ENERGY TRANSITION
CLIMATE RESILIENCY
ADVISORY COMMITTEE

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Memorandum

April 11, 2020

To: Mayor Iveson and Council

From: Energy Transition and Climate Resilience Committee (ETCRC), Clean Energy Sub-Committee Chair Peter Amerongen

Subject: **CR_7754 Downtown District Energy Initiative (Agenda Item 6.2) City Council Meeting on April 15, 2020**

ETCRC supports, with qualifications, the Downtown District Energy System serving the Winspear, Chancery Hall and Century Place including the installation of combined heat and power (CHP).

We offer this support for several reasons:

- District energy systems powered from low carbon sources built in tandem with deep energy retrofits are essential for Edmonton to meet its greenhouse gas reduction commitment.
- While the current system is not ideal, the 1.5C modelling demonstrates the potential for it to make significant greenhouse gas reductions in the next few years. Deep early cuts are critical to bending the emissions curve and reaching our 1.5C commitment.
- The window of opportunity to initiate this project is closing rapidly. Investment in the DDES with CHP must proceed as part of the construction of the addition to the Winspear.
- The initiative is a shovel-ready project that creates jobs and economic stimulus to support recovery from the current crises.

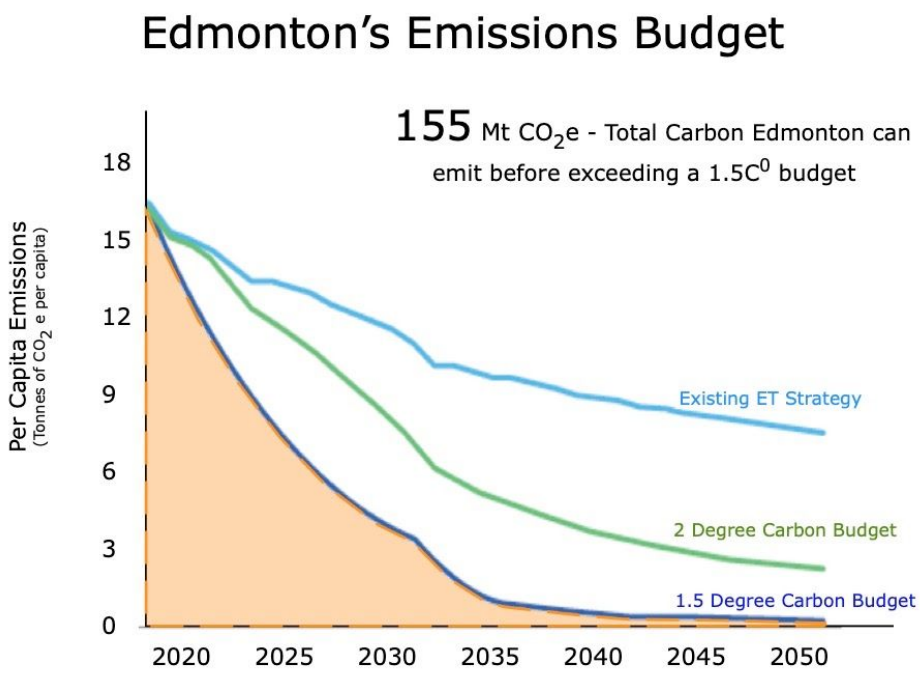
We are unable to offer unqualified support for this project because quantifying the benefits with sufficient confidence and establishing the real costs of those benefits turns out to be

very complicated. Considering the urgent need for deep emissions cuts with limited resources and the long term consequences of these decisions, you deserve a high level of certainty from us, which we unfortunately are unable to provide.

A few years ago, we would have supported this project more easily. Fewer emissions are obviously better. The stark necessity to cut Edmonton's emissions to near zero in a shockingly short time is a game changer. A simple intuitive analysis from this committee is not good enough. We have spent many hours discussing this project amongst ourselves, using the tools of our professions and bombarding city staff with requests for information and clarification which they have diligently, heroically provided.

Transitioning from an era of cheap abundant fossil fuels to zero emissions will be more complicated than just 'fewer emissions are better'. No one has done this before. We have had to develop a tool kit - an evaluation protocol - to properly weigh the costs, the emissions reduction benefits, and other trade-offs of this project and other projects. We and you need to know that the cost per tonne of CO_2 eliminated is competitive with the cost of other potential reduction measures so that we can allocate the scarce available resources efficiently. The complexities will become evident as we list our reservations and our requests for adjustments to mitigate them.

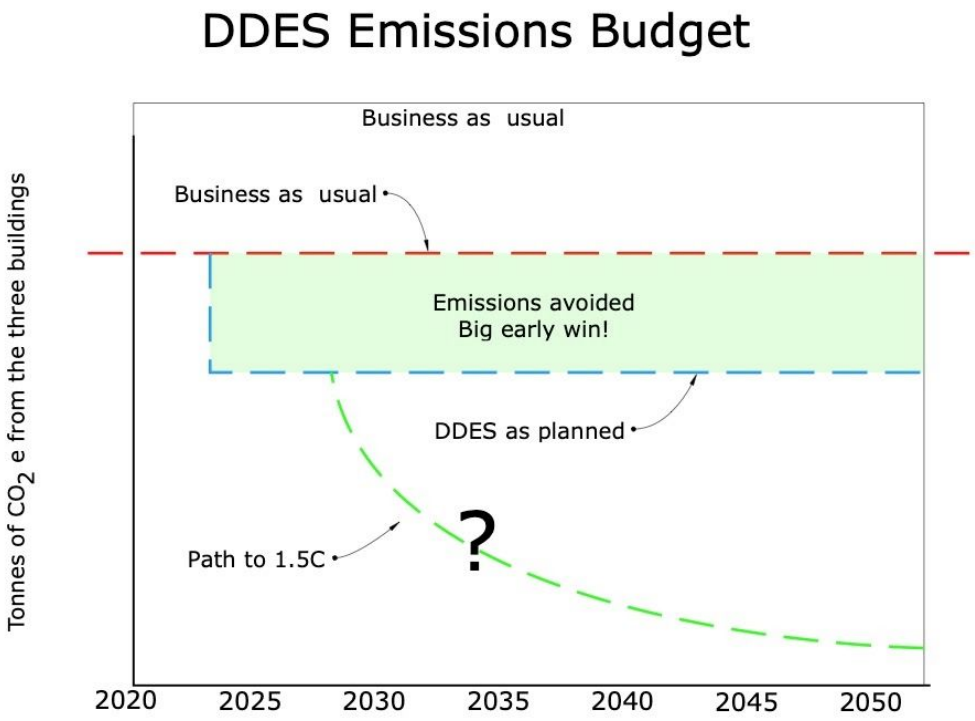
This diagram is included as a reminder of the enormity of the effort required:



A summary of our committees qualifications includes:

- **Costs:** As currently projected, the cost per tonne of CO_2 abated - based on the funding gap - seems reasonable now but is at the upper end of the range. However, the escalating costs of this project over time have concerned our committee. The project is exposed to risks of further cost increases, higher natural gas prices and carbon taxes.

- **Compatibility with a zero emissions future:** The project produces near-term emission cuts followed by a plateau that may be incompatible with a 1.5C scenario (see our rough graphical representation below).



- **Flexible system design:** We advise that the system be configured: so that this natural gas based, high temperature system can be transitioned practically and inexpensively to an ambient temperature system powered by renewable energy and capable of cooling as well as heating. The system must also be adaptable as these buildings undergo the deep energy retrofits necessary for a 1.5C future.

- **Renewable natural gas**: It is important to ensure that the path to near zero emissions for the system and the business case are not dependent on the assumption of cheap, abundant renewable natural gas. Renewable natural gas will

be an essential component of our transition to a zero emissions future and will likely be in high demand.

In future analysis and projects, ETCRC requests full lifecycle emissions of all project options. **Comprehensive accounting of emissions reduction potential is needed to fully understand all options including fugitive emissions from natural gas and electricity.** This is not an easy task and studies continue to have conflicting estimates quantifying fugitive emissions. However, even low-estimates are important for administration to include in analysis. The lack of such methodology has been a concern for us on the Downtown District Energy System project and has made it difficult to fully assess the different options' emissions reduction potential.

On balance we support the project because it gives Edmonton a foot in the door for the renewably powered district energy system that Edmonton's downtown ultimately needs, but it is critical that it be compatible with a near zero emissions future.