COMMUNITY INFRASTRUCTURE AND STRATEGIC GROWTH STANDING COMMITTEE AGENDA

Tuesday, September 24, 2024

1:00 pm - 4:00 pm

HYBRID - COUNCIL CHAMBERS AND MICROSOFT TEAMS

400 Main Street SE

Pages

1. CALL TO ORDER

2. DIRECTOR'S BRIEF (verbal only)

3. CONFIRMATION OF MINUTES

   3.1 Regular Meeting of September 10, 2024 — 1

4. PUBLIC PRESENTATIONS AND QUESTIONS

   There are no items.

5. CONSENT AGENDA

   There are no items.

6. AGENDA REPORTS

   6.1 Energy and GHG Performance Guidance on Municipal New Construction (Monica Labait, Manager Treasury) — 5

   The Community Infrastructure and Strategic Growth Standing Committee is being asked to provide guidance regarding the energy and GHG performance of new City-owned construction.

7. ITEMS REFERRED FROM COUNCIL

   There are no items.

8. UPDATE OF COMMITTEE RESOLUTIONS

   There are no items.

9. CLOSED SESSION

   There are no items.

10. ITEMS ARISING FROM CLOSED SESSION

There are no items.

11. ADJOURNMENT

COMMUNITY INFRASTRUCTURE AND STRATEGIC GROWTH STANDING COMMITTEE MEETING

MINUTES

Tuesday, September 10, 2024
1:00 pm - 4:00 pm
HYBRID - COUNCIL CHAMBERS AND MICROSOFT TEAMS
400 Main Street SE

PRESENT
Councillor A. Jones (Chair) (Voting)
Councillor T. Petrow (via MS Teams) (Voting)
Councillor R. Chapman (via MS Teams) (Voting)
M. Elsogheir (Non-Voting)
K. Mitchell (via MS Teams) (Non-Voting) – arrived at 1:13 p.m.

STAFF
L. Stevens, Director Community Infrastructure
S. Utz, Director Strategic Growth & Investment
E. Lund, Manager Utility Operations
S. Rice, Team Leader Waste & Recycling Services
L. Moreira, Program Coordinator Waste & Recycling Services
K. Jiang, Legislative Officer II/Committee Clerk
N. Parkinson, Legislative Officer I
K. Rushford, Recording Technician

1. CALL TO ORDER

Councillor Jones called the meeting to order at 12:57 p.m. and confirmed that quorum has been met for this meeting.

6. AGENDA REPORTS

6.1 Automated Garbage Collection Program (Leanne Moreira, Program Coordinator Waste and Recycling)

2024-CISG-031
Moved By Councillor Petrow

That the Community Infrastructure and Strategic Growth Standing Committee recommends that City Council accepts the revised garbage collection program that includes the following service levels: Automated garbage collection, Standard 120L cart, Weekly collection, Excess waste tag program, Medical exemption program, and Diaper exemption program, as presented, with the following considerations:

1. That black cart use parameters (like mandatory bagging) through bylaw is part of the program;

2. More information about environmental aspects;

3. Logistics of pick-ups in areas with cul-de-sacs, zero lot line lots, etc.;

4. Manual vs automated collection and the rationale for both; and

5. Explanation of how garbage that has been scattered from carts is managed.

Carried

3. CONFIRMATION OF MINUTES

3.1 Regular Meeting of August 27, 2024

2024-CISG-032
Moved By Councillor Petrow

That the Community Infrastructure and Strategic Growth Standing Committee adopts the minutes of the regular meeting of August 27, 2024 as presented.

Carried

2. DIRECTOR'S BRIEF (verbal only)

L. Stevens, Director Community Infrastructure, expression appreciation for the combined efforts of residents and the business community in this round of level 4 water restrictions. We have achieved an average of 28% water reduction from previous levels. The City of Calgary has advised that they are tracking completion of urgent repairs by September 23, which is on schedule.

The City has said farewell to our summer students. They did a great job in our parks and green spaces this year. The Roads department is now developing and finalizing the shift schedules for implementation in mid-October for our 24/7 snow and ice responses.

It was asked whether we anticipate a gradual step-down from the level 4 water restrictions. L. Stevens advised that it is staff's understanding that once the repairs are completed, all restrictions will be dropped.

A comment was made that if the water is turned off in a house, you don't normally turn everything on full blast due to risk of air in the system. L. Stevens advised that the first time, Calgary had an uncontrolled event that introduced air pockets and debris into the system. This time, there was a scheduled reduction, not a complete shutdown. Calgary gradually eased the water restrictions the last time due to the timing and nature of the repairs and sensitivity to what was happening in other parts of the system. Calgary has since done a more thorough investigation of their key feeder main, which has driven these repairs. Volume consumption is not at risk of being as high as it was previously and some of the areas of concern in the system have been addressed.

It was asked whether there was considerable usage of the water that was trucked in. L. Stevens advised that there was not as much usage as in the previous water restrictions in June and July. We only had a single location in June and July and there were two different locations this time, so the water was distributed better. This time around, residents had advance notice and were able to fill up bins and rain barrels, which reduced the need to go to an alternate site for non-potable water.

Councillor Petrow commented that Airdrie as a city does very well with water conservation in general. Our residents seem to understand the importance of water conservation, which is a testament to the job of City staff over the years.

S. Utz, Director Strategic Growth & Investment, advised that our residential and non-residential growth have both remained strong. We are tracking about 30% more inspection requests for our Safety Code officers than typical or compared to last year. We are experiencing strong development permit and business licensing application numbers, about 20% above already high volumes of the last few years. A new Area Structure Plan application has come in for lands east of East Points. There is construction fencing up for a 213 unit apartment building within the Community Revitalization Levy boundary at First Avenue and Edwards Way.

On the investment side, work is progressing on the first phase of the North East Regional Park. There has been a change in leadership in Transit. Chris MacIsaac has moved on and Billie-Jo Arnott has stepped up in the interim.

On the advocacy side, we are gearing up for the Alberta Municipalities fall meeting starting on September 25th, as well as some Minister meetings in October, and Airdrie Day at the Legislature. There was some change-over in staff at the Calgary Metropolitan Region Board. The CAO has left, but their meetings and Board meetings have progressed, as well as our Joint Planning Area with Rocky View and Calgary.

Downtown Enhancement – About 6,000 people came out to Ribfest in the downtown. The land use amendment application for the vacant site on Edmonton Trail will be at Council for Public Hearing on September 17th.

It was asked how Ribfest revitalizes the downtown, seeing as they are an out-of-town business that doesn't pay taxes in Airdrie. S. Utz advised that Administration is cognizant of Economic Development's strategy for tourism. Any time we bring people into the City, they are spending money that would not otherwise occur. Getting people excited about coming into the downtown is a good thing, as it makes people more aware of other businesses in the downtown. S. Utz will check with the Downtown Revitalization coordinator to see if there are statistics for the number of people that came into Airdrie from out of town for Ribfest and whether the City invested any money in Ribfest.

A question was asked about the music festival held at a bar. The understanding is that we have to support something that is for all ages. S. Utz will get more information from the Downtown Revitalization coordinator. Councillor Chapman commented that the event was in a parking lot.

It was asked whether the City made a financial investment in Ribfest. S. Utz advised that there is an activation and collaboration grant that Council has approved and has discretion for. The purpose of having incentives for the downtown was to get more private investment occurring within the downtown, to get more activity generated in the downtown, and to accelerate re-development.

S. Utz advised that he and City assessors will be giving a presentation to the Assessment Association of Alberta conference this week. At this point in time, for every $1.00 we have invested publicly, more than $3.00 has come in from the private sector. We essentially had zero dollars of new construction from 2012-2022 in the Community Revitalization Levy (CRL) boundary, and about $75M of leasehold improvements in the first two years since the CRL was adopted. In the first year in which we have had incentives, we have seen the uplift of over $92M of assessed value in the downtown.

4. PUBLIC PRESENTATIONS AND QUESTIONS

There are no items.

5. CONSENT AGENDA

There are no items.

7. ITEMS REFERRED FROM COUNCIL

There are no items.

8. UPDATE OF COMMITTEE RESOLUTIONS

There are no items.

9. CLOSED SESSION

There are no items.

10. ITEMS ARISING FROM CLOSED SESSION

There are no items.

11. ADJOURNMENT

Councillor Jones adjourned the meeting at 2:14 p.m.

_____
Committee Chair

_____
Committee Clerk

COMMUNITY INFRASTRUCTURE & STRATEGIC GROWTH – AGENDA REPORT

Meeting Date: 24 September 2024

Subject: Energy and GHG Performance Guidance on Municipal New Construction

Directorate: Corporate Services and CFO

Issue:

The Community Infrastructure and Strategic Growth Standing Committee is being asked to provide guidance regarding the energy and GHG performance of new City-owned constructions.

Policy / Council Direction:

Committee and subsequent Council direction is sought to establish criteria for new builds. These criteria are to be used for structures not yet in the design phase and will be incorporated into a corporate sustainable policy at a later date.

Background:

With a Corporate Energy and GHG Reduction Strategy in place but in the absence of a corporate sustainable building policy and an updated AirdrieONE Sustainability Plan, guidance is sought regarding the energy and GHG performance of new City-owned construction.

Through its AirdrieONE Sustainability Plan (2011) and Corporate Energy and GHG Reduction Strategy (2023) the City has set aspirational goals to reduce its corporate greenhouse gas emissions five per cent per year over the next five years through a lifecycle costing approach that identifies, assesses and implements potential energy and GHG reduction projects in City-owned buildings and operations.

The most up-to-date National Energy Code for Buildings (NECB 2020), referenced in the latest National Building Code – Alberta Edition [NBC (AE) 2023] do not capture life-cycle cost impacts and is already outdated with respect to *Canada Green Buildings Strategy.* However, the NBC (AE) 2020 sets energy performance tiers replicating the British-Columbia approach through the BC Energy Step Code.

The BC Energy Step Code sets a more than 50% annual energy consumption reduction target compared to the reference building for a net zero energy (NZE)-ready commercial or

institutional building (Figure 1, Tier 4) while the NECB 2020 sets a 60% reduction as a minimum (Figure 2, Tier 4).

In the context of new construction planning, the City has not budgeted so far to get from architects and engineers alternative, low GHG emitting design options for its new library, NE firehall and SW recreation centre. This decision implied the default design option was the NECB 2020 Tier 1, the level adopted by the Government of Alberta. However, life-cycle costing of various low carbon building options is currently not included within Tier 1. The lifecycle cost impacts of higher Tiers represents a significant endeavor that architectural and engineering firms do not undertake, unless tasked by their client to do for an extra fee. The City does currently not ask designers to conduct life-cycle costing analysis to assess the long-term net value of energy upgrades, i.e. the total cost of ownership of its new facilities.

With that level of performance, the City **cannot apply for energy efficient buildings grant funding** from the Federation of Canadian Municipalities (FCM) Green Municipal Fund (GMF) nor the federal government. Such funding programs now require new constructions to be built net zero energy (NZE) or NZE-ready (Tier 4) to get maximum funding. While design and construction costs of a new NZE facility are currently known to be higher, the City does not know what those costs actually are (with a range going from 0% to 30% depending on the construction approach, site and facility type).

Figure 1: BC Energy Step Code Energy Reduction Targets (Commercial & Institutional Buildings)

Table 10.1.2.1.
Energy Performance Tiers
Forming Part of Sentences 10.1.2.1.(1) and (2)

Energy Performance Tier	Percent *Building Energy Target*(1)	Percent Improvement(1)
1	≤ 100%	≥ 0%
2	≤ 75%	≥ 25%
3	≤ 50%	≥ 50%
4	≤ 40%	≥ 60%

Figure 2: NECB 2020 Tiered Energy Reduction Targets (Commercial & Institutional Buildings

Options

By establishing a *Sustainable Buildings Policy*, the City of Airdrie could set a Tier 2, Tier 3 or Tier 4 energy performance as a requirement for its corporate buildings, which are relative reductions of 25%, 50% or 60%, respectively, compared to business-as-usual construction (Tier 1). The details around how those targets are achieved can be fully left in the hands of architects and engineers, who will use their creativity to propose the most cost-effective solutions through a detailed parametric design study that would allow the City to make sounder, life-cycle based investment decisions regarding its corporate emissions. Through such a study, the design team optimizes lifecycle costs for various building system options and land on a few recommended solutions, from which the City can select the best.

A parametric design study is estimated to increase **design** costs by 3% to 4. For instance, a consultant who presented to City staff in September 2023 suggested that such a study that assesses different NZE design scenarios would cost a bit less than $0.5M for the new SW rec centre, or a 3% increase in the design budget. **Construction** cost increases could not be estimated at this very early stage.

While a Tier 2 performance target might be achievable by the building designer without a parametric study, the uncertainty in design parameters and options will likely be transferred into higher construction costs at the next stage. If the City is not ready to build to NZE or NZE-ready (Tier 4) and still want to make progress in its corporate GHG reduction goals, the best value that is proposed consist in the following:

- **set a Tier 2 performance design construction requirement as a minimum; and**
- **conduct and budget for a parametric study with lifecycle costing at the design phase.** The study would include four design and construction scenarios:
    - Tier 1 (business-as usual reference scenario);
    - **Tier 2;**
    - **Tier 4 (NZE-ready);**
    - **NZE (Tier 4 with RE systems installed)**.

With that information, the City will be able to make an informed decision about building a Tier 2, Tier 4 or NZE facility.

Other Alberta Municipalities

See the *Energy and GHG Performance Guidance of New Constructions_Additional Context* appendix.

Business-as-Usual Risks

Since approximately 2017 and especially with the US *Inflation Reduction Act* (IRA) introduced in 2022, the heating, ventilation and air conditioning (HVAC) and sustainable building industry is seeing a massive transformation. Investments in cleaner buildings and energy options are rapidly advancing. By continuing to rely on the NECB Tier 1 and install soon-to-be outdated heating, cooling and control solutions, the City puts itself at risk of not being able to service those systems in as little as 15 years, since little investment is anymore made by HVAC manufacturers in standard GHG-emitting systems. While those systems can be installed for cheap in the short term, they will come with high operational, maintenance and replacement costs in the future. Building and system retrofits with prohibitive costs will be needed as soon as those systems reach their life end in 12 to 20 years and will strain further the City finances in the mid-term.

NZE facilities are being designed today in Alberta so it is not a concept that out of reach for the City of Airdrie. NZE designs require energy and GHG modeling to be a very early component of the development process. Once a building site, orientation and roof shape have been selected, there are several NZE design options that become out of reach.

Administration Recommendation:

Administration recommends that the 25% (NECB Tier 2) energy consumption reduction requirement compared to business as usual for its larger (>600 m^2), standard commercial and institutional constructions, classified as NBC (AE) Part 3 buildings be used.

Atypical facilities such as lift and pump stations are excluded from this classification but could be assigned another relevant performance target. The City could update this target to a higher performance Tier before the NBC (AE) 2032 comes into force and mandate then NZE-ready design and construction. With this option, the City most likely **cannot** apply for FCM nor federal funding for energy efficient buildings

Alternatives/Implications:

1. Set a Tier 2 performance design minimum construction requirement and then at Council's discretion, depending on the project size and scope, conduct and budget for a parametric study with lifecycle costing at the design phase. For a large facility like the SW Recreation Centre, this study is estimated to cost an additional $500,000 in budget dollars. The study would provide great value when it comes to making progress on GHG reduction goals on a very large, public and long-term municipal structure.
2. Set a 60% (NECB Tier 4) energy consumption reduction target. With this option the City **can** apply for FCM and federal funding for energy efficient buildings.
3. Set a Third-party certification requirement (e.g. LEED Gold or Platinum, Passive House or CaGBC Zero Carbon), with a life-cycle cost assessment determining the best option.

This approach is valuable in the short term, will be costly for minimal extra value in the long term, it should be pursued for up to two building designs and then the City should decide which certification becomes required for future buildings.

Budget Implications:

Depending on the options chosen, setting a Tier 2 standard may have no immediate capital budget implications. There likely would be some savings in future operating costs with a more efficient building than building as per the base standards.

Communications and Engagement:

N/A

Recommendation:

Administration recommends that the Community Infrastructure and Strategic Growth Committee receives the information as presented and recommends to Council to:

1. adopt the National Energy Code for Buildings (NECB) 2020 Tier 2 energy consumption reduction standard for commercial and institutional construction greater than 600 m2 as classified in the National Building Code – Alberta Edition [NBC(AE)] Part 3 into the design of City structures moving forward; and

2. direct Administration to develop a sustainable buildings policy for Council approval by (date).

_____

Joad Clement, Municipal Energy Advisor
Monica Labait, Manager of Treasury

Staff Presenter:	Monica Labait
Department:	Corporate Services
Reviewed by:	Shannon Schindeler
Attachments:	#1:Energy and GHG Performance Guidance of New Construction Additional Context

Appendix - Guidance Sought Regarding the Energy and GHG Performance of New Constructions

Building Code and Performance Tiers

Provinces have adopted various Tiers of the National Energy Code for Buildings (NECB) 2020 based on their strategic priorities with respect to GHG reductions (see Kevin Lockhart, 2024). The Government of Alberta adopted the NECB 2020 Tier 1 which became in force in May 2024.

Table 10.1.2.1.
Energy Performance Tiers
Forming Part of Sentences 10.1.2.1.(1) and (2)

Energy Performance Tier	Percent *Building Energy Target*(1)	Percent Improvement(1)
1	≤ 100%	≥ 0%
2	≤ 75%	≥ 25%
3	≤ 50%	≥ 50%
4	≤ 40%	≥ 60%

Figure 1: NECB 2020 Tiered Energy Reduction Targets (Commercial & Institutional Buildings)

What is a Net Zero Energy (NZE) Building?

For NECB energy modeling purposes, the building annual energy consumption includes lighting, water heating and space-conditioning, but no renewable energy sources. A NZE building is thus a high performance building (typically Tier 4) that is equipped with local renewable energy (RE) technologies that bring its net annual energy consumption to zero. The RE systems generate as much energy as the building uses over a year, so the net amount of energy purchased from local utilities is *approximately zero*, including heating, cooling and electricity loads. This typically implies NZE buildings are fully electrified and use no natural gas, although it is not an absolute requirement. The key element is that NZE buildings have significantly reduced heating, cooling and ventilation loads compared to Tier 1 buildings.

On one end of the performance spectrum, the 40% gap to go from Tier 4 (NZE-ready) to NZE is assumed by building code creators to be generally relatively easy, consisting in the installation of pre-designed renewable energy systems such as solar thermal or photovoltaics (PV) systems. On the other end of the spectrum, achieving a 25% (Tier 2) energy reduction is sometimes possible with simple tweaks in design and construction strategies, such as HVAC and lighting systems equipped with advanced controls, better envelope insulation with less fenestration, and heat recovery systems. Achieving 50% (Tier 3) or higher energy reductions is the most challenging step. It requires a much higher design effort (see ZEBx, 2022). This design work normally includes high-performance heating systems (i.e. 200% seasonal efficiency for air-source heat pumps and 400% efficiency for ground-source heat pumps versus 90% efficiency for fossil fuels combustion systems), building footprint, roof and wall size and orientation adjustments, enhanced building envelope details to reduce thermal bridging, advanced energy storage and recovery systems, and planning of future renewable energy systems. Thus, once Tier 3 is achieved, most of the work for achieving a NZE-ready (Tier 4) building has been completed. The extra effort to reach Tier 4 from Tier 3 is relatively

small at the design stage, though it could be costly at the construction stage. However, once a Tier 3 building is constructed, it will be impossible to cost-effectively transform it into a NZE building in the future. Continued emissions from the building will be locked-in for the remaining life of the building. While the same reflection applies to all Tier 2 buildings, the initial effort to get to a 25% energy consumption reduction is much smaller, which will reduce upfront design and construction costs. Thus, targeting the NECB Tier 3 is not recommended for the City, but Tier 2 or Tier 4 are.

It should be noted the NECB sets a relative scale of GHG reductions in percentage while other approaches such as the Passive House standard (see Passive House Canada 2024) and the Canadian Green Building Council (CaGBC) Zero Carbon standard use an absolute scale, i.e. they set maximum levels of energy consumption per m^2 based on the climate zone. Also NECB modeling reduction targets do not necessarily in actual energy use since operational factors such as system setpoint override by operators, user behavior, changes in occupancy and scheduling are not accounted for by energy models.

Tiers and NZE Cost-Effectiveness

As of today, no comprehensive study has been conducted to quantify the lifecycle cost-effectiveness of NZE or high performance buildings due to the difficulty in comparing building archetypes and project/site specific parameters, given the relative novelty of NZE buildings. Previous older studies have looked into the economic, environmental and social value of green building rating systems such as LEED (see HRD Corporation, 2013), or high performance building design strategies, before the introduction of *Canada Green Buildings Strategy* and the carbon tax (see Integral Group, 2020). More recently the City of Edmonton and City of Calgary have been updating their cost-benefit analysis of implementing or mandating building performance requirement higher than the NECB at the community level. Results will become available in the coming months.

Several smaller high-performance buildings have achieved net zero energy performance at no additional upfront costs using innovative design methods, such as integrated project delivery (see Reimagine Architects (2024)). Net zero energy or carbon facilities do not necessarily come at higher life-cycle costs for owners, with the future low operating costs offsetting sometimes fully the higher upfront costs, or even more if low-carbon grant funding can be secured. To reduce future building retrofit costs, early energy and GHG modeling should become part of the City standard site master planning process (see ZEBx, 2022).

Other Alberta Municipalities

The following Alberta municipalities are considering or have adopted the following sustainable building policies and implementation guidance documents.

	Document	**Application**	**Adoption Date**	**Summary and Status**
Banff	*C7006 Municipal Sustainable Building Policy*	All new municipal buildings and	2021-04-26	Buildings require certification through one or more green building rating systems

		building expansions		
Calgary	*CP2021-02 Sustainable Building Policy* *Sustainable Building Guidance Document Version 2.0 - January 2024*	All new City-owned and City-financed facilities	2004-09-13 2021-07-05 (last amended)	The City of Calgary plans, delivers, and maintains infrastructure that shows smart investment beyond initial construction costs by addressing the **lifecycle** impacts on buildings through: • operating costs, • effects of climate change, • the environment, and • the people who use the infrastructure. The *Sustainable Building Guidance Document* details specific sustainability targets, requirements, and deliverables.
Lethbridge	-	-	-	In development
Edmonton	*C532 Sustainable Building Policy* *Procedure – Climate Resilient Design and Construction of City Buildings*	All City-owned and occupied facilities; new constructions or additions with floor area of >500 m^2	2017-05-09 2018-03 (last amended)	New City-Owned buildings will be designed and constructed in a manner that mitigates the risks and impacts of future energy and carbon pricing and provides flexibility to incorporate emerging technologies that become cost effective in the future.

References:

1. BC Energy Step Code (2024), *How it Works*, https://energystepcode.ca/how-it-works/
2. City of Edmonton (2024), *Jurisdictional Scan* - Best practices and key learnings from other jurisdictions supporting zero emission building construction, https://pub-edmonton.escribemeetings.com/filestream.ashx?DocumentId=213085
3. Heelan Powell, B., Lockhart, K., Unger, J., Webb, R. (2023), *Policy Tools for Achieving Energy Efficient and Emissions Neutral Buildings in Edmonton*, https://www.efficiencycanada.org/edmonton-report/
4. Government of Canada (2024), *Canada Green Buildings Strategy*, https://natural-resources.canada.ca/transparency/reporting-and-accountability/plans-and-performance-reports/departmental-strategies/the-canada-green-buildings-strategy-transforming-canadas-buildings-sector-for-net-zer/26065
5. HRD Corporation (2013), *The City of Calgary - Sustainable Return on Investment Analysis of LEED Certification for New Buildings Construction – REDACTED VERSION*, Feb 28 2013.
6. Integral Group (2020), *City of Edmonton Emissions Neutral Buildings: Final Report*, October 13, 2020, www.edmonton.ca/sites/default/files/public-files/assets/PDF/2020-10-13-EdmontonEmissionsNeutralBuildings.pdf?cb=1631929454
7. Kevin Lockhart (2024), *Provincial and Territorial Tiered Energy Code Adoption Landscape*, www.efficiencycanada.org/better-building-codes-2/

8. Mantle Developments (2022), *Best Practice Study on Climate-related Building Standards by Canadian Municipalities*, Prepared for the City of Calgary, May 2022, www.calgary.ca/content/dam/www/uep/esm/documents/esm-documents/calgary-climate-related-building-standards-study-report.pdf
9. National Research Council (2020), *National Energy Code of Canada for Buildings 2020*, https://nrc.canada.ca/en/certifications-evaluations-standards/codes-canada/codes-canada-publications/national-energy-code-canada-buildings-2020
10. Passive House Canada (2024), *Building Certification*, https://www.passivehousecanada.com/passive-house-building-certification/
11. Reimagine Architects (2024), *Red Deer Polytechnic Student Residence*, https://reimagine.ca/work/project/red-deer-polytechnic-student-residence
12. Town of Banff (2021), *C7006 Municipal Sustainable Building Policy*, https://banff.ca/DocumentCenter/View/344/Municipal-Sustainable-Building-Policy-C7006
13. ZEBx (2022), *Planning for High-Performance Buildings*, Net-Zero Energy-Ready Playbook Series, https://www.zebx.org/wp-content/uploads/2022/01/Playbook-Planning-High-Performance-Buildings.pdf