

FEASIBILITY STUDY

Village at ICE District Lands

Recommendation

That the March 20, 2024, Integrated Infrastructures Services report IIS01447, be received for information.

Requested Action	Information only		
ConnectEdmonton's Guiding Principle	ConnectEdmonton Strategic Goals		
CONNECTED This unifies our work to achieve our strategic goals.	Climate Resilience		
City Plan Values	CREATE.		
City Plan Big City Move(s)	Greener as we grow	Relationship to Council's Strategic Priorities	Climate adaptation and energy transition
Corporate Business Plan	Transforming for the future		
Council Policy, Program or Project Relationships	<ul style="list-style-type: none"> • C627 Climate Resilience Policy • C555 Private Public Partnerships (P3) Policy • Edmonton's Community Energy Transition Strategy • Climate Resilient Edmonton: Adaptation Strategy and Action Plan • District Energy Strategy 		
Related Council Discussions	<ul style="list-style-type: none"> • IIS01386, Downtown District Energy Initiative - Project Update, Executive Committee, June 23, 2023 • IIS02148, Implementing Edmonton's District Energy Strategy, Urban Planning Committee, February 27, 2024 		

FEASIBILITY STUDY - VILLAGE AT ICE DISTRICT LANDS

Previous Council/Committee Action

As the August 16, 2022, City Council Public Hearing, the following motion was passed:

That Administration, in collaboration with EPCOR and the developer to cost share a study, provide a report to Committee on a feasibility study for integrating the Village at ICE District Lands into the Master Plan for Downtown District Energy Initiative.

Executive Summary

- To determine the feasibility of integrating the Village at ICE development into the planned Downtown District Energy Initiative, Katz Group Real Estate, EPCOR and the City of Edmonton engaged in a study.
- The infrastructure concept for the District Energy integration proposes a staged approach, with the initial stage of development being providing heating and cooling energy from a temporary energy centre, later connecting to a permanent energy centre at the time when the load and customers increase.
- The result of this study indicates that integrating the Village at ICE District Lands into the development growth plan for the Downtown District Energy Initiative would present a strong and logical opportunity to reduce greenhouse gas (GHG) emissions at a competitive thermal energy cost, subject to further analysis that will need to be completed.
- Integrating the Village at ICE District in the Downtown District Energy Initiative will require continued communication and further analysis between Katz Real Estate Group, EPCOR and the City of Edmonton. All parties have committed to keeping each other informed and engaged in ongoing coordination of development and district energy system implementation timelines.

REPORT

The Downtown District Energy Initiative is a City-owned district energy system in downtown Edmonton, with a phased development and construction approach. Phase 1 of the Downtown District Energy Initiative includes the construction of a central energy centre at the Winspear through a design-build, operate, maintain and co-financing agreement with EPCOR and includes connections and the provision of thermal energy to the Winspear, including its current completion project, and the City-owned Century Place and Chancery Hall. The growth plan for the initiative identifies Phase 1A, consisting of City Hall, Stanley A. Milner Library and the Citadel Theater, as an immediate and relatively short-term opportunity.

The phased development approach, detailed in Attachment 1, continues to build clusters to the north of the downtown area and would require the construction of a second energy centre, as the generation capacity and space requirement of the first one would be exceeded. The last two development phases comprise building clusters to the west and south of the downtown.

The Downtown District Energy Initiative identified the Village at ICE District development as a potential connection to the district energy system in concept, being part of the development to the north of the downtown. However, at the time of the development growth plan generation, the Village at ICE District development was only rudimentarily included due to a lack of

FEASIBILITY STUDY - VILLAGE AT ICE DISTRICT LANDS

information of the number of buildings, projected gross floor areas and thermal energy demands.

Village at ICE District is envisioned to create a livable “urban village” environment with the opportunity for residential, commercial and mixed-use buildings with at-grade commercial uses and higher density residential above, as well as a new public park. The area is zoned Central McDougall Urban Village Special Area Zone (CMUV) and Neighbourhood Parks and Services (PSN). The Village at ICE District site is located adjacent to the downtown area and the MacEwan LRT Station, bounded by 105 Avenue to the south, 104 Street to the west, 106 Avenue to the north, and the lane between 101 Street and 102 Street to the east.

The Village at ICE District Downtown District Energy Initiative Connection Feasibility Study

Through the motion at Executive Committee on November 1, 2022, the three parties, Katz Group Real Estate, EPCOR and the City of Edmonton, engaged in the project to determine the feasibility of integrating the Village at ICE development into the development of the Downtown District Energy Initiative. The study evaluates the technical options to expand the Downtown District Energy Initiative and provide thermal energy service to the future Village at ICE District development. The study was conducted by an engineering company expert in the district energy field, providing high level details that should be considered as indicative only of technical and economic feasibility.

Scope and Assumptions

The scope of the feasibility study includes analysis of the heating and cooling thermal energy for the Village at ICE District development for 1) business-as-usual scenario, including commonly applied building-scale natural gas heating systems and electric air conditioning cooling systems, and 2) district energy concept, with heating and cooling systems in time connected to the Downtown District Energy system.

The Village at ICE District development scale and timelines are not specifically defined at this time, with uncertainty regarding building type, building size and development timeline. Therefore, a variety of development assumptions were established in collaboration with Katz Group Real Estate, EPCOR and the City of Edmonton to complete this feasibility study.

District Energy Concept and Infrastructure

The district energy concept buildout timeline has been developed to align with the assumptions for the Village at ICE District development. To meet the thermal energy requirements of the development without overcapitalization of the utility during the initial stages, the use of an interim district energy system is envisioned. The interim system would provide thermal energy service to the initial stages of the development, after which a permanent solution would be implemented to service the initial and remaining development stages through to full buildout.

The interim district energy concept consists of a temporary energy centre and permanent installation of distribution piping and building connections to the initial buildings in the development. Since building connections include permanent energy transfer stations, there would be no impact on building-installed systems due to district energy system expansion or changes to the energy centre. Temporary energy centres are common for district energy system

FEASIBILITY STUDY - VILLAGE AT ICE DISTRICT LANDS

development to support early stage development, and as demand for heating and cooling energy grows, they are replaced with permanent energy centres, reusing equipment where possible.

As the larger Downtown District Energy Initiative district energy system fully develops, a permanent Energy Centre would be constructed to support the full Village at ICE District development and other building customers in the identified building cluster in the northern downtown core. The permanent energy centre would allow for future connection to low-carbon energy sources, a key goal of the growing Downtown District Energy Initiative. Examples of these energy sources are geexchange and waste heat recovery opportunities. For Katz Group Real Estate, connecting the Village at ICE District development to the district energy system is expected to reduce the risks, challenges, and costs associated with owning, operating and maintaining individual building scale heating and cooling mechanical systems as part of their development.

Feasibility Study Outcomes

Integrating the Village at ICE District into the growing Downtown District Energy Initiative could present a strong and logical opportunity to reduce GHG emissions at a competitive thermal energy cost. Over a 25-year analysis from 2025 to 2050, the district energy concept results in an estimated 83,000 tonnes GHG emission reduction, a 60 per cent net GHG emission reduction compared to business-as-usual. GHG emission reductions are achieved through district energy systems operational efficiencies and the City's plan to purchase renewable attributes.

The district energy concept also could result in an estimated total five per cent cost savings relative to business-as-usual over 25 years. Total operational and maintenance costs are estimated to be 40 per cent less for the district energy concept. However, the district energy concept is estimated to require approximately 30 per cent more total capital cost compared to the business-as-usual costs at the development full build out.

Sensitivity analysis indicates that minimal impacts to project economics are estimated if the Village at ICE District development has up to a 10 per cent smaller buildout. A larger development buildout would improve the district energy concept economics and increase the estimated GHG emission reduction numbers.

Connecting the Village at ICE District to the Downtown District Energy Initiative district energy system represents a logical growth opportunity for both EPCOR and the City. The buildings connected to the district energy system during early Downtown District Energy Initiative phases serve as significant thermal loads for the permanent second Energy Centre, reducing risk of additional infrastructure and costs for district energy system expansion to the Village at ICE District Lands. Additionally, the proposed district energy system concept for the Village at ICE District development represents an opportunity for the City to reduce GHG emissions associated with heating and cooling for a significant development in the downtown core.

Further review and analysis of integrating low-carbon technologies for the Village at ICE District development district energy concept should be conducted when more details of both initiatives are available. One key objective of the Downtown District Energy Initiative, as stated in IIS 01368,

FEASIBILITY STUDY - VILLAGE AT ICE DISTRICT LANDS

is to further reduce GHG emissions and improve energy resilience by integrating more distributed renewable, low carbon energy systems.

Next steps and integration

Both initiatives are at an early stage to determine more detailed integration, which will depend on their individual progress and is subject to various internal and external factors such as market conditions, funding, and development decisions and progress. At this time no further work on the integration is needed.

The Village at ICE District has approved zoning under the Central McDougall Urban Village Zone to develop with a mix of commercial, residential and recreational uses. Integrating the Village at ICE District in the Master Plan for Downtown District Energy Initiative will require continued communication and partnership between Katz Real Estate Group, EPCOR and the City of Edmonton. All parties have committed to keep each other informed and engaged on ongoing coordination of development and district energy system implementation timelines and financial analysis. These actions and commitments will support the integration for potential future district energy service to the Village at ICE District development from the growing Downtown District Energy Initiative.

With phase 1 of the Downtown District Energy Initiative anticipated to start operation in Q3 2025, Administration continues to focus on the next stage, growing the system to connect to City Hall, Citadel and Stanley A. Milner Library.

Legal Implications

Public utilities owned or operated by municipalities that provide service within that municipality are regulated by their municipal councils and are exempt from Alberta Utilities Commission regulation pursuant to s. 78(2) of the *Public Utilities Act*, RSA 2000, c P-45. Pursuant to the *Municipal Government Act*, municipalities may pass bylaws that require properties to connect to public utilities provided by municipalities.

Public utilities that are not owned or operated by municipalities that supply water, heat, light or power are regulated by the Alberta Utilities Commission. Municipally controlled corporations are exempt from regulation by the Alberta Utilities Commission with respect to utilities that provide water or steam within a municipality pursuant to s. 75.4 of the *Municipal Government Act*.

Community Insight

Regular Downtown District Energy Initiative updates have been provided and presented to the Energy Transition Climate Resilience Committee (ETCRC) and have informed engagement for the Community Energy Transition Strategy. As part of the future project development, EPCOR and Administration are planning public consultation activities for the surrounding community to achieve awareness of the project and the overall initiative.

FEASIBILITY STUDY - VILLAGE AT ICE DISTRICT LANDS

GBA+

The initiative is not directly public-facing, and while there would be no changes in economical impact as a result of the project, the reduction of GHG emissions and the gain in energy resilience will be net positive impacts on a community level. In addition the direct liability towards Edmontonians is limited. The project does not foresee any medium or long-term impact to residents or visitors in the downtown area as a result of construction activities.

Attachment

1. Development Growth Plan for the Downtown District Energy Initiative