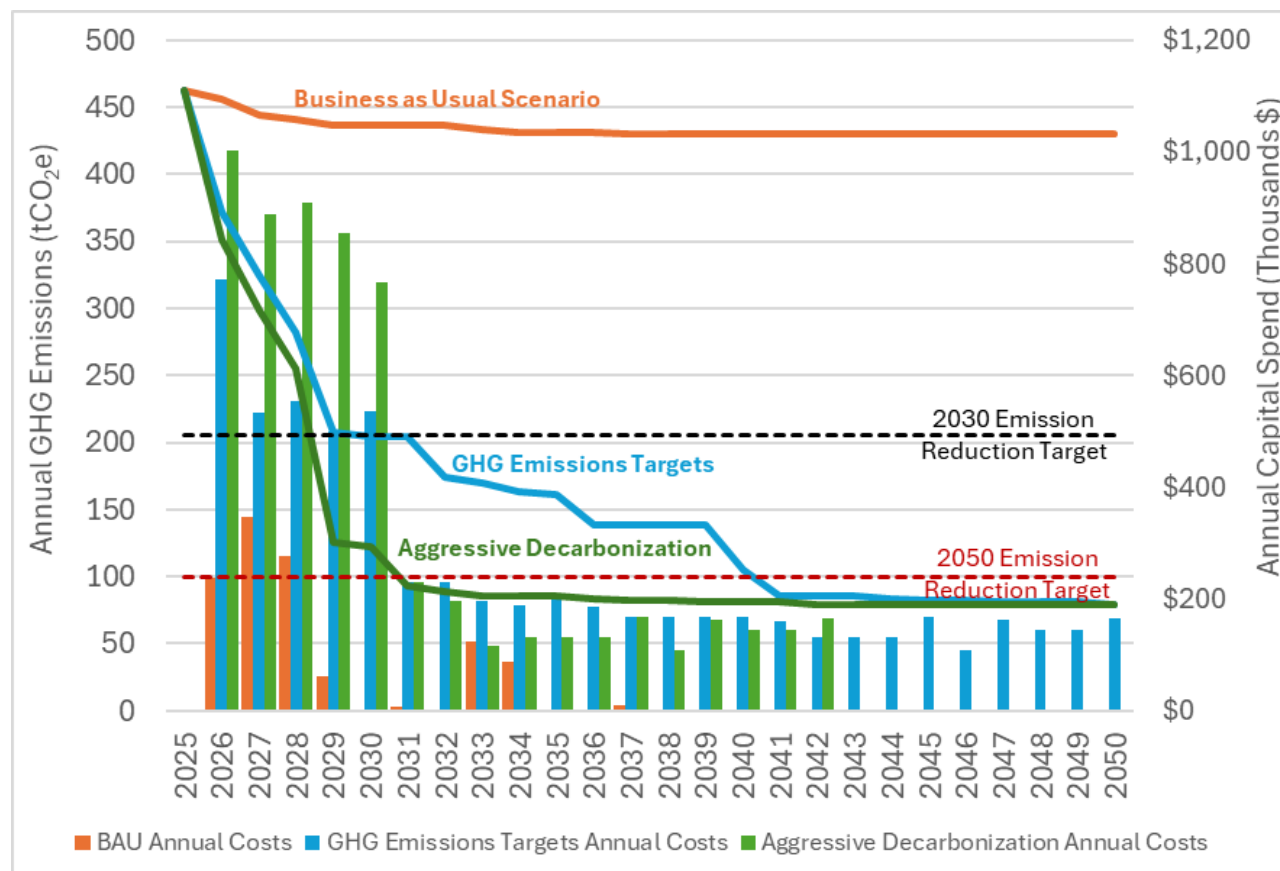


Figure 2: Financial impacts and emissions reduction for each proposed pathway

The **Business-as-Usual** pathway demonstrated that natural gas equipment must be replaced with electric equipment to achieve the 2030 emissions reductions target. Replacement with newer gas equipment will only achieve marginal efficiency reductions.

The **GHG Emissions Targets** pathway demonstrated the emission reductions that are possible with strategic upgrades that occur once the existing equipment has reached the end of its service life and must be replaced. This pathway seeks to achieve emission reductions, while evenly distributing capital project investment.

The **Aggressive Decarbonization** pathway includes the same measures included in GHG Emissions Targets pathway but maximizes cumulative GHG emissions reductions over the same period. This is done by completing impactful equipment upgrades before the equipment has reached the end of its service life. This pathway seeks to achieve maximum emission reductions.

Table 1 summarizes implications of each pathway.

Table 1: Summary of implications associated with each pathway.

Decision Criteria		Pathway 1 – Business as Usual	Pathway 2 – GHG Emissions Targets	Pathway 3 – Aggressive Decarbonization
Capital Cost	Average annual spend (2026-2030)	\$269,000	\$990,000	\$1,395,000
	Total spend (2026-2030)	\$1.35 M	\$4.95 M	\$6.98 M
Equipment	Replacement Timing	End of life replacement		Early replacement, where required
	Performance Monitoring & verification	N/A	Yes	Limited
Emission Targets	Meet legislated 2030 GHG reductions	No	Yes. Targets are met by 2029	Yes. Targets are met by 2028
Funding Options		No external funding options	May be eligible for funding from federal and provincial agencies, such as FCM, CleanBC, and/or BC Hydro	
Recommendation		Not Recommended	Recommended	Not Recommended

Pathway 2 is recommended because it meets the legislated GHG reduction targets before the legislated date of 2030, while allowing time for performance monitoring of equipment to verify it is working as intended. It also aligns with the lifespan of existing equipment, thereby reducing costs related to early replacement.

POLICY ANALYSIS:

The development of the Corporate Facility Energy Management was informed by:

- The CleanBC Roadmap to 2030, the provincial plan to meet 2030 greenhouse gas targets
- The Official Community Plan Bylaw 3070, which outlines municipal emission targets
- The Climate Change Accountability Act, which specifies provincial emission reduction targets

FINANCIAL IMPLICATIONS:

The Financial implications of Pathway 2 and Pathway 3 are summarized in the table below. Where the costs are the same for each pathway, one number is reported in the table. Where there is a difference in cost, the costs for each pathway are reported in the same cell, with the cost of Pathway 2 on top, and the cost for Pathway 3 on the bottom in italics.

Pathway 2 offers relatively consistent annual spend, whereas Pathway 3, fast-tracks retrofits at the Lewis Centre and Comox Valley Centre of the Arts, which require increased spending for a couple of years. The selected pathway will be added to the 5-year Financial Plan and 2026 budget for council consideration.

Table 2: Proposed 5-Year Financial Plan for building upgrades and retrofits.

Facility	2026	2027	2028	2029	2030
Lewis Centre, Outdoor Pool and Lewis Park	\$ 23,000	\$ 24,500 \$ 1,127,000	\$ - \$ 923,500	\$ 39,500	\$ 893,500
Public Works Yard	\$ -	\$ 123,500	\$ 26,000	\$ 239,500	\$ -
Native Sons Hall	\$ 648,500	\$ -	\$ -	\$ 342,000	\$ -
Vancouver Island Regional Library	\$ -	\$ 107,500	\$ 389,500	\$ -	\$ 56,500
Centre for the Arts	\$ 160,000	\$ 38,000	\$ - \$ 331,500	\$ -	\$ -
Firehall #1	\$ 365,500	\$ 8,500	\$ -	\$ 173,000	\$ -
Sid Williams Theatre	\$ -	\$ 495,000	\$ 290,000	\$ -	\$ -
Florence Filberg Centre	\$ -	\$ 83,500	\$ 222,500	\$ 58,500	\$ -
The LINC Youth Centre	\$ -	\$ 24,500	\$ -	\$ -	\$ -
City Hall	\$ -	\$ 18,000	\$ -	\$ -	\$ -
Courtenay & District Museum	\$ -	\$ 5,500	\$ 14,000	\$ -	\$ -
Valley View Field House	\$ -	\$ 16,000	\$ -	\$ -	\$ -
Courtenay Civic Cemetery	\$ -	\$ 16,500	\$ -	\$ -	\$ -
Trades Building & Storage	\$ -	\$ 49,000	\$ -	\$ -	\$ -
TOTAL Pathway 2	\$1,197,000	\$1,010,000	\$942,000	\$852,500	\$ 950,000
TOTAL Pathway 3	\$1,197,000	\$2,112,500	\$1,826,500	\$1,788,000	\$ 950,000

Currently, in the 5-Year financial plan, there exists a capital line item entitled ‘Renewable Energy Options’, funded from LGCAP reserves. It is proposed to reallocate these funds to facilitate the above proposed building energy upgrades as the renewable energy options project was designed to capture the results from the Corporate Facility Energy Management Plan.

Budget Item	2025	2026
Renewable Energy Options	\$400,000	\$400,000

The City holds about \$1,369,000 of GHG and LGCAP-related reserves as of September 30th, 2025. Some of these funds must be spent by March 31, 2028. The LGCAP program is under review by the provincial government, and future LGCAP funding is unknown.

The table below provides an estimation of the taxation required each year to fund the Corporate Facility Energy Management Plan. The table outlines annual spending and various funding sources. The LGCAP reserve is utilized early in the plan to ensure funds are spent by the March 31, 2028 deadline. The taxation impact model below assumes that LGCAP will continue in 2027 at similar levels to historic funding, although this has not yet been announced.

LGCAP Reserve Spending and Funding Model						
	2026	2027	2028	2029	2030	Total
Annual Spending	\$ 1,197,000	\$ 1,010,000	\$ 942,000	\$ 852,500	\$ 950,000	\$ 4,951,500
Funding						
LGCAP Reserve*	\$ 787,000	\$ 134,000	\$ -	\$ -	\$ -	\$ 921,000
New LGCAP*	-	105,000	105,000	105,000	105,000	420,000
Tax	410,000	771,000	837,000	747,500	845,000	3,610,500
Total Funding	\$ 1,197,000	\$ 1,010,000	\$ 942,000	\$ 852,500	\$ 950,000	\$ 4,951,500
Estimated Tax						
Change Impact*	1.1%	1.0%	0.2%	-0.2%	0.3%	

*LGCAP reserve is depleted by March 31, 2028

*New LGCAP funds assumed at historic rates

*Estimated tax change impact is based on 2025 taxation

If approved by Council, the LGCAP Reserve Spending and Funding Model would be worked into the Financial Plan; precise allocations of reserve and tax-funded projects could vary slightly depending on the specific project. Further, some projects could be eligible for alternative funding sources; this information would be included in the future Financial Plans.

ADMINISTRATIVE IMPLICATIONS:

The Corporate Facility Energy Management Plan was developed by the Infrastructure and Environmental Engineering Department with support from consultants, Prism Engineering. The development of the plan has been supported by Civic Properties, the Fire Department, and Recreation Facility Operations.

It is expected that implementation of the plan will involve the work of multiple departments.

- Infrastructure and Environmental Engineering will coordinate capital projects to complete building retrofits and upgrades. Delivering these projects on pace to meet GHG reduction targets will require a dedicated staff person.
- Civic Properties will complete equipment and facility upgrades as opportunities arise through maintenance schedules.
- Building managers and occupants will be engaged for education, feedback, or to coordinate temporary closures or service disruptions.

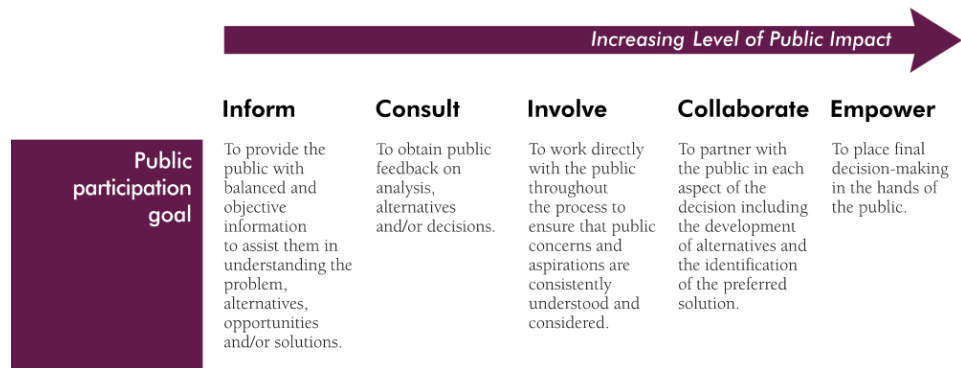
STRATEGIC PRIORITIES REFERENCE:

This initiative addresses the following strategic priorities:

- Natural Environment - Integrate climate change commitment into our governance work: Update Corporate Climate Action Plan
- Natural Environment - Integrate climate change commitment into our governance work: Include climate change lens in staff reports
- Social Infrastructure - Develop measures and criteria to track progress for the OCP's four cardinal directions: reconciliation, community well-being, equity, and climate action

PUBLIC ENGAGEMENT:

Staff would inform the public based on the IAP2 Spectrum of Public Participation:



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OPTIONS:

1. THAT Council direct staff to include capital costs associated with Pathway 2 – GHG Emissions Targets in the 5-Year Financial Plan.
2. THAT Council direct staff to include capital costs associated with Pathway 3 – Aggressive Decarbonization in the 5-Year Financial Plan.
3. THAT Council provide alternative direction to staff.

ATTACHMENTS:

1. Presentation – Corporate Facility Energy Management Update
2. GHG Reduction Pathway Report
3. Integrated Energy Audit

Prepared by: Garret Wright, Engineering Technologist

Jeanniene Tazzioli, P. Eng, Manager of Environmental Engineering

Reviewed by: Chris Davidson, P. Eng, PMP, Director of Infrastructure and Environmental Engineering

Susie Saunders, Director of Recreation, Culture & Community Services

Adam Langenmaier, BBA, CPA, CA, Director of Financial Services

Concurrence: Geoff Garbutt, M.PI., MCIP, RPP, City Manager (CAO)