# Community Energy Investment Roadmap

*Stakeholder Engagement Summary*

March 2022

## Background

The *Community Energy Investment Roadmap* (CEIR) identifies City and community-wide systems level actions and investments required to achieve emissions reduction targets as outlined in the WCAP, and additional actions to meet the *OurWinnipeg 2045* target of net zero by 2050.

The CEIR project draws upon the expertise of internal and external targeted stakeholder groups to help determine achievable scenarios to model for the Winnipeg context. The City Internal Working Group (CIWG) included key internal City departments that will have a stake in any implementation of recommended programs or policies. The Technical Advisory Group (TAG) involved external stakeholders with technical expertise in climate change mitigation, or sector area knowledge.

## Engagement

The CIWG and TAG both met virtually over the course of the project. Meeting overview documents were provided in advance, discussions were had during the session, and handouts were provided after the meetings. Follow up emails and surveys were sent after the meetings to ask additional follow up questions. Review of the contents and comments were conducted during the next meeting.

One buildings sector specific meeting was held with relevant stakeholders from both the CIWG and TAG.

Both the TAG and CIWG were provided with the opportunity to review and comment on the draft report.

The TAG meetings included a presentation of the modelling and analysis, group discussion and breakout sessions. The discussion helped review and confirm data sources, identify and review modelling assumptions, and discuss and implementation and priorities.

**Table 1: Summary of TAG meetings**

| Date | Meeting | Theme |
|---|---|---|
| **July 22, 2021** | Virtual | CEIR Intro and overview, Business-as-Planned energy and emissions modelling, Low Carbon Scenario assumptions |
| **September 28, 2021** | Virtual | Net Zero Scenario Results, Implementation discussion |
| **November 10, 2021** | Virtual | Financial and Economic Analysis, Key Implementation Strategies |
| **November 26, 2021** | Virtual | Buildings Sector focused discussion |

The groups provided inputs during the following project phases:

- Baseline Conditions, GHG Inventory Update
- Data Gap Assessment, Energy and Emissions Forecast
- Economic and Financial Analysis, Implementation

The outcomes of their input served to:

- confirm current community emissions and identify any gaps in data collection
- review and confirm business-as-usual, business-as-planned and net zero scenario assumptions
- help identify actions and refinements to achieve GHG reductions targets up to 2050
- address any barriers and challenges to implementation of recommended actions
- review and provide feedback on financial implications analysis

## What We Heard

Through the engagement process the project team was able to identify gaps in data collection, review and confirm business-as-planned and net zero scenario assumptions, and review and provide feedback on financial assumptions. Importantly, through both internal and external stakeholder groups, the project team was able to identify barriers, opportunities or challenges to implementation of recommended actions.

Key findings from the meetings are grouped into themes and summarized below.



**To learn more about the Community Energy Investment Roadmap please visit winnipeg.ca/CEIR**

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**Business as Usual and Business as Planned**

Data sources and modelling processes were reviewed as part of the Business as Usual and Business as Planned discussions. After reviewing the preliminary content, the TAG was asked if the data sources, modelling assumptions and scope seemed on the right track, and if anything was missing. As a result of the discussions:

- Language added to report to state that actions required are not all within City scope, but collaboration and communication will be key across sectors and levels of government
- Existing building retrofit rate numbers were reviewed and clarified to identify only retrofits that improved energy efficiency
- Modelling assumptions were changed to match federal guidelines of all new light-duty trucks and passenger vehicles to be zero emissions by 2035.
- Waste related emissions were updated with data from the National Pollution Release Inventory program

**Net Zero Scenario**

Net Zero modelling assumptions were presented and discussed by the group. The scale of effort and change to reach net zero by 2050 was identified as a significant challenge. Deep energy retrofits and rate of industrial efficiency improvements were identified as very ambitious. Modelling and analysis were discussed to review the scale of change required to reduce emissions to net zero. Changes in energy system were discussed related to decentralized generation, district energy, and bio-energy systems.

Net Zero Scenario modelling results were reviewed with the TAG. The role of Manitoba Hydro infrastructure and its ability to support a transition to electrical transportation and heating and cooling systems were discussed. The role of heat pumps was reviewed in conjunction with the shift away from the use of natural gas in buildings and the report was adjusted to not specify air-source or ground source (geothermal). Remaining emissions from the waste sector were discussed, as despite increasing diversion rate targets, methane continues to be emitted from landfilled organics. Additionally, landfill gas systems were discussed as needing to be improved in capture rate, and be installed in active landfills accepting waste from Winnipeg. Renewable natural gas was identified as a transitional fuel that can be used to replace natural gas in some systems on the pathway within the Net Zero Scenario.

**Implementation**

Implementation discussion focused on five main categories: net zero buildings, zero emissions transportation, clean energy for everyone, waste management, and municipal coordination. Cross cutting themes included the need to work with other levels of government, industry and education stakeholders, and community. Identifying funding resources and equitable investment and opportunity were identified as key considerations. The potential to build on work and success underway is an opportunity. The approach of 'reduce, improve, switch' was seen to apply across sectors, including buildings, transportation, energy systems, and waste. More discussion, collaboration, and coordination were identified as key to successful implementation of a net zero pathway.

## Next Steps

The Community Energy Investment Roadmap will be presented to Council in spring 2022 for information. The CEIR can be used to inform the development of strategic City policies, infrastructure plans, and investments, by establishing targets and objectives for each sector. It provides annual GHG emissions targets against which progress can be tracked. Additionally, it may represent an economic development roadmap for the city, by identifying opportunities for new and existing businesses. The CEIR highlights the cost and benefits of actions, laying a foundation for the development of regulations, policies, and incentives to prioritize and accelerate action.



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Winnipeg

Meeting the Council approved target of net zero emissions by 2050 will require action across the city, together with national and global level efforts. The findings of this modelling and analysis can be used in decision-making by the City of Winnipeg, as well as organizations, businesses and community groups across sectors, both in collaboration with the City as well as in their own planning processes, to reach net zero emissions by 2050.

## Appendices

Appendix A – Technical Advisory Group List of Organisations

Appendix B – Technical Advisory Group Meeting 1 Notes

Appendix C – Technical Advisory Group Meeting 2 Notes

Appendix D – Technical Advisory Group Meeting 3 Notes

Appendix E – Buildings Discussion Meeting Notes

# Appendix A – Technical Advisory Group List of Organisations

# Technical Advisory Group List of Organisations

Assiniboine Credit Union

Climate Action Team

Canadian Centre for Policy Alternatives

Climate Change Connection

Canada Green Building Council

Efficiency Manitoba

Green Action Centre

International Institute for Sustainable Development

Manitoba Home Builders Association

Winnipeg Chamber of Commerce

Sustainable Buildings Manitoba

# Appendix B – Technical Advisory Group Meeting 1 Notes

# Winnipeg Community Energy Investment Roadmap

Technical Advisory Group #1

July 22, 2021

## Purpose:

To introduce the Technical Advisory Group to the purpose and methods of the CEIR, review the timeline and the Business-as-Planned energy and emissions modelling, and discuss the Low Carbon Scenario assumptions.

## Desired outcomes:

Allow for discussion and general consensus on the assumptions to be used in the Low Carbon Scenario modelling that will illustrate a pathway for Winnipeg to meet its emissions target of net zero emissions by 2050.

## Meeting Agenda:

1. Welcome
2. Introductions
3. Project goals/plan/timeline
4. Method
5. Business-as-Planned results
6. Low Carbon Scenario assumptions
7. Next steps

## Attendees:

SSG/WiT: Camilla Melrose, John Kong, Yuill Herbert

City of Winnipeg: Becky Raddatz, Jeanette Sivilay

TAG: Darrel Olson, Larry McInnes, Harry Schroeder, Beth Timmers, Tracy Hucul, Levi Higgs, Dennis Cunningham, Durdana Islam, Mel Marginet

## Low Carbon Scenario Assumptions

Below is a summary table with the draft modelling assumptions that will be used to develop a scenario to allow Winnipeg to meet its emissions target. We will be discussing these assumptions in detail, with in-depth explanations of how these actions will interact with each other, and the larger implications of the scenario as a whole.

These assumptions are provided to allow for you to review them prior to the meeting, allowing you to identify any questions or areas for deeper discussion during the meeting. These assumptions have been developed in consultation with the City.

Time will be provided after the meeting for you to submit further questions you may have as a result of the discussion during the meeting.

| | | Impact | Net-Zero modelling assumptions |
|---|---|---|---|
| **LAND-USE** | | | |
| **1** | Spatial distribution | | PLUM scenario 3 |
| **BUILDINGS** | | | |
| **New buildings - buildings codes & standards** | | | |
| **2** | Building Use Intensity | | New homes are 30% smaller in 2050 than the 2016 average (steady decline from 2016)<br><br>Only 20% of structures to be single-detached by 2050 (steady decline from rates in 2016) |
| **3** | New residential housing development solar PV installs | Avoided thermal and electric energy | -As of 2031, all new homes have 50% annual load coverage by solar PV<br>-By increasing storage capacity (i.e. batteries) with every renewable that is installed, reduce curtailment (i.e. the amount of time renewable energy supply is simply turned off, because it is not needed at that exact moment on the electricity grid) from 15% to 10% as renewables are installed |
| **4** | Commercial - New commercial development targets | Avoided thermal and electric energy | -in 2021, new buildings are 20% more efficient, with similar efficiency improvements in 2026, then 2031, resulting in new buildings being a total of 60% more |

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| | | | efficient<br>- include rooftop PV |
| **Existing buildings - retrofitting** | | | |
| **5** | Retrofit homes built prior to 1980 | Avoided thermal and electric energy | Starting in 2021, retrofit 100% of all existing dwellings built before 1980, exponentially, by 2035,<br>-Achieving on average thermal savings of 50%; electrical savings of 50%: including shifting to on-demand water heaters, and heat pumps for space heating |
| | Retrofit homes post 1980 | Avoided thermal and electric energy | Starting in 2035, retrofit 100% of all dwellings built between 1980 and 2016, exponentially, by 2050 (following pre-1980 dwellings)<br>- Achieve on average thermal savings of 50%; electrical savings of 50%: including shifting to on-demand water heaters, and heat pumps for space heating |
| **6** | Retrofits of commercial | Avoided thermal and electric energy | Starting in 2021, increase efficiency by 50% by 2050 (linearly) |
| **7** | Industry - (processes, motive, lighting, space cooling, plug load) other than coal use at AMD | Avoided thermal and electric energy | starting in 2021, increase efficiency by 50% by 2050 (linear) |
| **Renewable energy generation (on-site, building scale)** | | | 2 |
| 12 | Installation of heat pumps | Fuel-Shifting | 50% of buildings by 2050 |
| **8** | Solar PV | Local energy generation | Starting in 2021, install solar PV on pre-2016 buildings, achieving on average 50% of building electric load, scaling up to 50% of these buildings by 2050. |
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| **ENERGY GENERATION** | | | |
| **Low or zero carbon energy generation (community scale)** | | | |

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| **9** | Solar PV - ground mount | Local energy generation | Install a total of XX MW, 10 MW/yr (and associated storage) from 2022 to 2050, inside or outside city boundary (prioritizing inside)<br>-8.51 acres/MW |
| **9a** | Solar -PV (ground mount) Utility-scale storage | Local energy generation | Install sufficient battery storage to decrease curtailment rate from 15% to 10% |
| **10** | District energy | Local energy generation | 1) First undertake deep energy retrofits (see row 6);<br>2) decarbonize the system (100% of energy from clean sources (i.e. replacing natural gas with RNG) |
| **11** | Energy Storage (rooftop solar PV) | Local energy generation | By increasing storage capacity (i.e. batteries), reduce curtailment from 15% to 10% as renewables are installed |
| **12** | Wind | Local energy generation | 250 MW by 2050 inside or outside the city (owned by the City on behalf of the community), starting in 2021 (50 MW installed every 4 years, starting in 2030) |
| **13** | Renewable Natural Gas | Local energy generation | Replace any remaining NG in the system post retrofits and heat pumps with RNG (maximizing RNG feedstock) |
| **TRANSPORT** | | | |
| **Transit** | | | |
| **15** | Expand Transit | Avoided transportation energy | |
| **16** | Electrify transit system | Fuel-shifting | 100% by 2035 |
| **Active** | | | |
| **17** | Home Based Work/ Transportation marketing & individual planning | Avoided transportation energy | Private vehicle trips decline by 9% per person and vehicular trip lengths declined 6%.<br><br>All areas of Winnipeg are affected. Implement smart commute / home-based |

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| | | | work |
| **18** | Increase/improve cycling & walking infrastructure | Avoided transportation energy | By 2050, mode shift 50% of 2km trips to walking and 5km to cycling. |
| **19** | E-bikes & EV car-share | Avoided transportation energy | By 2050, 10% of trips up to 10km are complete by E-Bike or EV Car-Share |
| **20** | Emissions Free Zone | Avoided transportation energy | Emissions-free vehicle downtown zone as of 2025 (emitting vehicles are subject to a charge), resulting in 50% less combustion-engine vehicle trips starting in the zone - scale up to 100% by 2050 |
| **Private/personal use** | | | |
| **21** | Electrify municipal fleets | Fuel-shifting | 100% electric by 2040 |
| **22** | Electrify personal vehicles | Fuel-shifting | Zero-emission vehicles targets of 10% of light-duty vehicles sales per year by 2025, 30% by 2030 and 100% by 2040 |
| **23** | Low Carbon Commercial Transport Activities | Fuel-shifting | BY 2040, all heavy duty vehicles (semi-trucks) are hydrogen based<br><br>Light-duty commercial vehicles are 100% electric by 2050 (Taxi-Fleet) |
| **WATER AND WASTE** | | | |
| **24** | Landfill diversion/gas capture | Avoided methane Emissions | (1) By 2050, 95% organic waste sent to anaerobic digestion<br>- Re-route from compost to AD<br>(1a) Maintain waste diversion target<br><br>(2) By 2050, 25% reduction in water / wastewater consumption (behaviour change, leak detection system, greywater re-use) |

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| **25** | Wastewater Process Efficiency | Reduce Energy Consumption | Increase Efficiency by 30% by 2050; upgrades of sludge handling will reduce GHG emissions associated with the blower energy consumption |
| **26** | Wastewater to energy | | By 2050, biogas production:<br>- 95% methane recovery and conversion to Biogas |
| **Municipal Actions** | | | |
| **27** | Municipal buildings | | 80% of municipal buildings net-zero and solar PV by 2030 , 100% by 2050 |
| **28** | Vehicle Fleet | | 100% Electric by 2040 |
| **Sequestration and Land Accounting** | | | |
| **29** | Tree Planting | Sequestration | Add 50,000 trees in Winnipeg by 2050 |
| **30** | Natural Areas | Sequestration | Effect of Action 1, Land Use and remaining net populations put in greenfield areas |
| **Renewable Energy Procurement** | | | |
| **31** | Purchases of Renewable Electricity | off-set | Calculate remaining emissions needed to get to net zero |
| **32** | Purchases of Renewable Natural Gas | off-set | Calculate remaining emissions needed to get to net zero |

## Discussion

### Questions about assumptions for BAP and Net Zero Scenario

| Question | Response/action |
|---|---|
| Will a copy of the presentation be forwarded to the group? | Yes, will be sent out after the meeting |
| Is the population growth assumption consistent with those used in Our Winnipeg and WMR 2050 | The projections were provided by Conference Board, and extended to 2050 by the City |

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| plans? | Economist; they align with the PLUM modelling. |
| Does Manitoba Hydro not have plans to replace natural gas with RNG? The BAP assumption for natural gas stays the same until 2050. | No changes are explicitly made in the BAP, although if it is currently being projected to change the emissions factor for grid electricity then it is captured in the BAP. |
| Is there a roles and responsibilities map? Eg: federal government controls the fuel efficiency standards, vs the City that controls land use planning | BAP scenario for new building efficiency standards would align with LCS assumption (net zero by 2030); resulting from bill 38 to ensure a maximum of 18 months between national building code coming out and adoption in Manitoba<br>● Consider revisiting BAP with net zero by 2030 national code instead; but may impede being able to evaluate the financial impact of this measure in the LCS<br>Discussion on implementation - jurisdictional responsibility of federal code comes out and provinces adopt the code |
| New housing- can we look at moving toward a Passive House level of design and construction as the code minimum? The feds are looking at increasing standards but Winnipeg could look at phasing in standards. Toronto has http://www.passivehousecanada.com/wp-content/uploads/2017/11/Toronto-Zero-Emissions-Buildings-Framework-Report.pdf | Team to review linked report. |
| Are homes in Winnipeg trending towards smaller now? Is this a big lift as compared to current trends? | ● BAP existing building retrofit assumption too low - need to set more realistic rate based on what's occurring in Winnipeg (Efficiency Manitoba as source?); 1% annual renovation is too low but 10% energy use reduction is pretty high<br>● LC existing buildings retrofit assumption of 50% electrical and thermal savings too high, more realistic is ~20 - 30%; 100% retrofit by 2050 is too aggressive - some buildings just cannot be retrofit |

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| | • LC industrial energy efficiency of 50% by 2050 is too high; more realistic to aim 10-20%<br>• LC assumption of 100% electric space heating and cooling also too aggressive<br>• No feedback on transit electrification and mode share shift<br>• Manitoba Trucking Association for heavy vehicle transition to ZEVs<br>• BAP PUV electrification rate could be changed to align with new federal targets |
| Federal guidelines relating to BAP seem to be more aggressive than what's currently modelled for vehicles | BAP assumptions changed to match federal guidelines of all new light-duty trucks and passenger vehicles to be zero emissions by 2035. |
| No feedback on solid waste, wastewater, or water assumptions | |
| Support for decentralized generation<br><br>Some standalone systems being marketed by province, although no uptake at the moment<br><br>Some support for district energy<br><br>Consider bio-energy systems | |

# Appendix C – Technical Advisory Group Meeting 2 Notes

# Winnipeg Community Energy Investment Roadmap (CEIR)

Technical Advisory Group (TAG) Meeting #2

September 28, 2021.

## Meeting Objectives:

- To inform key stakeholders about net zero scenario modelling and analysis results
- To consult with key stakeholders about key implementation strategies, to which their area of expertise relates

## In Attendance:

- Becky Raddatz, Jeanette Sivilay, Alara Brinton, John Kong, Marcus Williams, Yuill Herbert, Eleri, Camilla Melrose
- Dudley Thompson, Darrel Olson, Curt Hull, Harry Schroeder, Mel Marginet, Laura Tyler, Dennis Cunningham, Janetta McKenzie, Levi Higgs

## Meeting Agenda:

- Welcome
- Introductions
- Progress Update
- Net Zero Scenario results
- Implementation discussion
- Next steps

| Session | Discussion |
|---|---|
| **Welcome** | - |
| **Introductions** | Becky Raddatz, Jeanette Sivilay, Alara Brinton, John Kong, Marcus Williams, Yuill Herbert, Eleri, Camilla Melrose, Dudley Thompson, Darrel Olson, Curt Hull, Harry Schroeder, Mel Marginet, Laura Tyler, Dennis Cunningham, Janetta McKenzie, Levi Higgs |
| **Progress Update** | Data gathering, modelling and analysis, and implementation options to date were reviewed |
| **NZS results** | - Hydro is projecting 7000 MW peak but currently they have 4000 power capacity.<br>- Discussion on building energy consumption and effects of LC actions:<br>  - Demand implications for electrical grid<br>  - Recommendation to look at a breakdown of space cooling and space heating reductions as a result of retrofits and equipment efficiency contributions from switching to heat pumps<br>  - Seems like ground-source heat pumps are the preferred technology over air-sourced<br>  - Lots of interest for follow-up discussion<br>  - What is currently being done to reduce NG consumption in the building sector (more having to do with implementation)<br>- NREL study for utilities on emissions targets that suggests it is not possible to get to zero emissions, disputed by another NREL study from Yuill on 100% renewable in LA for zero emission target. NREL Renewable Integration Study<br>- Discussion around remaining waste emissions:<br>  - Despite increasing diversion rate targets, there are factors that result in remaining emissions from organics in landfill<br>  - First order decay method, competing increasing population, Prairie Green landfill with no landfill gas capture, continuing 55% landfill gas capture at Brady (but not 100%)<br>- V2G as a strategy for reducing peak system demand.<br>- It's from 2018 but a great overview of where food waste occurs along the chain and various strategies for reduction including changing policies. http://www.nzwc.ca/Documents/NZWC-FoodLossWasteStrategy.pdf<br>- Is Prairie Green Landfill the same as Summit Road Landfill? PGL doesn't appear in Large Final Emitter data. |
| **Breakout Group Discussions using JamBoard** | |

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| **Implementation discussion**- Affordable NZ buildings | **First key policy/program/action:**<br>- new city buildings will not use natural gas<br>- Regulatory adoption, NECB<br>- Update Green Policy<br>- Review Residential Building policy (new), MHBA, WCA<br><br>**Key partners:**<br>- FCM<br>- MB Hydro<br>- Sustainable Building Manitoba<br>- Efficiency Manitoba<br><br>**Funders:**<br>- Off-set increase in electrical costs through local solar generation<br>- Long term reduction in operating costs<br>- FCM Green Municipal Fund<br><br>**Other Comments:**<br>- Education with Contractors and Consultants (Gas Fitters)<br>- Older building stock (Cost)<br>- Monitor city load demand to understand demand cycles<br>- lack of funding resources |
| **Implementation discussion-** Zero-emissions transportation | **First key policy/program/action:**<br><br>**Key partners:**<br><br>**Funders:**<br><br>**Other comments:** |
| **Implementation discussion**- Clean energy for everyone | **First key policy/program/action:**<br><br>**Key partners:**<br><br>**Funders:**<br><br>**Other comments:** |

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| **Implementation discussion-** Waste Management | **First key policy/program/action:**<br>- Reduce-improve-switch should focus on organics<br>- Organic composting city-wide programs<br>- Targeting packaging as a waste source<br>- Focus on food waste reduction as well as organics diversion<br><br>**Key partners:**<br>- Non-profit organizations<br>- Canadian food and restaurant organization<br>- Canadian stewardship services alliance<br>- Food Matters Manitoba<br>- Grocery stores- Retail Council of Canada<br>- Working with province for policy shifts<br>- Multi-material Stewardship Manitoba<br>- Green Action Centre Composting Education and Food Waste Reduction Programming (backyard composting, vermi composting, school composting, multi family dwelling composting)<br>- RNG with UofM<br><br>**Funders:**<br><br>**Other comments:**<br>- COVID resulting in disposable masks in generated waste and packaging<br>- The Province - we need a ban of organics at the landfill to make serious GHG reductions and to facilitate city wide organics collection. |

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| **Implementation discussion**- Municipal coordination | **First key policy/program/action:**<br>- Clearly define who is ultimately responsible for moving forward, and the governance structure<br>- Set up interim targets out to 2050, and assign responsibility (example every 5 years)<br><br>**Key partners:**<br>- FCM<br>- Federal Government<br>- Province- multiple departments<br>- Association of Manitoba Municipalities<br>- Hydro<br>- Winnipeg Metro Region<br>- work with other orgs in community, e.g. IISD, ACU, SBM, CaGBC, etc. Lots of people working hard on these issues<br><br>**Funders:**<br>- FCM<br>- Province of MB<br>- Federal Government<br><br>**Other comments:**<br>- Budget<br>- laying out how City departments work together, who is responsible, and clarity on roles for policy implementation |
| **Next Steps** | - Review of notes by the TAG<br>- Next meeting: financial modelling and implementation |

# Appendix D – Technical Advisory Group Meeting 3 Notes

# Winnipeg Community Energy Investment Roadmap

## Technical Advisory Group #3

## Meeting Details

Date: November 10, 2021

Time: 2:00 pm - 4:00 pm

Location: Zoom

## Meeting Objectives

- To inform key stakeholders about financial and economic analysis results
- To consult with key stakeholders about key implementation strategies, to which their area of expertise relates

## In Attendance:

Becky Raddatz, Jeanette Sivilay, Alara Brinton, John Kong, Marcus Williams, Yuill Herbert, Eleri, Camilla Melrose

Dudley Thompson, Darrel Olson, Curt Hull, Harry Schroeder, Mel Marginet, Laura Tyler, Dennis Cunningham, Janetta McKenzie, Levi Higgs

## Agenda

| Item | Discussion |
|---|---|
| 1. Welcome + Introductions | |
| 2. Update to the Net Zero Scenario | - comparison of 2016 base year emissions relative to Golder report done for 2011 emissions inventory |

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| 3. Financial Analysis | - $553 million investment per year - across feds, province, city, and private? Is there an allocation of which group is committed to that investment?<br>  - (Yuill) yes; no - but we do have experience in modeling out that work<br>- Is the $24 million net benefit broken down by action?<br>  - (Yuill) - financial modelling by zone, intervention and year is used to provide the net financial benefit<br>- WIll there be access to data/modeling results; to work out with city<br>- How do annualized yearly financials associate with infrastructure deficits floating around?<br>- There is no net metering arrangement in Winnipeg, it's differential buy-and-sell rates ; how much of the revenue category of the plan is associated with the sale of energy production? (majority of revenue is transit revenue, very little is from the sale of energy back to the grid)<br>- framing of Climate Action Team resiliency work is on energy, where emission reductions fall out as a consequence of energy resilience improvement actions<br>- There are workforce constraints for mass retrofits.<br>- https://www.hydro.mb.ca/accounts_and_services/generating_your_own_electricity/ |
| 4. What We Heard | - Are mandatory performance requirements included in the building policy recommendations for retrofits?<br>- Construction waste should be considered under waste actions |
| 5. Discussion- Buildings | Concerns<br>● Renters vs. landlords- complicated responsibilities<br>● Existing residential buildings- so many, with a diversity of capacity<br>● Upfront costs<br>● Equity in the ability to access deep retrofits<br>● Capital requirements on top of existing infrastructure deficits<br>● Awareness<br>● Capacity<br>● Technology and usability (e.g. heat pumps) |

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| | Hopes<br>● Densification<br>● That we can approach with a WWII mentality- how many people can we train? What materials do we need to get to the end result?<br>● Equity of transformation<br>● Leverage financing opportunities<br>● Leverage existing data, e.g. on building performance<br>● Significant employment opportunities |
| 6. Discussion- Transportation | Concerns<br>● So much focus on EVs<br>● Two-way charging needs to be planned and designed<br>● Metering at the charger to track the direction of flow<br>● Resistance in the retail vehicle selling and vehicle service industry<br>● Selling back to the grid, and legislative concerns that could be a barrier, specifically in the Hydro Act<br>Hopes<br>● By-in from residents for walking and biking<br>● People living closer to work<br>● Pandemic reminded people how to enjoy their own neighbourhood, walking, cycling<br>● That we will consider EVs as power sources<br>● Desire for community- not having to travel so far<br>● Walking, biking, transit can have fast impacts<br>● Consider old EV batteries for home power<br>● That we don't replace combustion vehicles for EV- we need fewer vehicles in total rather than a 1:1 replacement |
| 7. Discussion- Clean energy | Concerns<br>● Affordable access<br>● Demand vs. energy<br>● Slows down mode shift<br>● Need to upgrade the distribution system<br>● At the building level<br>● Incentives are motivating for individuals, not the community- no incentive to bring neighbours on board.<br>Cross-over |

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| | • There is a need for utility-owned district energy systems to make it a service for the user to tap into, vs having to go through individual hoops<br><br>Hopes<br><br>• Manitoba has a big head start!<br>• Hydro is built-in battery<br>• New investments in smart grids<br>• Side benefit of improved health<br>• local/domestic<br>• Robust network/transmission/distribution good for integration |
| 8. Discussion- Waste management | Concerns<br><br>• Construction waste and reusing material locally<br>• Residual LFG emissions<br>• Limited control- global manufacturing, supply chains, etc<br>• Recycling program co-opted by industry- industry needs to put recycled material back into use<br>• People's perceptions of recycling<br>• Need to produce less waste to begin with<br><br>Hopes<br><br>• Organic waste should be part of the food production system- recycled back into food production system<br>• Culture shift- more diversion<br>• Switch to reduce and reuse<br>• Reducing packaging<br>• Everybody feels like they are involved |
| 9. Discussion- Municipal coordination | Concerns<br><br>• History of relationship with the Province<br>• Clarity of roles<br>• Political will<br>• Limited municipal authority<br><br>Hopes<br><br>• Permitting needs to allow innovation in design and construction<br>• Taxpayer movement asking for more coordination<br>• Climate action plan advisory council<br>• Leadership<br>• Federal-municipal direct relationship<br>• Speed! |

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| | ● Other municipalities want to move on climate change- see the advantage of working together<br>● Need a retrofit code- can't build your way to emissions reductions, you can only retrofit your way to emissions reductions<br>● Expand the Office of Sustainability, and have them report directly to the CAO<br>● Better multi-level coordination at all levels of government |
| 10. Next steps | Review of notes by the TAG<br>Review working copy of CEIR |

# Appendix E – Buildings Discussion Meeting Notes

# Winnipeg Community Energy Investment Roadmap (CEIR)

Buildings Group special discussion

November 26, 2021.

## Meeting Agenda:

- Welcome
- Introductions
- General Discussion about buildings modelling
- Next Steps

| Session | Discussion |
|---|---|
| **Welcome** | - |
| **Introductions** | Attending:<br>Becky Raddatz, Alara Brinton, Jeanette Sivilay (CoW)<br><br>Camilla, Marcus, John, Yuill (SSG)<br><br>CIWG and TAG: Dudley Thompson, Darrel Olson, Laura Tyler, Glen Stefanyshen, Harry Shroeder, Dennis Cunningham, Curt Hull, Linda Hathout, Rick Klassen, |
| **General Discussion on Buildings Modelling** | - Review of modelled scenarios including:<br>  - Methodology of CityInSite buildings modelling approach<br>  - Overview of assumptions and data inputs for the modelled scenarios<br>- Q: Can the group have access to the scenarios and assumptions that shaped the modelled curves?<br>A: Yes, all are available to the group, and can be circulated. All assumptions will also be included in the final report for the CEIR<br>- The group wants to know more about the electrification and assumptions to get to the results- thermal vs electrical load<br>- Framework of 'Reduce, Improve, Switch' was reviewed<br>- Costing and financing - is this private investment? Government financing?<br>  - CEIR does not specify but does state that everyone, all levels, will need to be involved to meet net zero goal<br>- How will the costs and solutions be implemented? Does the model include costs going up over time (contractor and material costs)<br>  - Assumptions are made about changes in costs over time for materials, labour, energy, and carbon. These projections can be difficult to confirm, and are subject to change as markets change over time. |
| **Next Steps** | - Group members will submit further questions if they develop<br>- Group members will continue to participate in the TAG, where they will review assumptions and results and help shape the implementation strategy for the CEIR |