COMMUNITY CLIMATE ACTION PLAN

September 2021

Community Energy Association

MOUNTAINS OF OPPORTUNITY
CRANBROOK

Acknowledgements

This Community Climate Action Plan was developed by the City of Cranbrook in collaboration with the Community Energy Association (CEA). Partial funding for developing this Plan was provided by BC Hydro. We would like to acknowledge the many individuals and organizations who participated in the development of this Plan. We truly appreciate your time and contributions.

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Executive Summary

The City of Cranbrook (City) Community Climate Action Plan (Community Plan) carves a path towards a low carbon future: A future where City residents experience the benefits of a connected, healthy, and economically prosperous community, while taking action on climate change and adapting to climate impacts.

The climate is changing locally, provincially, and globally. The average global temperature has already increased by 1 degree Celsius (°C) above pre-industrial levels. In Cranbrook, the annual average temperature has increased by 1.7°C over the last century, with upward trends expected to continue. By 2050, Cranbrook expects to experience an average annual temperature increase of up to 2.2°C with an additional 24 days over 25°C each year (under RCP 8.5, high carbon scenario). In March 2020, an analysis of climate adaptation indicators in the Cranbrook area was completed and found that Cranbrook can expect to experience:

- increasing rainfall events during the winter season;
- decreasing rainfall events during the summer season; and
- increasing extreme weather events (extreme heat days; heavy rainfall)

The City has been progressing on climate action initiatives over the last several years. Since 2012, the City has been actively reducing energy consumption through the BC Hydro Energy Management Program. Additionally, the City has been completing long term infrastructure planning for stormwater management, water supply, and natural assets to mitigate future climate impacts. The greatest contributions for the City in reducing GHG emissions and mitigating climate impacts at a community level include:

- Implementation of the BC Step Code;
- Curbside Recycling Program;
- Water Smart Program (Ambassador; low flow toilet rebates; rain barrel rebates); and
- Development of a Water Master Plan and Storm Water Master Plan.

In 2017, the City joined the Federation of Canadian Municipalities (FCM) Partners for Climate Protection Program (PCP Program) to continue making progress on climate action initiatives at a Community and Corporate level.

The City has developed greenhouse gas (GHG) reduction targets at a community level through the development of this Community Plan. The Federal and Provincial government GHG reduction targets were reviewed, and the GHG reduction targets of other BC municipalities were reviewed and compared during the development of this Plan. The Federal Government has committed to a 40% to 45% reduction target by 2030 (from 2005 baseline) and a 100% reduction target by 2050. The BC Government has committed to an 80% reduction target by 2050 (from 2007 baseline). The City has set targets for 2030 (40% reduction) and 2050 (80% reduction), with the year 2007 established as a baseline.

	Baseline Year	GHG Reduction Target	
		2030	2050
Federal Government	2005	40-45%	100%
Provincial Government	2007	40%	80%
City of Cranbrook	2007	40%	80%

Through engagement sessions with staff and stakeholders, several community action items have been identified to be implemented and explored over the next 30 years to achieve the City's Community GHG reduction targets. This Plan identifies actions for transportation, buildings, waste, organizational readiness, as well as complementary climate adaptation and mitigation actions that can be championed by residents, businesses and visitors. The purpose of this Community Plan is to outline a practical approach for the City to use its capacity, as a municipality, to help residents and businesses save energy and, by doing so, save money and reduce greenhouse gas emissions.

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Climate Action

In 2007, the City of Cranbrook (City) signed on to the BC Climate Action Charter, which is a voluntary agreement between the Province of British Columbia, the Union of BC Municipalities, and individual local government signatories who are committed to aiming to reduce GHG emissions, measure and report corporate greenhouse gas (GHG) emissions, and create an energy-efficient community.

In 2017, the City joined the Federation of Canadian Municipalities (FCM) Partners for Climate Protection Program (PCP Program). The PCP Program, which is managed and delivered by FCM and ICLEI – Local Governments for Sustainability Canada, provides a framework to local governments for taking inventory of GHG emissions, and developing targets and plans for their reduction. Over 450 municipal governments are working through the PCP Program to reduce GHG emissions, and implement a variety of climate mitigation and adaptation initiatives that result in a reduction of operational expenses and energy costs, and increase investment in the local economy.

The PCP Program uses a five-milestone framework to guide members in developing and implementing GHG emission reduction action plans at a community and corporate level. Community GHG emissions include those that arise from citizens and businesses (such as from vehicles and houses), whereas corporate GHG emissions include those that result only from municipal operations (such as from recreational facility operation or snow clearing). The PCP framework includes:

Milestone 1: Establish a baseline GHG inventory and forecast ***(completed Community level on June 9, 2021)***
Milestone 2: Set GHG reduction targets
Milestone 3: Develop a Local Action Plan
Milestone 4: Implement the Local Action Plan
Milestone 5: Monitor progress and reporting results.

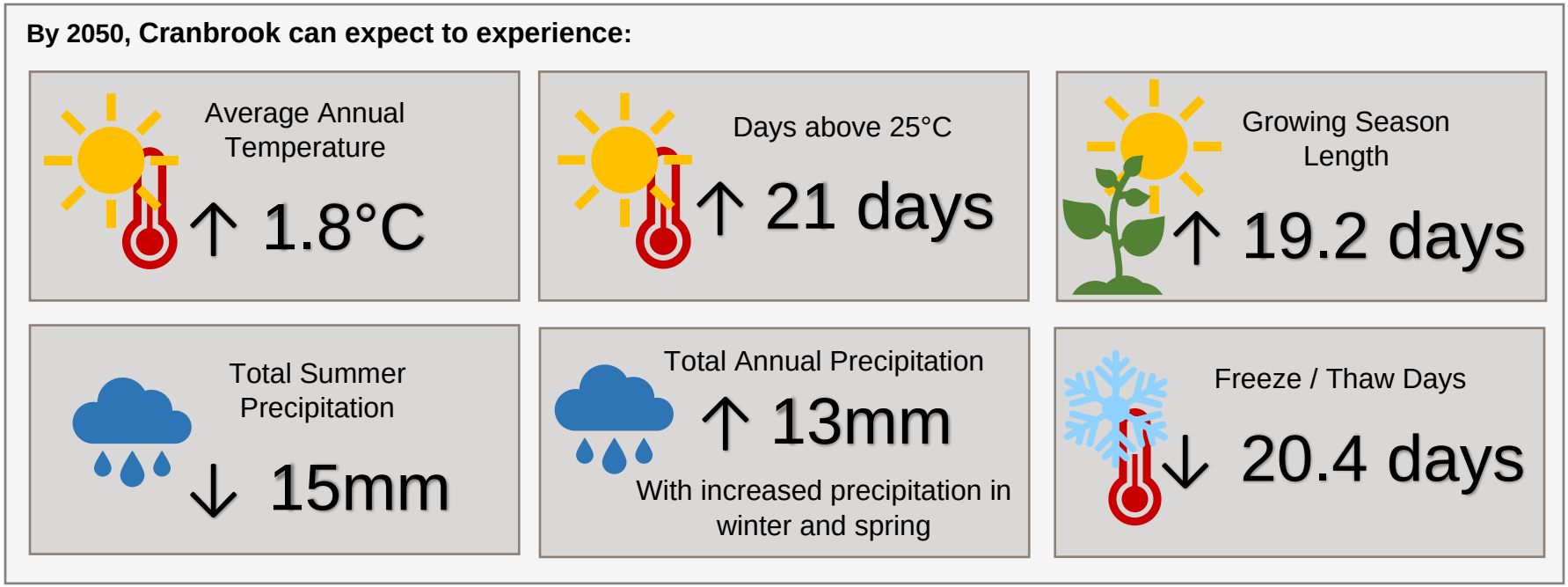
This Community Climate Action Plan (Community Plan) identifies community GHG emission reduction targets, and actions that will support reaching these GHG emission reduction targets. Following approval from Council, this Community Plan will be submitted to the PCP Program to meet the requirements of Community Milestones 2 and 3.

Having an up-to-date plan such as this Community Plan helps meet the requirements of the Provincial legislation, and also provides the City with a plan that can be used to apply for funding from the Federal or Provincial governments (and other grant sources) to implement the actions identified. This Community Plan supports the City's Strategic Plan commitments of mitigating the impacts of climate change; protecting the environment to maintain our healthy ecosystems; and fostering partnerships with community members, provincial and municipal governments to reduce the duplication of efforts and decrease costs.

Cranbrook's Local Climate

In March 2020, the Columbia Basin Rural Development Institute led a study to identify trends and impacts related to Cranbrook's local climate and surrounding environment. The purpose of this study was to gain a greater understanding of these trends in order to be better prepared for climate resilience in the City's long-term planning and infrastructure upgrades. The study included an analysis of temperature and precipitation trends; extreme weather and emergency preparedness; water supply; flooding; agriculture; and wildfire. Over the last century, the City has experienced increases in seasonal and annual temperatures, precipitation, extreme weather, and growing degree days (amount of heat available for growth and development of plants/crops). It is anticipated that higher average annual and seasonal temperatures are expected to continue to increase. The precipitation in Cranbrook is also changing, with more precipitation expected in the spring, and less throughout the summer months. A summary of temperature and precipitation trends, reported under the RCP 4.5 (low carbon) scenario is provided below. For additional information on the overview of climate change trends in Cranbrook and the Columbia Basin, please visit https://basinclimatesource.ca.

By 2050, Cranbrook can expect to experience:



Cranbrook's Climate Action Initiatives

The City of Cranbrook has been supporting climate action initiatives for several years. An overview of key climate action initiatives are identified below.

In Progress	Water Supply Master Plan Official Community Plan update Economic Development Plan Downtown Revitalization Plan
2021	Adoption of BC Building Code, Energy Step Code 1 & 2 Residential curbside recycling collection begins Natural asset management inventory, condition assessment & risk identification completed City acquires first fleet electric vehicle
2020	Solar panels installed at Cranbrook Public Library Secondary suites approved in residential areas
2019	Rain barrel rebate program launched Wildland urban interface initiated Trail network links completed
2017	Heat-recovery project completed (Western Financial Place pool dehumidification)
2016	Restore Joseph Creek partnership begins
2015	All City-owned streetlights converted to LED Joseph Creek Management Framework completed Cranbrook receives Level 3 Recognition for CARIP reporting
2014	First public electric vehicle charging station installed
2012	City joins BC Hydro's Energy Manager program Asset management investment plan completed
2010	Low flow toilet rebate program initiated
2007	Signatory of BC Climate Action Charter

BC CLIMATE ACTION COMMUNITY 2015

Benefits of Climate Action

This Community Plan consists of both climate mitigation (reducing greenhouse gas emissions) and climate adaptation (preparing for the impacts of a changing climate) initiatives in the community. With proactive long-term planning, the community can incorporate natural resources and infrastructure with engineered assets to mitigate impacts to climate action, and leverage the co-benefits of the environmental, economic and social impacts to these climate mitigation and adaptation initiatives.

Environmental Impacts

The implementation of climate adaptation initiatives provide the community with increased resilience to environmental impacts (ex: flooding, heat waves, and water quality) that are experienced with changing temperatures, precipitation and air quality. We can improve how the environment responds to changing climates by incorporating natural asset management into our responses to these impacts. The co-benefits of climate action initiatives include improved response to flooding, heat waves and water quality, and enhancements to green spaces, tree cover and natural systems restoration.

Economic Impacts

Climate mitigation and adaptation initiatives require people, money and businesses to support and implement these actions. By investing locally and regionally in these initiatives, we are increasing economic development in the community and providing improvements in job creation. These projects recirculate savings in the local economy; provide sustainable asset management; and create energy resilience and affordability.

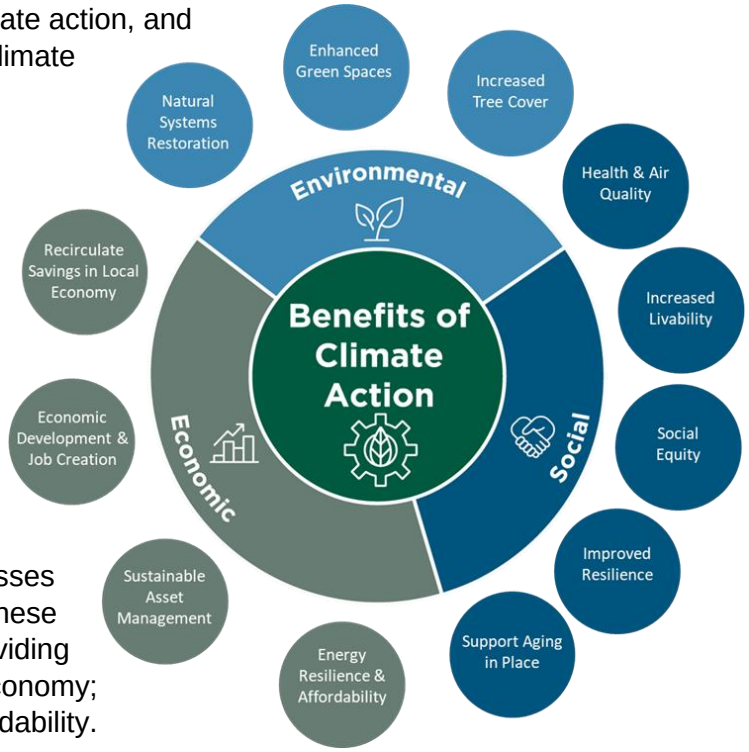


Figure 1: Benefits of Climate Action

Social Impacts

Climate mitigation and adaptation measures provide social benefits in the community. The implementation of active and accessible transportation and improved green spaces can improve quality of health and livability. When supporting local food systems, we are also improving resilience to increasing food costs.

In Cranbrook, the median annual home energy expenditure is $1,725, with some households spending up to $2,401 per year on energy costs (CUSP network, 2016). Approximately 16% (1,285) of households in Cranbrook spend more than 6% of their income on energy costs, which is considered energy poverty. By implementing energy conservation initiatives and supporting

the use of energy conservation grants and incentives, the number of residents experiencing energy poverty can be decreased, resulting in improvements of resilience and livability within the community.

Climate Action Plan Development

The development of this Community Plan followed the PCP Program's milestone framework.

PCP Milestone 1 – Baseline Inventory & Forecast

An inventory of the Community GHG emissions was developed using data from 2007 to 2018 for buildings, transportation and waste. This data was obtained from the Province of BC and was measured using the BC Methodological Guidance for Quantifying GHG Emissions. A baseline GHG emission year of 2007 was established; this year was selected in order to adequately compare GHG reductions to the Provincial baseline year (2007).

Using the data from 2007 to 2018, the Business As Usual (BAU) forecast was developed. The BAU shows how GHG emissions change each year if no further action to decrease GHG emissions were completed. The BAU forecast assumes: population growth (0.82% per year based on capital planning studies); increased vehicles due to population growth; increased buildings due to population growth; increased concentration of atmospheric greenhouse gasses; changing weather patterns; and future impacts from Provincial and Federal policies.

Further details on the emissions factors, inventory and data assumptions can be found in Appendix 1 – Inventory and Modelling Methodology.

PCP Milestones 2 & 3 – Emissions Reduction Target & Develop a Local Action Plan

Stakeholder engagement workshops were facilitated by the Community Energy Association on April 28th and May 6th, 2021 to gather feedback on climate action initiatives and discuss how stakeholders may collaborate on climate action initiatives. The stakeholder engagement sessions identified several priorities including waste diversion and curbside collection programs; improvement of active transportation and public transportation services; encouraging building energy efficiency; and increasing electric vehicle charging infrastructure.

Feedback from community engagement sessions that have been completed by the City over the last several years were also reviewed to identify priorities that relate to this Community Plan. The results of the following community engagement surveys/sessions were incorporated into this Plan:

- City of Cranbrook Strategic Plan Engagement Survey Results (2020);
- Cranbrook Age Friendly Community Assessment Report and Action Plan (2019);
- City of Cranbrook Parks and Recreation Master Plan (2016); and
- City of Cranbrook Integrated Community Sustainability Plan (2011).

These engagement surveys/sessions supported the information gathered during the CEA facilitated stakeholder engagement sessions, and also identified the need for watershed protection and reducing the risk of wildfire and flooding in the community.

Figure 2: Feedback from Engagement Surveys and Sessions

Following the review of the feedback from the stakeholder engagement workshops, the climate action priorities were refined with City of Cranbrook staff. GHG emissions were then modelled using the draft climate action priorities in order to determine potential GHG reduction targets. The GHG model was reviewed by CEA staff and City staff in order to identify achievable GHG reduction targets for the community based on the identified climate action priorities. This Community Plan identifies the draft Community GHG reduction targets and the climate action strategies to achieve those targets.

Cranbrook's Current Emissions

The current state of energy and emissions is shown in Figure 3 for each sector in 2018. In 2018, for the entire community of Cranbrook:

- total energy consumption was 3,510,956 GJ;
- total GHG emissions were 187,888 tonnes of CO_2e;
- total energy expenditure was $91,057,000.

Passenger vehicles (Class 1-2b) account for the greatest proportion of energy (32%), emissions (41%), and energy costs (44%). When combined with commercial vehicles (Class 3 to 8), transportation as a whole accounts for 64% of emissions in Cranbrook. Residential buildings account for 18% of the community's GHG emissions, with commercial and small/medium industrial (CSMI) buildings accounting for 14%, and waste at 4%.

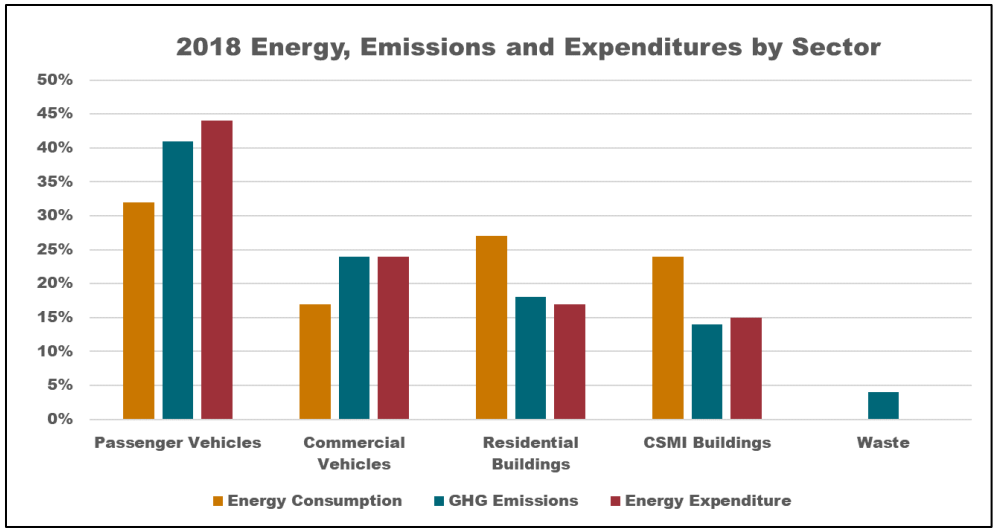


Figure 3: Cranbrook's Current Energy, Emissions and Expenditures breakdown by Sector (2018)

In 2018, over $62 million was spent on vehicle fuel and $29 million on home energy in Cranbrook. The waste sector in this inventory only considers GHG emissions emitted directly from the waste itself during its decomposition; these emissions amount to 4% of total community emissions.

Figure 4 (next page) shows Cranbrook's emissions and energy expenditure in terms of fuel source rather than sector. Mobility fuels are comprised of gasoline and diesel emissions from passenger and commercial vehicles, and account for the majority of community emissions (64%) and energy costs (68%). Electricity and natural gas are primarily used in buildings, but small amounts may be used in other sectors, such as passenger vehicles (ex: electricity for EV's). Natural gas is a significant emission source in Cranbrook at 29% of all community emissions, but only comprises 12% of costs. On the other hand, electricity accounts for 17% of community costs, yet only 1% of emissions. This is because electricity in BC has very low emissions associated with it, but it is more expensive per unit of energy than natural gas. Heating oil, propane and wood combined account for less than 5% of emissions and expenditures because they are not the main source of energy in most buildings.

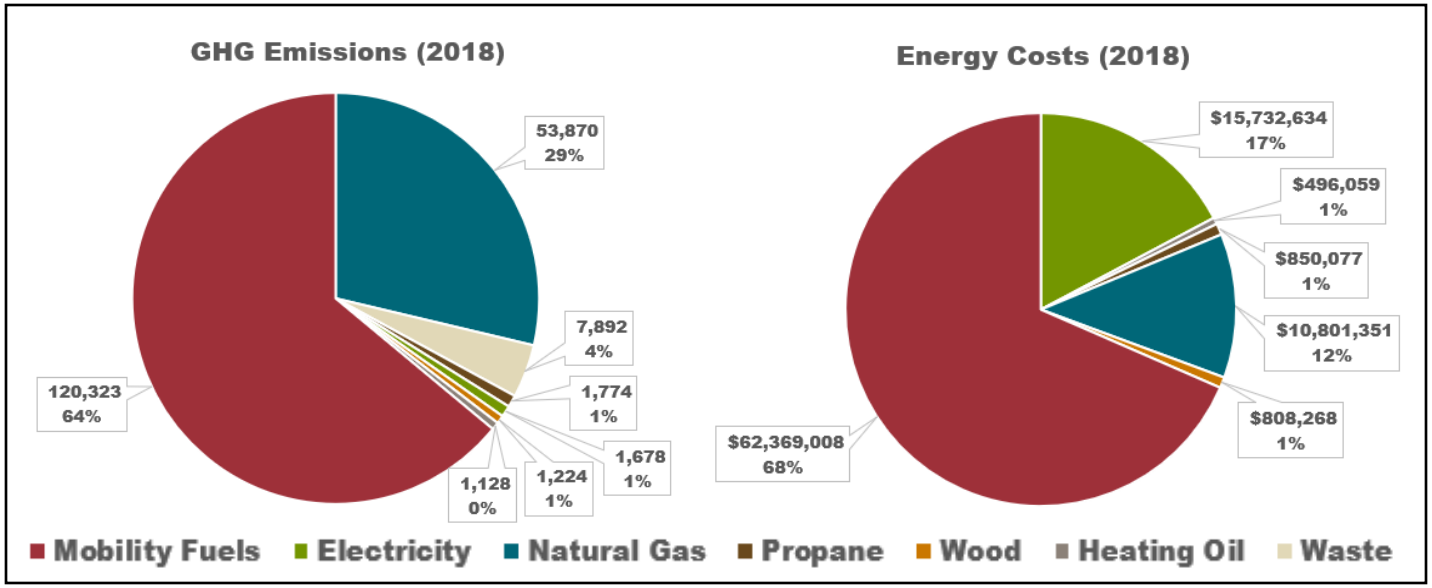


Figure 4: Community GHG Emissions and Energy Costs by Fuel Source

Cranbrook's Projected Emissions

Forecasting of the community's GHG emissions was completed to develop estimates of future emissions using the 2018 inventory data and business-as-usual (BAU) projections. The BAU projections are a way of describing what is estimated to happen to the community's emissions if no further action to decrease emissions (other than what is currently occurring) is completed. A number of factors are taken into account to develop BAU emissions scenarios, population growth being one of the most important considerations; as the number of people increase in a community, more buildings are needed/used and more vehicles are driven on roads.

Other considerations that were taken into account to develop the City's BAU emissions scenario for this report include the following:

- Changing climate patterns - as warmer winters and hotter summers occur, they are and will continue to change the way that energy is consumed in buildings.
- Potential future impacts of policies already adopted by other orders of government, such as:
    - Renewable and low carbon fuel standards;
    - Vehicle tailpipe emissions standards Zero-Emission Vehicle (ZEV) mandate as part of the CleanBC Plan, requiring 10% of new vehicle purchases by 2025 as ZEVs, 30% by 2030, and 100% by 2035; and

- The greening of the BC Building Code by 2032 (progressive steps towards net zero energy).

Figures 5 and 6 show Cranbrook's GHG emissions inventory from 2007 to 2018 and its business-as-usual forecast from 2019 to 2050. Figure 5 shows emissions from the five sectors stacked on top of one another to sum the total emissions. Figure 6 shows emissions by fuel type. Between 2007 and 2018 emissions increased by 1.2%. Without the implementation of climate action initiatives at a municipal level, emissions are expected to decline from 2021 onwards due to Provincial climate policies, such as the Zero Emission Vehicles Act in BC.

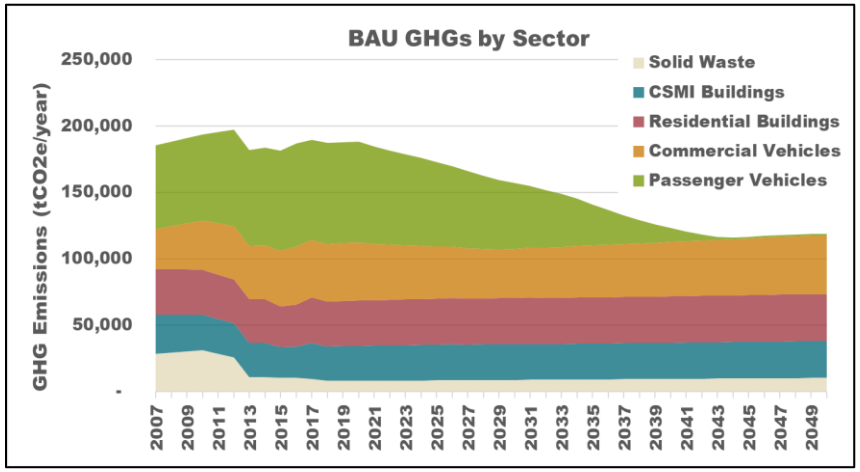


Figure 5: Business-As-Usual GHG Emissions by Sector

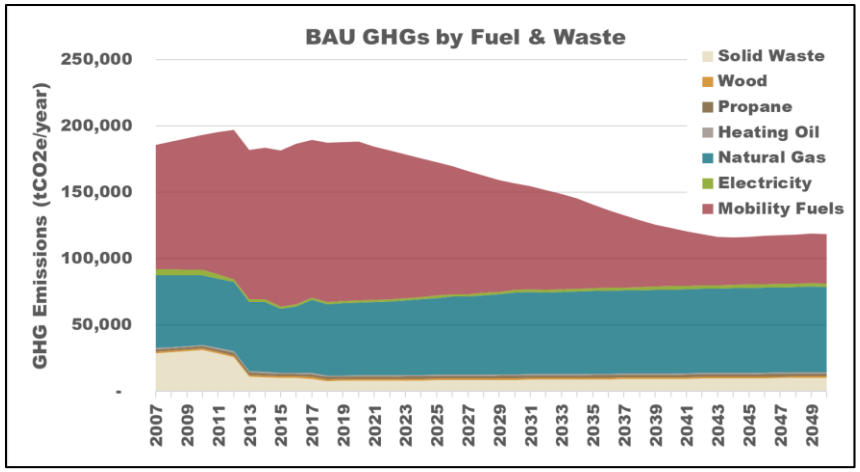


Figure 6: Business-As-Usual GHG Emissions by Fuel & Waste

Figure 7 shows the modelled emissions reduction by Climate Action Big Moves relative to the BAU. If all actions are implemented in Cranbrook to the degree outlined in this Community Plan, GHG emissions in 2030 could be reduced by 18,460 tonnes of CO2e, or 26% below 2007 levels. Note that although the 2050 emission reduction target is not met, it is anticipated that new technologies will become available in the future which will enable Cranbrook to achieve the target. It is recommended that GHG emissions be monitored, and future targets be updated every five years to take into account future technologies.

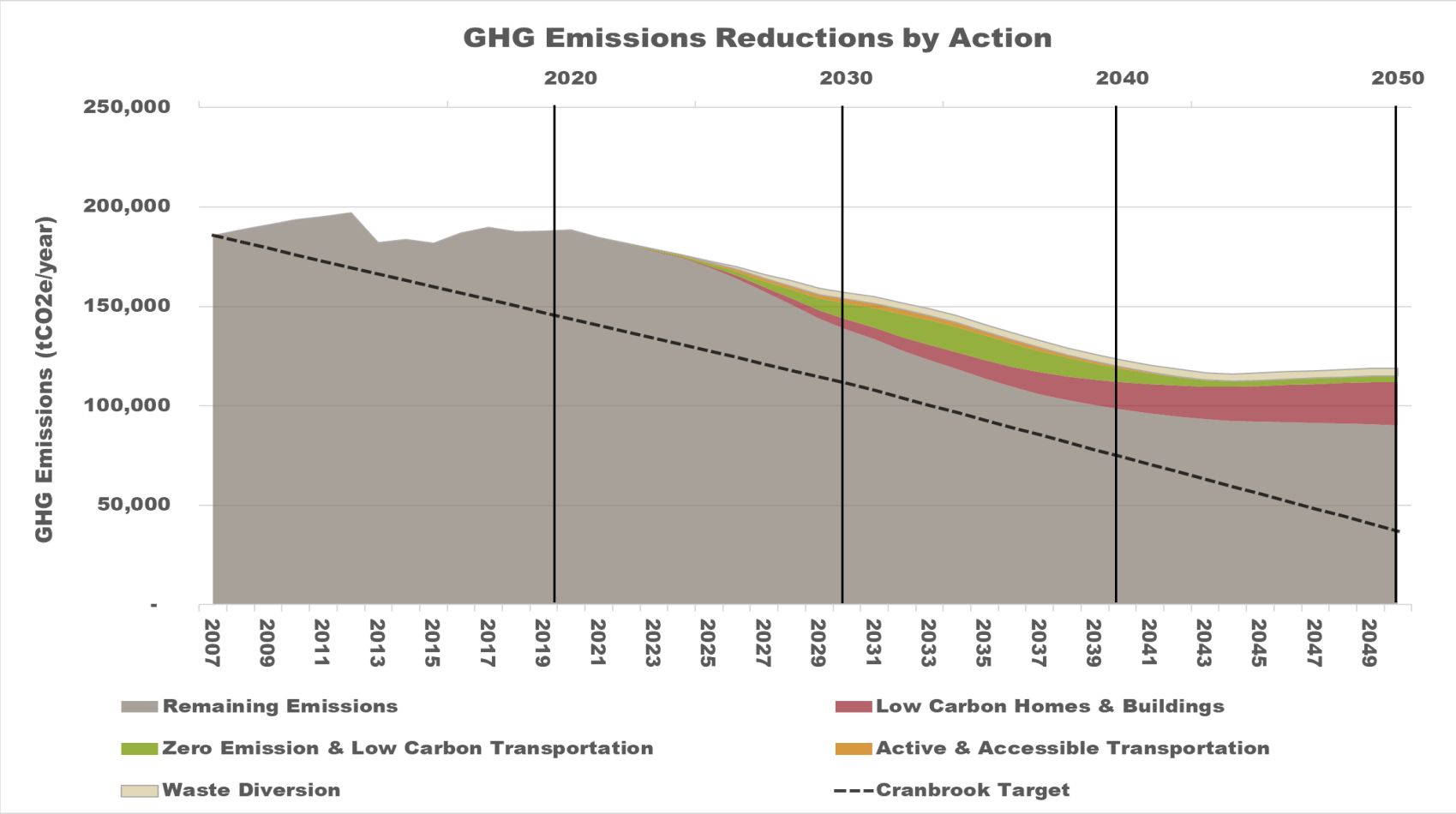
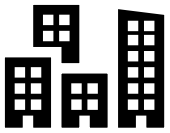


Figure 7: GHG Emission Reductions by Climate Action Big Moves

Climate Action Big Moves

The City's Climate Action Big Moves have been separated into five categories that have impact on reducing GHG emissions in the community. This focuses on the types of GHG emission reduction initiatives that can be supported by local government, in partnership with local businesses, organizations and residents.



LOW CARBON HOMES & BUILDINGS

Enhance energy efficiency and low carbon heating in new buildings. Support deep energy retrofits in existing buildings. This includes renewable energy initiatives.

Estimated GHG Reduction by 2030: 4,960 tCO_2e

ZERO EMISSION & LOW CARBON TRANSPORTATION

Encourage transition to zero-emission and low carbon vehicles.

Estimated GHG Reduction by 2030: 8,100 tCO_2e

ACTIVE & ACCESSIBLE TRANSPORTATION

Encourage active and accessible transportation and transit.

Estimated GHG Reduction by 2030: 2,100 tCO_2e

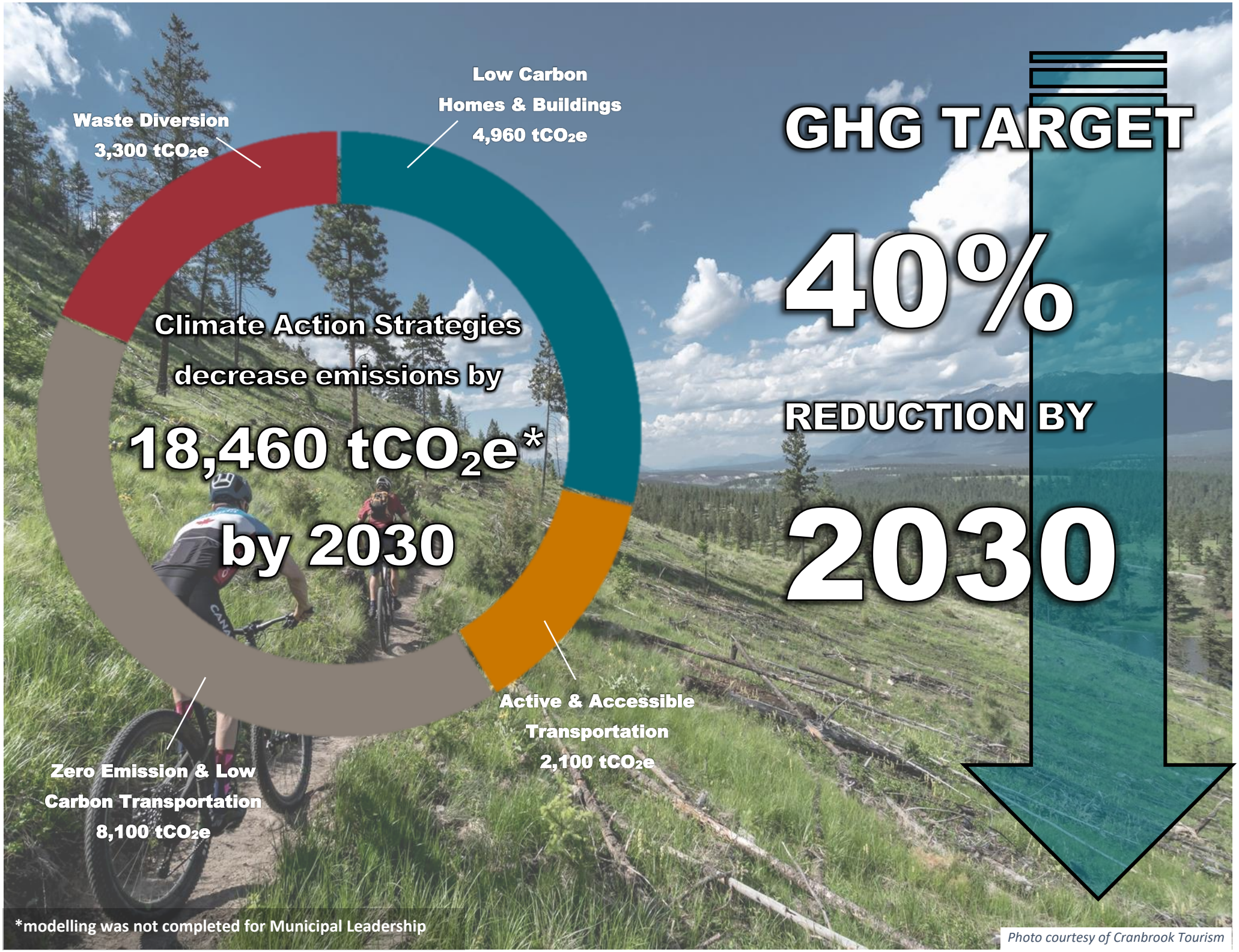
MUNICIPAL LEADERSHIP

Support and encourage community groups, businesses and residents to lead and participate in climate action initiatives. Collaborate with the community on climate action initiatives.

WASTE DIVERSION

Divert waste from the landfill through recycling, organics collection, and re-use it opportunities.

Estimated GHG Reduction by 2030: 3,300 tCO_2e


Low Carbon
Homes & Buildings
4,960 tCO2e
Waste Diversion
3,300 tCO2e
Climate Action Strategies
decrease emissions by
18,460 tCO2e*
by 2030
Active & Accessible
Transportation
2,100 tCO2e
Zero Emission & Low
Carbon Transportation
8,100 tCO2e
GHG TARGET
40%
REDUCTION BY
2030
*modelling was not completed for Municipal Leadership
Photo courtesy of Cranbrook Tourism


John Brass
INSPIRE PHOTOGRAPHY
Big Move 1
LOW CARBON HOMES
& BUILDINGS

1 - LOW CARBON HOMES & BUILDINGS

Introduction

Residential Buildings and Commercial and Small-Medium Industrial (CSMI) Buildings make up approximately 32% of the community's GHG emissions. The main source of residential and CSMI emissions is natural gas. Approximately 90% of building emissions is from natural gas, which is primarily used for space and water heating. By supporting energy efficient retrofits in existing buildings and energy efficient designs in new construction, the community GHG emissions from residential and CSMI buildings can be reduced.

To date, several initiatives have been completed within the community to promote energy efficiency in residential and CSMI buildings. These include:

- Building a Legacy Workshops for East Kootenay builders;
- Implementation of Step 1 of the BC Energy Step Code (January 1, 2021);
- Implementation of Step 2 of the BC Energy Step Code (August 1, 2021); and
- Kootenay Clean Energy Transition (2020 and ongoing).

By completing the initiatives above, the community continues to receive support for energy efficient design in new construction, which will result in reduced energy costs for homeowners and buyers.

For existing buildings, building owners can pursue various degrees of building energy retrofits, such as replacing individual pieces of equipment, sealing doors and windows, to completing comprehensive overhauls of the whole building (known as deep energy retrofits). Deep energy retrofits include upgrades to insulation, windows, doors, and mechanical equipment for ventilation, space heating and water heating. Additionally, building owners can complete retrofits that include fuel switching, such as replacing a natural gas furnace with a low-carbon electric heat pump. By completing deep energy retrofits, homeowners can decrease their energy bills by as much as 30%, resulting in a reduction of up to 4.5 tonnes of GHG emissions per year.

1 - LOW CARBON HOMES & BUILDINGS

COMMUNITY TARGET

All new homes and buildings will meet Step 4 of the Energy Step Code, and 25% of our community's new homes and buildings will use low or zero carbon energy sources for space and water heating.

Deep energy retrofits will have been completed on 9% of existing homes.

ACTIONS

Recently Completed

B1	Adoption of Step 1 of the BC Energy Step Code in January 2021 for Part 9 homes.
B2	Adoption of Step 2 of the BC Energy Step Code in August 2021 for Part 9 homes.

Ongoing or In Progress

		Lead
B3	Prepare for Provincial requirements of BC Energy Step Code, Step 3 in 2022.	DS
B4	Support Kootenay Clean Energy Transition initiatives.	PW; DS

Provincial Targets & Requirements

The Province's CleanBC Climate Plan outlines the timeline of the *BC Building Code*'s implementation of the BC Energy Step Code performance targets. These targets are:

- In 2022, all new buildings will be 20% more energy efficient than those built to meet today's minimum code requirements.
- By 2027, all new buildings will be 40% more energy efficient.
- By 2032, all new buildings will be net zero energy ready.

Rebates and resources are available to builders, homeowners & building owners through the **CleanBC Better Homes** and **CleanBC Better Buildings programs.**

Federal Targets & Requirements

Natural Resources Canada's **Build Smart: Canada's Building Strategy** establishes the goal that all provinces & territories will adopt a net-zero energy-ready model building code by 2030.

The Government of Canada's **Greener Homes Grant** provides grants for energy efficiency upgrades & FREE EnerGuide assessments. This program also supports training Energy Advisors across Canada.

Short-Term Actions to Implement (2-5 years)

		Lead
B5	Promote CleanBC, FortisBC, and BC Hydro programs and incentives to residents for home retrofits.	PW; DS
B6	Promote CleanBC and FortisBC new construction incentives that subsidize the costs of low-carbon technologies, improved insulation, working with an Energy Advisor, and mid-construction testing.	PW; DS
B7	Support the Kootenay Clean Energy Transition's initiatives such as collaborating across the region to provide relevant training to the building industry and realtors. Provide reference to the Natural Resources Canada tool for a list of local and regional Energy Advisors so that residents interested in their assistance have their contact information readily available.	PW; DS
B8	Prepare for Provincial requirements of the BC Building Code's upcoming Retrofit Code, expected in 2024.	DS
B9	Prepare for Provincial requirements of BC Energy Step Code, Step 4 in 2027.	DS
B10	Encourage building electrification and renewable gas by identifying barriers in permitting processes, and removing barriers.	DS
B11	Establish a marketing campaign that encourages energy efficiency retrofits in buildings and homes ***(2020-2024 Strategic Plan 3.4.4).***	PW

Long-Term Actions (>5 years)

		Lead
B12	Implement Provincial requirements of BC Energy Step Code, Step 4 in 2027.	DS
B13	Opt-in to Provincial carbon metrics for new buildings if/when they become available. Consider the impacts of embodied emissions in new construction.	DS; PW
B14	Explore opportunities to provide support to residents and businesses that complete energy efficiency retrofits ***(2020-2024 Strategic Plan 3.4.4).***	PW
B15	Consider Provincial requirements of BC Energy Step Code, Step 5	DS
B16	Continue to support a transition to practical renewable/alternative energy sources (wind, solar) whether new or existing construction upgrades.	DS
B17	Continually search for funding opportunities and incentive programs for both new construction and substantial renovations towards energy reduction.	DS

Big Move 2

ZERO EMISSION & LOW CARBON TRANSPORTATION

2 – ZERO EMISSIONS & LOW CARBON TRANSPORTATION

Introduction

Vehicles (passenger cars and commercial vehicles) make up approximately 64% of the community's GHG emissions. Transportation fuels, such as gasoline and diesel, are the largest expenditure on energy in Cranbrook, at over $91 million per year. In British Columbia, where at least 94% of all electricity is renewable and non-GHG emitting, electric vehicles (EVs) are already a viable near zero-emission option. Zero-emission vehicles (ZEVs) are clean, efficient and cost-effective. By supporting and accelerating the transition to zero-emission and low carbon transportation, the community GHG emissions from transportation can be reduced by up to 5.2% by 2030.

To date, several initiatives have been completed within the community to promote the transition to zero-emissions and low carbon transportation. These include:

- Accelerate Kootenays Initiative (2018-2020);
- Level 2 and Level 3 Public Electric Vehicle charging stations (9 stations in Cranbrook); and
- Kootenay Clean Energy Transition (2020 and ongoing).

By completing the initiatives above, the community has started to transition to zero-emission and low-carbon transportation options.

Figure 5: Public Electric Vehicle Charging Stations in Cranbrook

2 - ZERO EMISSIONS & LOW CARBON TRANSPORTATION

COMMUNITY TARGET

Over 15% of the community has transitioned to driving zero-emission vehicles.

Transit buses and school buses utilize low-carbon fuel, or are electric, providing clean, low-emission travel options for the community.

ACTIONS

Recently Completed

EV1	Accelerate Kootenays initiatives
EV2	Installation of multiple public EV chargers in the community

Ongoing or In Progress

		Lead
EV3	Support Kootenay Clean Energy Transition initiatives	PW; DS
EV4	Installation of multiple public EV chargers in the community (6 Tesla Level 3 Superchargers coming Q3 2021)	

Provincial Targets & Requirements

In May 2019, the Province enacted the **Zero Emissions Vehicle Act** to follow through on the transportation commitments in its **CleanBC** climate plan. The legislation requires manufacturers to ensure that a steadily increasing proportion of all new light-duty cars and trucks sold or leased in British Columbia will be zero-emission vehicles, leading up to 100% by 2040.

The Province established its **Clean Energy Vehicle Program** to support the transition. The program provides incentives to reduce the price of new zero-emission vehicles and charging stations, and works to raise awareness of the benefits of such vehicles.

Federal Targets & Requirements

The Government of Canada provides purchase and lease incentives for new zero-emission vehicles, and offers tax deductions for businesses.

For Commercial Transportation, the Government of Canada has tailpipe emission reduction standards, with a 40% reduction in tailpipe emission intensity by 2025 from 2015 levels.

Short-Term Actions to Implement (2-5 years)

		Lead
EV5	Support initiatives to increase EV charging stations at key locations throughout the community. If available, leverage grant opportunities and partner with community groups/businesses to install EV charging stations.	PW; DS
EV6	Support the Kootenay Clean Energy Transition's initiatives such as collaborating across the region to provide relevant training to the building industry and developers on EV charging infrastructure requirements.	PW; DS
EV7	Establish a marketing campaign that provides residents and businesses with updated incentive opportunities for EV charging infrastructure and electric vehicles ***(2020-2024 Strategic Plan 3.4.4).***	PW
EV8	Support the transition of transit buses and school buses to electric or low-carbon fuel.	
EV9	Establish an anti-idling policy.	PW

Long-Term Actions (>5 years)

		Lead
EV10	Continue to stay up to date on Building Code requirements and adopt EV-ready building requirements if required.	DS
EV11	Continue to stay up to date on low carbon commercial transportation options, and support the use of renewable, low-carbon fuels where electrification is not feasible.	DS; PW
EV12	Support joint procurement and funding initiatives for commercial/industrial EV charging networks, electric vehicles and low-carbon vehicles.	PW; FIN

Courtesy of Cranbrook Daily Townsman; May 6, 2021


Big Move 3
ACTIVE & ACCESSIBLE TRANSPORTATION
Photo courtesy of Cranbrook Tourism

3 – ACTIVE & ACCESSIBLE TRANSPORTATION

Introduction

Walking and cycling are not just weekend recreational activities – they are viable, beneficial, economical and environmentally friendly modes of transportation. Good sidewalks, bike lanes, and trails make active transportation a safe and enjoyable choice when traveling throughout the community. This same infrastructure also improves access for those who use mobility aids, such as scooters and wheelchairs. By improving the City's walking and cycling networks, residents and visitors are encouraged to choose active modes of transportation.

Planning for an active and accessible transportation system requires a paradigm shift. Rather than solve traffic and infrastructure problems by expanding roads or building more of them, communities can support all transportation options and facilitate alternative travel choices that reduce the need for more, or bigger roads. Not only does this reduce transportation-related emissions, but this shift can also result in reduced infrastructure and maintenance costs down the road.

To date, several initiatives have been completed within the community to promote the transition to active and accessible transportation. These include:

- Expansion of the Community's trail networks by creating links in trail and sidewalk networks;
- Extending, enhancing and maintaining the cycling network (ex: dedicated bicycle lanes);
- Completion of the Cycle Network Plan (2018); and
- Completion of the Parks & Recreation Master Plan (2016)

The City is currently undergoing an update of the Official Community Plan. This update may include a review of active and accessible transportation opportunities within the community.

By completing the initiatives above, the community has been encouraged to utilize various modes of transportation. Accessible transportation options have improved over the years, and those residents using mobility aides have been provided additional opportunities to explore the City's trail networks.

3 – ACTIVE & ACCESSIBLE TRANSPORTATION

COMMUNITY TARGET

Walking, cycling and other forms of zero emissions mobility are promoted throughout the community. These transportation options are supported by bike paths; bike storage locations; and land use that enable compact community growth.

ACTIONS

Recently Completed

AT1	Dedicated bicycle lanes along specific city routes (2018).
AT2	Cranbrook Great Trail Loop (Trails BC; 2019).
AT3	Community forest trail expansions and sign installation (numerous supporters, donors and volunteers).

Ongoing or In Progress

		Lead
AT4	Leisure Access Program (free transit access).	CS
AT5	Moir Park Community Trail Network.	PW
AT6	Annual sidewalk missing links ***(2020-2024 Strategic Plan 3.4.5)***	PW
AT7	Community forest trail expansions (numerous supporters, donors and volunteers).	
AT8	Explore opportunities to provide effective and efficient accessible transportation and transit to the community, such as on-demand transit ***(2020-2024 Strategic Plan 3.4.5)***	DS; PW

Provincial Targets & Requirements

As part of the Province of BC's commitment through **CleanBC** to embrace clean and renewable energy across the board, the government developed **Move Commute Connect – BC's Active Transportation Strategy.** This strategy established a new target for active and assisted transportation:

> *By 2030, double the percentage of trips will be taken with active transportation.*

Federal Targets & Requirements

The Government of Canada's **Pan Canadian Framework on Clean Growth and Climate Change** commits to supporting a shift from higher-to-lower emitting modes of transportation as well as investing in infrastructure.

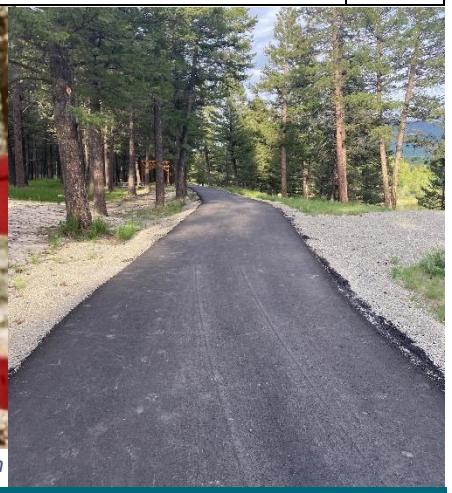
Short-Term Actions to Implement (2-5 years)

		Lead
AT9	Review opportunities to compact growth and incorporate active and accessible transportation in the Official Community Plan.	DS
AT10	Continue to improve active transportation infrastructure to connect paths and neighbourhoods, and support the promotion of new trails and routes as they are developed ***(2020-2024 Strategic Plan 3.4.5)***	PW; DS
AT11	Promote transit ridership and transit partnerships with neighbouring communities.	DS
AT12	Support initiatives completed by community groups and businesses to improve trail networks in the community.	PW; DS
AT13	Complete a local and regional public transportation study to include public and private options for transportation ***(2020-2024 Strategic Plan 3.4.5)***	DS
AT14	Promote micro e-mobility and on-demand mobility services. Support awareness events for micro-mobility opportunities (ex: kick-scooters and e-bikes).	DS
AT15	Promote car-free events by providing transit access or free passes for community events.	CS
AT16	Continue implementation of Cycle Network Plan	DS

Long-Term Actions (>5 years)

		Lead
AT17	Implement new opportunities in transportation.	DS
AT18	Implement active transportation opportunities identified in Downtown Revitalization Master Plan.	DS

Photo courtesy of Cranbrook Tourism




Big Move 4
WASTE DIVERSION
MOUNTAINS OF OPPORTUNITY
CRANBROOK

4 – WASTE DIVERSION

Introduction

Organic waste accounts for approximately 4% of the community's GHG emissions. Emissions from waste occurs when organic waste, mixed in with garbage, decomposes in the landfill and releases methane. Organic waste makes up about 30 - 40% of landfill waste and includes food waste, yard/garden waste, wood waste, and paper that cannot be recycled, such as food-soiled paper. Organic material decomposes over approximately 10 years in the local landfill. Organic diversion reduces or eliminates the new waste added every year but the waste that is already in place at the landfill continues its decomposition process; because of this, it takes a number of years for the emissions reductions from organics diversion to be realized.

Organic waste that is diverted from the landfill can be turned into compost that can be utilized by the community. There are other technologies that can capture value from the waste stream, such as landfill gas capture, biogas digesters, gasification plants, and waste heat recovery systems.

To date, several initiatives have been completed within the community to promote waste diversion. These include:

- RecycleBC depot located at the Cranbrook Transfer Station; and
- Curbside recycling collection for residential households.

The RDEK is currently constructing an organics composting facility that is anticipated to open in mid-2022. This facility will be used to process yard and garden waste into a useful end product to be used for compost. By completing the initiatives above, the community has been encouraged to divert waste from the landfill.

4 – WASTE DIVERSION

COMMUNITY TARGET

By 2030, 40% of our community's residential food and yard/garden waste is converted to usable compost at a regional processing facility. Compost is repurposed into soil for use in local farms, gardens, and green spaces.

ACTIONS

Recently Completed

WD1	RecycleBC Depot at the Cranbrook Transfer Station.
WD2	Curbside Recycling Collection for residential households ***(2020-2024 Strategic Plan 3.4.6)***

Ongoing or In Progress

WD3	RDEK constructing an organics composting facility (opening mid-2022).

Short-Term Actions to Implement (2-5 years)

		Lead
WD4	Complete feasibility analysis of curbside organics collection.	PW
WD5	Support the RDEK's organics diversion initiatives and community engagement ***(2020-2024 Strategic Plan 3.4.6)***	PW
WD6	Support the diversion of construction, demolition, agricultural and industrial wood waste from the landfill. ***(2020-2024 Strategic Plan 3.4.6)***	PW; EDS

Long-Term Actions (>5 years)

		Lead
WD7	Implement curbside organics collection if feasibility analysis supports the program.	PW
WD8	Support evaluation and implementation of other resource recovery opportunities, such as potential for a composting or biofuel facility. ***(2020-2024 Strategic Plan 3.4.6)***	PW; EDS

Provincial Targets & Requirements

The Province of BC has committed to ensuring that, by 2030, 95% of organic waste will be diverted from landfills, and 75% of landfill gas will be captured. The province has also committed to fund workforce training.

Federal Targets & Requirements

The Government of Canada, through its Investing in Canada Infrastructure Program (ICIP) provides funding for infrastructure that enables resource recovery, such as generating renewable fuel from waste.


Big Move 5
MUNICIPAL LEADERSHIP

5 – MUNICIPAL LEADERSHIP

Introduction

The successful implementation of the Community Plan requires combined efforts of the City, residents, businesses and visitors.

Municipal leadership has been displayed in numerous initiatives, including:

- Adoption of the BC Building Code, Step Code;
- Creating partnerships with local organizations, such as the Restore Joseph Creek Project;
- Asset Management planning, including natural assets and stormwater management;
- LED conversion of City owned streetlights;
- Improving greenspaces by completing tree planting and invasive species management;
- Promoting water conservation;
- Springtime Spruce Up campaign;
- Increasing engagement with the public on FireSmart principles; and
- Completing interface fire mitigation.

By completing the initiatives above, the City has demonstrated leadership in climate action and mitigation projects to provide the community with increased resilience to climate impacts such as flooding, invasive species, wildfire and water source.

5 – MUNICIPAL LEADERSHIP

ACTIONS

Recently Completed

ML1	PCP Program's Community Milestone 1 - Inventory
ML2	Natural asset management inventory, condition assessment & risk identification completed
ML3	City acquires first fleet electric vehicle

Ongoing or In Progress

		Lead
ML4	Springtime Spruce Up campaigns	CS
ML5	Tree planting & invasive species management ***(2020-2024 Strategic Plan 3.4.4)***	PW
ML6	Restore Joseph Creek ***(2020-2024 Strategic Plan 3.4.3)***	PW
ML7	Wildland urban interface & FireSmart education ***(2020-2024 Strategic Plan 3.4.2)***	FIRE
ML8	Water Conservation initiatives and education (ex: rainbarrel rebate program). ***(2020-2024 Strategic Plan 3.4.1)***	PW
ML9	Incorporate climate action (ex: community greenhouse gas reduction targets; densification) in official community plan. ***(2020-2024 Strategic Plan 3.4.1)***	DS

Short-Term Actions to Implement (2-5 years)

		Lead
ML10	Monitor progress on actions as outlined in Monitoring and Evaluation section	PW

Long-Term Actions (>5 years)

		Lead
ML11	Prepare and plan for updates every five years. Report updates to Council as required.	PW

Provincial Leadership

The Provincial government uses provincial laws, regulations and funding to implement climate action initiatives. These include updates to the BC Building Code; providing direction to the BC Utilities Commission; carbon taxes; infrastructure funding; and municipal regulations and authority.

The CleanBC Plan is the Provincial government's climate plan. In 2021, the Province is developing a Climate Preparedness and Adaptation Strategy for 2022-2025.

Federal Leadership

The Federal government uses national standards and funding to support climate action initiatives. Some of these standards/initiatives include infrastructure funding; energy ratings and tools; vehicle fuel efficiency standards; and national carbon pricing.

The Pan-Canadian Framework on Clean Growth and Climate Change is the Federal government's climate plan.

Implementation

Successful implementation of the Community Plan requires support from all levels of the Municipal operations and the community (businesses, organizations and residents). To support the implementation of this Community Plan, many of the actions from departmental master plans have been incorporated into this document. To minimize the financial impact of implementing climate action initiatives, many of the actions identified will be completed using existing operational and staffing resources. Funding for additional climate action initiatives will be brought forward for consideration during the annual budgeting process.

Measuring & Reporting Progress

Monitoring and evaluating the implementation of the Community Plan is critical for its success. Key Performance Indicators (KPIs) enable communities to measure the outcomes of a plan's implementation. When KPIs are monitored regularly, communities can determine how to best allocate resources to support implementation, and what success different actions are having.

Two types of indicators are recommended for measuring the success of the Climate Action Big Moves in this Community Plan.

1. Primary indicators: measure community energy consumption and GHG emissions.
2. Secondary indicators: quantify the indirect success of various actions.

The following table provides a description of these indicators. Annual progress reporting should be planned by the City to provide additional information to the Community on progress of these Climate Action Big Moves.

Action Area	Objectives	Primary Indicator	Secondary Indicator
Overall	Decrease community GHG emissions	Total community GHG emissions	Total GHG emissions per capita
	Decrease in average household and commercial energy use	Total household and commercial energy use	Total household and commercial energy use per capita
	Educational campaign and workshops to community and builders	# of participants at events and workshops	

Action Area	Objectives	Primary Indicator	Secondary Indicator
Low Carbon Homes & Buildings	Promote existing programs and incentives.	# of residents receiving information (ex: from building office or on City webpage)	
	Promote BC Energy Step Code	# of homes constructed to Step Code	
Zero Emission & Low Carbon Transportation	Support EV charging stations at key locations	# of EV charging stations	Total energy used at EV charging stations
	Support training to building industry & developers	# of training sessions # of builders & developers at training sessions	
	Support transition of transit buses and school buses to electric or low-carbon fuel	# of electric or low-carbon fuel transit buses and school buses	
Active & Accessible Transportation	Improve active transportation and trail network	km of trail networks in the community	
	Promote transit ridership and partnerships	# of transit riders	
	Promote active transportation	# of participants in bike to work week initiatives (or similar)	Increased travel by walking/cycling
Waste Diversion	Reduce residential waste going to landfill	Total weight to landfill Total weight of recycling Total weight of organics	Residential diversion rate (%) Waste diverted (tonnes) and landfilled per capita
Municipal Leadership	Increase tree cover in community	# of trees planted	
	Promote water conservation	Total community consumption (m^3) Maximum daily demand (m^3)	Water consumption per capita (m^3)

References

Canadian Urban Sustainability Practitioners. 2019. “Energy Poverty and Equity Explorer Tool.” *Energy Poverty*. https://energypoverty.ca/mappingtool.

Climatic Resources Consulting and Selkirk College. 2021. “Basin Climate Source: Climate Data” https://basinclimatesource.ca/about-data.

Columbia Basin Rural Development Institute. *State of Climate Adaptation City of Cranbrook.* June 2020.

Appendix 1 – Inventory & Modelling Methodology

This appendix contains details on the community energy & emissions inventory and projections for the City of Cranbrook.

Inventory

Cranbrook's inventories were created using data for buildings, transportation and waste obtained from the Province of BC. Full inventory years for buildings and waste are: 2007, 2010, 2012, 2013, 2014, 2015, 2016, 2017 and 2018. Full inventory years for transportation are 2007 and 2010.

Emissions factors for inventory years are shown in the following table, and are sourced from the Province of BC.

Table 1 – Emissions factors used for inventory years

GHG/GJ, by Year	2007	2010	2012	2013	2014	2015	2016	2017	2018
Passenger Vehicles	0.068	0.065	0.069	0.069	0.069	0.069	0.070	0.068	0.068
Commercial Vehicles	0.070	0.067	0.070	0.070	0.070	0.070	0.071	0.070	0.070
Electricity	0.007	0.007	0.004	0.004	0.003	0.003	0.003	0.003	0.003
Natural Gas	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Wood	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
Heating oil	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068
Propane	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061

As can be seen, some of the emission factors have changed over time. The emission factors for gasoline have decreased as a result of the Renewable and Low Carbon Fuel Requirements Regulation. The emissions factor for electricity has decreased as a result of ongoing efforts to decarbonise the electricity grid. However, please read the textbox below regarding future changes in emissions factors for electricity.

Transportation data was sourced from a previous release of the Province of BC's Community Energy & Emissions Inventory (CEEI) data,[1] and building energy and landfill waste data was sourced from the latest CEEI data and the Province's release of Provincial Inventory data at the community level.[2]

[1] https://www2.gov.bc.ca/gov/content/environment/climate-change/data/ceei
[2] https://www2.gov.bc.ca/gov/content/environment/climate-change/data/provincial-inventory

Electricity emissions factor subject to change

Information received from the Province of BC in December 2020 and January 2021 states that the electricity emissions factor used for electricity consumption across BC will change, effective for reporting for the 2021 year. But because of the lag in reporting cycles it will not appear in reports until June 1st 2022, and the Province will not officially change the electricity emission factors in the forthcoming *2019 BC Methodological Guidance for Quantifying Greenhouse Gas Emissions.*

Despite this it is official that there is an intention to change, which will take effect in 2022, and the change will be backdated as well for previous years.

Previously, emissions from electricity use were calculated using a three-year rolling average of emissions from BC utility owned and operated facilities, and did not include emissions associated with importing electricity from outside of BC. Those emissions will now be included. (Note that no credit will be made for clean electricity generated in BC used to displace electricity generated in other jurisdictions.)

Under the old methodology the Province calculated City of Cranbrook's electricity emissions factor to be 10.67 tCO_2e/GWh for 2018. Based on the limited information currently available, under the new methodology the Province has calculated the figure for the 2019 year to be 29.9 tCO_2e/GWh. *If* the 2018 and 2019 years are comparable (and it is probable that they are at least approximately comparable), this would be an increase of 2.8 times.

Despite the increase, emissions from electricity would still be far lower than for natural gas on a per unit of energy basis, and electricity used in the City would still have among the lowest GHG emissions in the world (e.g., still about 30 times lower than Australia's, 8 times lower than New York's, or 40% lower than Ontario's).

Assumptions made with respect to the inventories are as follows:

- The Province of BC made a series of standard assumptions in the creation of the CEEI data, which are outlined on the CEEI webpage: https://www2.gov.bc.ca/gov/content/environment/climate-change/data/ceei. The CEEI inventory years in the preceding charts are 2007, 2010, and 2012.
- The Province of BC made assumptions for buildings and landfill waste emissions information, which are outlined in the community level spreadsheets on the Provincial Inventory webpage: https://www2.gov.bc.ca/gov/content/environment/climate-change/data/provincial-inventory
- In creating the inventories, CEA made other assumptions in addition to these:
    - Because the Province removed transportation data from its most recent release of the 2007 and 2010 CEEI data, and has not provided this data for any other year, CEA has used population data to extrapolate transportation data for any year post-2010.

The following are not included in the inventory:

- Emissions from Agriculture, Forestry and Other Land Use (AFOLU)
- Emissions from large industry
- Consumptive emissions (e.g. food, services, consumer goods)

Business As Usual Projection

CEA's QuickStart model was used both to calculate the BAU trajectory, and to estimate the potential GHG reductions that could be achieved. Developed in 2010 on behalf of BC Hydro and used by approximately 70 communities to date, the model builds on information including population and community energy and emissions inventory data.

The model uses formulas both to calculate the BAU trajectory, and to estimate the impacts of implementing each Big Move.

The BAU trajectory was calculated by using available inventory data, and then projecting forwards using a population forecast provided based on census data.

There are full or partial inventory years that describe the community's emissions profile from 2007-2018. From 2019 onwards, all of the data is an estimate as a BAU projection.

For the BAU projection modelling, the assumption is that energy consumption and emissions will increase proportionally with increases to population, although the impact of policies from higher levels of government are also incorporated, and other assumptions. Only policies that have already been adopted and that will have quantifiable impacts are incorporated. Assumptions are:

- The Province's incremental steps to net zero energy ready buildings by 2032.
- Federal Tailpipe emissions standards.
- Provincial Renewable & low carbon transportation fuel standards.
- Zero-Emissions Vehicle Act, requiring every new LDV sold in B.C. to be a zero-emission vehicle by 2040 (with a ramp up in advance of that date).
- An annual decrease in natural gas consumption per residential connection is included, as per Fortis BC 2017 Long Term Gas Resource Plan: https://fbcdotcomprod.blob.core.windows.net/libraries/docs/default-source/about-us-documents/regulatory-affairs-documents/gas-utility/171214_fei_2017_ltgrp_ff.pdf
- How the impacts of a changing climate will affect building energy consumption, as outlined below:

The final assumption had the following methodology:

- Climate change data for the region obtained from ClimateData.ca.
- Projected global emissions to 2030 currently places the world in the range for the IPCC's Fifth Assessment Report's Representative Concentration Pathway (RCP) 6.0 scenario.
- RCP 6.0 scenario not available on ClimateData.ca, therefore RCP 4.5 (median impact scenario) used as a (conservative) proxy.
- Decreases in residential heating oil and propane consumption assumed to be proportional to projected decreases in Heating Degree Days (HDDs).
- Decreases in residential and commercial natural gas consumption assumed to be proportional to decreases in HDDs and the proportions of natural gas consumed for space heating for each sector, and that proportion obtained from the Navigant 2017 Conservation Potential Review for FortisBC Gas.
- Decreases in residential and commercial electricity consumption assumed to be proportional to decreases in HDDs and the proportions of electricity consumed for space heating for each sector. However, proportions of electricity consumed for space cooling for each sector and how this will increase proportional to projected increases to Cooling Degree Days (CDDs) also included. These proportions obtained from the Navigant 2016 Conservation Potential Review for FortisBC Electric.

Although CEA's model assumes that projections will be linear, there will be annual variability due to factors such as economic conditions (on mobility fuels and building energy consumption) and climatic variations (particularly on building energy consumption). These variations mean that it may often be necessary to collect several years of data before one can see the success or lack of it in implementation of an action, in the primary indicators.

Modelling the Big Moves

The QuickStart model estimates the impacts of the Big Moves compared to the BAU trajectory. The impacts of the Big Moves can vary greatly between communities, and depend on the assumptions made. The assumptions made for each Big Move are based on research that CEA has conducted and can be tailored for individual communities.

GHG emission reductions by Big Move are described in the main body of this report.

The QuickStart model allows Big Move implementation at five levels; 0%, 25%, 50%, 75% and 100%. This allows for varying levels of ambition within each Big Move. The model also requires an implementation start year.

The QuickStart model makes the following assumptions based on full implementation (100% ambition level).

Big Move	Modelling Assumptions	
Low Carbon Homes & Buildings	90%	New homes with zero-carbon heating
	3%	Homes retrofit per year
	33%	Energy reduction per retrofit
	2%	Homes replacing fossil fuel heating with heat pumps
Active & Accessible Transportation	1 year	Lag time from implementation for initial impact
	20 years	Full implementation takes 20 years
	17%	Maximum VKT reduction after 20 years from Active Transportation, Transit and Land Use
	33%	Attribution of VKT reduction to Active Transportation
	33%	Attribution of VKT reduction to Transit
	33%	Attribution of VKT reduction to Land Use
Zero Emission & Low Carbon Transportation	9%	Current % of vehicle sales as EV
	20%	Compound Annual Growth Rate of new car purchases as EV in year 1
	12%	Compound Annual Growth Rate of new car purchases as EV in year 5
	1%	Percentage GHG reduction per year
	10%	Maximum GHG reduction after 10 years
	5	Lag time from implementation for initial impact
Waste Diversion	75%	Percentage GHG reduction from organics diversion or landfill gas capture
	5	Full implementation takes 5 years.

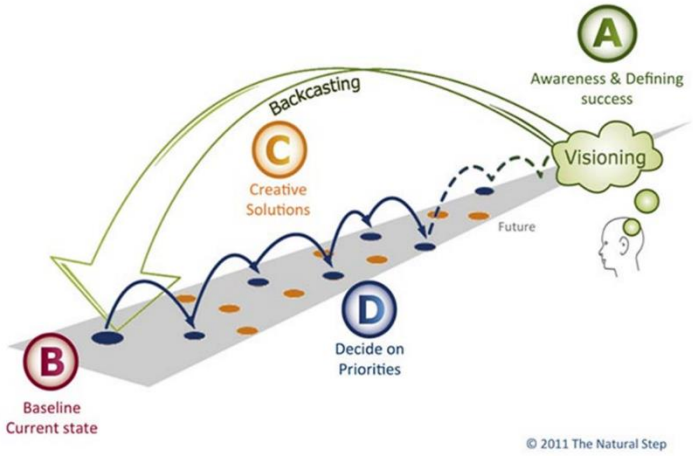
If a lower level of ambition is selected, then that would be applied in the model. For example, if a community selects a 50% ambition level for Waste, then the GHG reduction would be 50% of 75% (or 37.5%) but would still take 5 years to ramp up to that diversion level.

Big Move	Implementation Year	Ambition Level	Modelling Assumptions - Cranbrook	
Low Carbon Homes & Buildings	2022	1	22.5%	New homes with zero-carbon heating
	2025	2	1.5%	Homes retrofit per year
			33%	Energy reduction per retrofit
			1%	Homes replacing fossil fuel heating with heat pumps
Active & Accessible Transportation	--	--	1 year	Lag time from implementation for initial impact
			20 years	Full implementation takes 20 years
			13%	Maximum VKT reduction after 20 years from Active Transportation, Transit and Land Use
	2025	4	39.1%	Attribution of VKT reduction to Active Transportation
	2025	3	40.6%	Attribution of VKT reduction to Transit
	2022	2	20.3%	Attribution of VKT reduction to Land Use
Zero Emission & Low Carbon Transportation	--	--	5%	Current % of vehicle sales as EV
			5 years	Lag time from implementation for initial impact
	2022	2	35%	Compound Annual Growth Rate of new car purchases as EV in year 1
			25%	Compound Annual Growth Rate of new car purchases as EV in year 5
	2025	3	0.75%	Percentage GHG reduction per year
			7.5%	Maximum GHG reduction after 10 years
Waste Diversion	2024	2	37.5%	Percentage GHG reduction from organics diversion or landfill gas capture
	--	--	5 years	Implementation takes 5 years

Appendix 2 – Stakeholder Engagement Summary

On April 28th and May 6th, Cranbrook community stakeholders gathered via Zoom to discuss Cranbrook's Community Energy and Emissions Plan. The workshops were facilitated by Community Energy Association (CEA) staff. The workshops featured in-depth discussion on the current community emissions on Cranbrook as well as the envisioning of a low carbon future and review of the opportunities and actions to reduce community Greenhouse Gas Emissions (GHGs). The workshop group spent one morning and afternoon examining community energy emissions and expenditure data and developing an action plan. Workshop participants and community stakeholders represented the following groups:

- City of Cranbrook Councillors and staff;
- Cranbrook Climate Hub;
- Cranbrook Tourism;
- Interior Health Authority;
- School District No. 5;
- Wildsight;
- Columbia Institute of Renewable Energy



The workshops followed the "backcasting" approach, which first envisions a low carbon future and defines success, then identifies the current state before brainstorming creative solutions and prioritizing actions. Workshop 1 focused on A and B of the backcasting approach. Workshop 2 focused on C and D of the backcasting approach.

Workshop participants were divided into three breakout groups and remained in the same group throughout. The breakout groups were;

- Transportation
- Buildings
- Waste & Other

Workshop One

- Activity A – A Vision of the Future
- In the first breakout session, participants were asked to describe their vision of the future for Cranbrook for Buildings, Transportation and Waste. The year 2040 was used in this exercise as it bridges the gap between 2030 which is the short-term target year and 2050 which is the long-term target year. Participants were told that their vision could be unimpeded by traditional constraints such as cost. Participants were encouraged to be bold with their ideas. The Miro boards can be seen in Figures 8, 9 and 10.

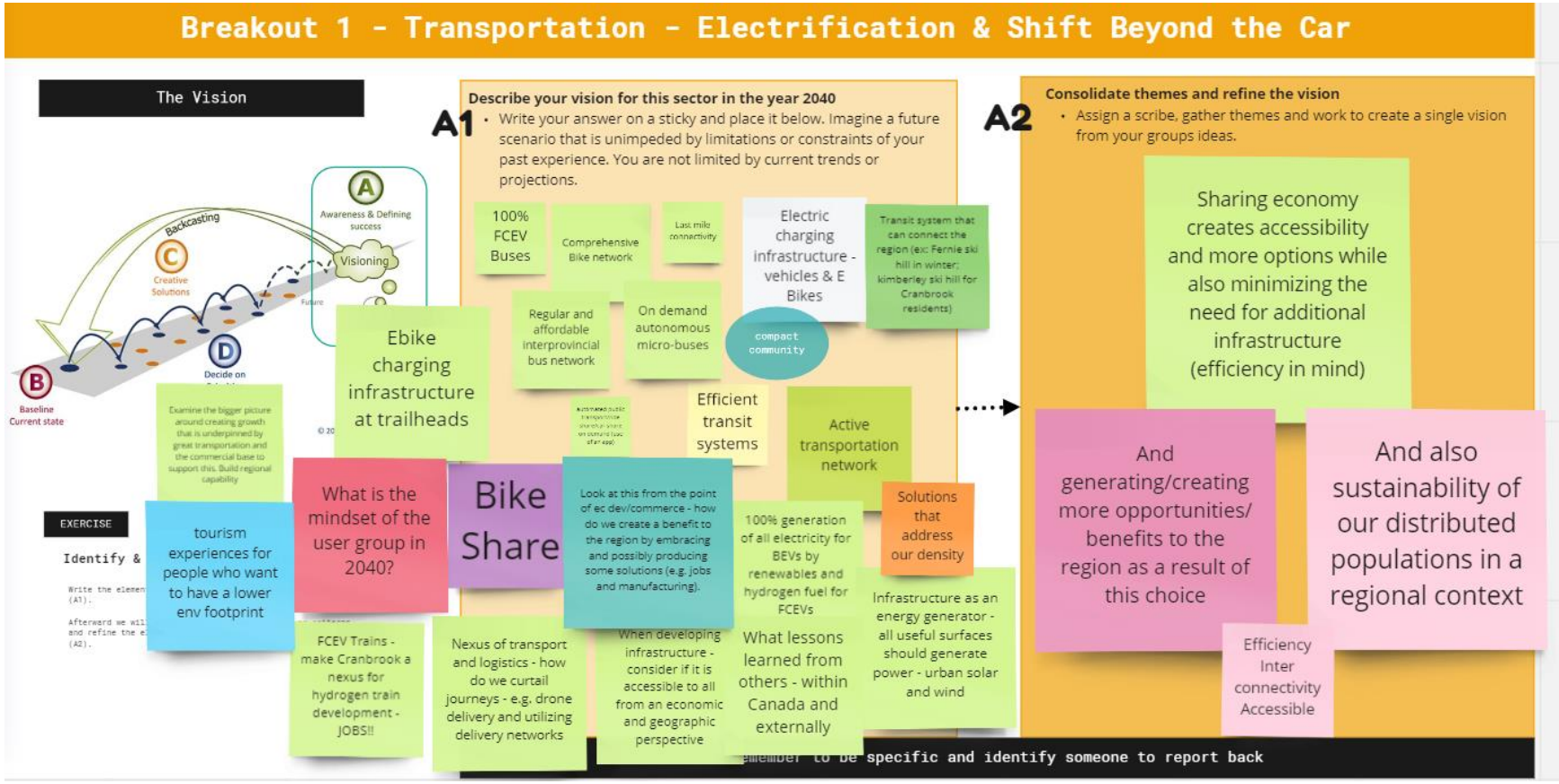


Figure 8: Activity A - Breakout 1 Miro Board (Transportation)

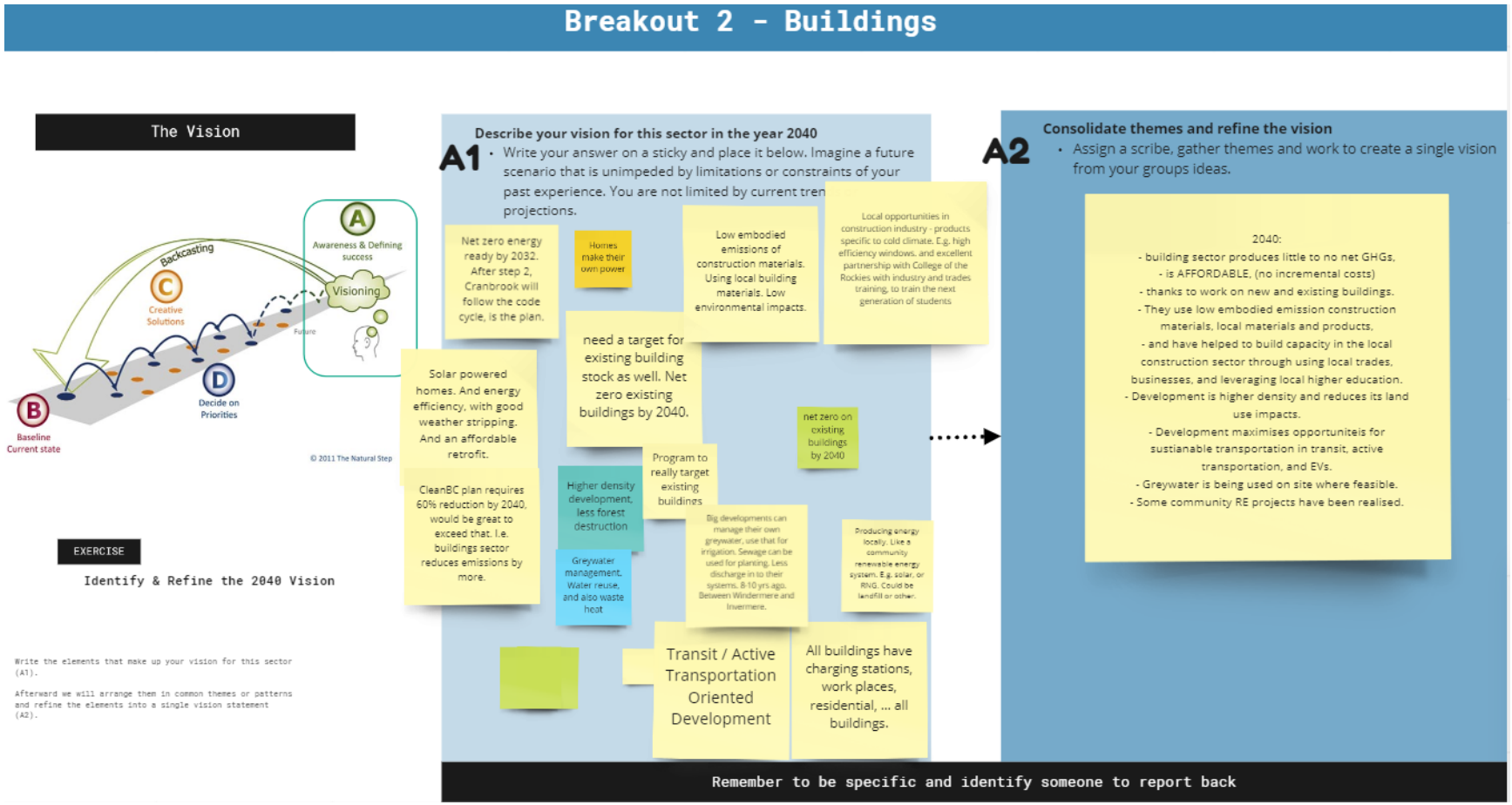


Figure 9: Activity A - Breakout 2 Miro Board (Buildings)

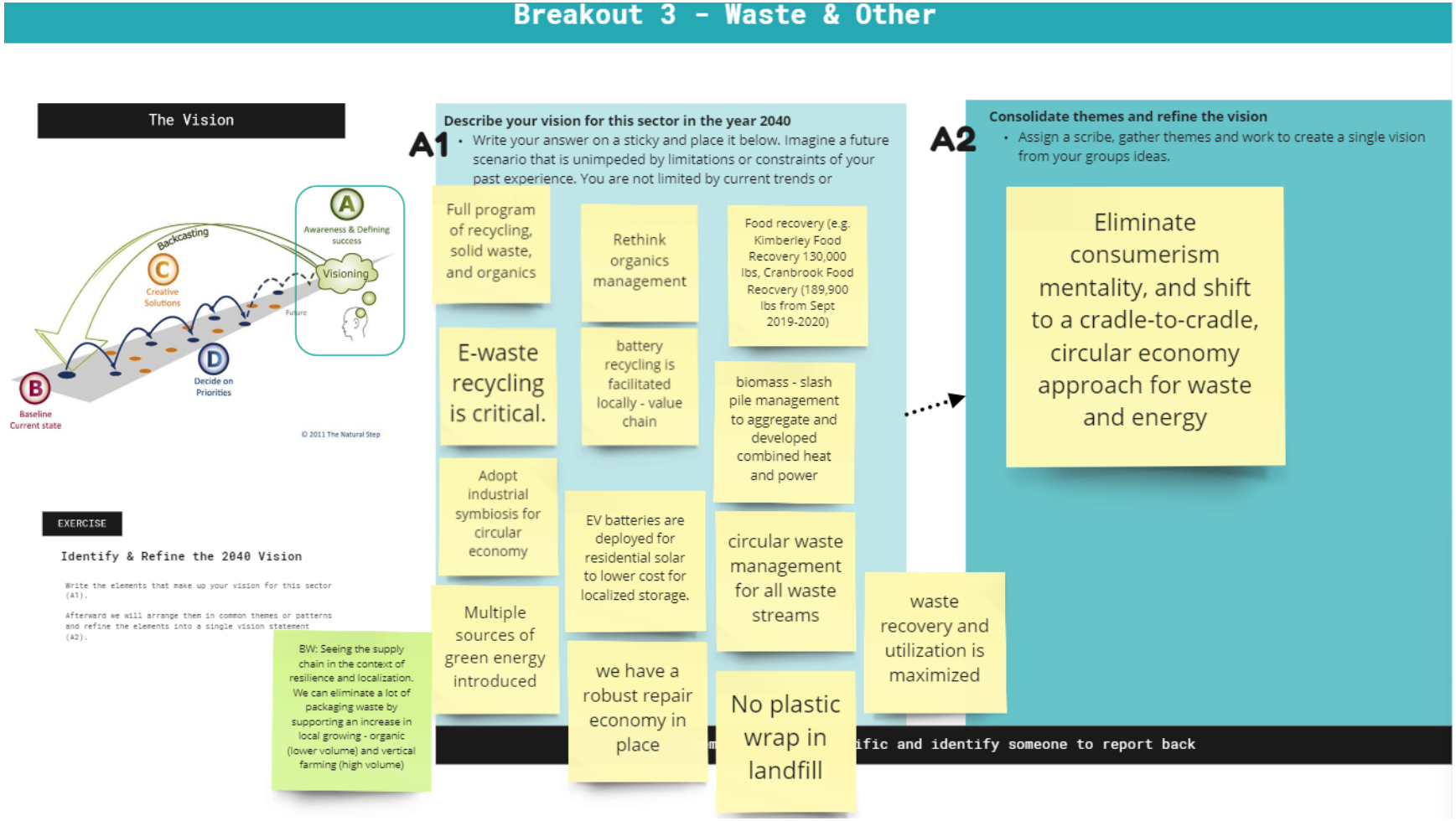


Figure 10: Activity A - Breakout 3 Miro Board (Waste & Other)

Activity B – The Current State

In the second breakout session, participants were asked to describe the current state of Buildings, Transportation, and Waste & Other for Cranbrook. The Miro boards can be seen in Figures 11, 12 and 13.

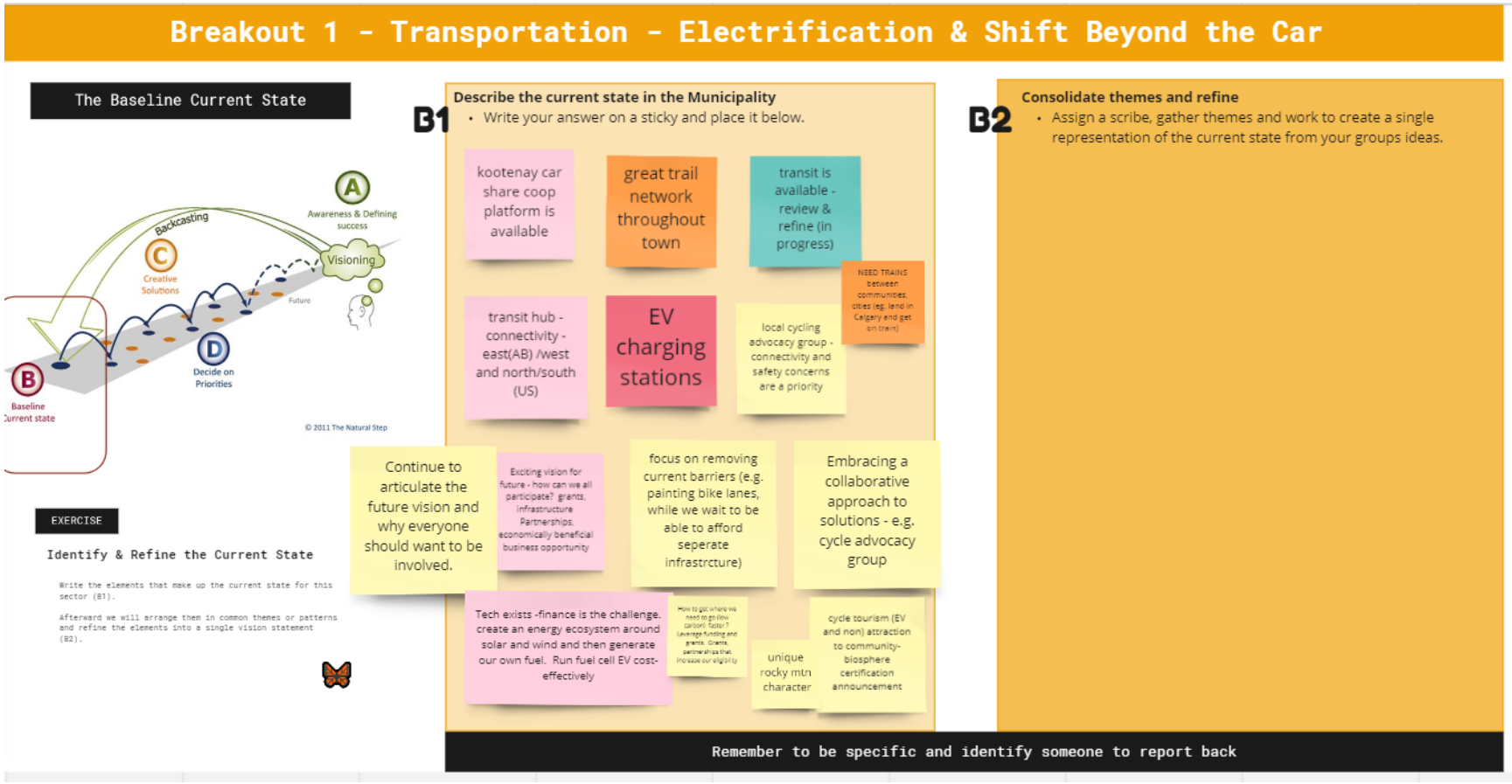


Figure 11: Activity B - Breakout 1 Miro Board (Transportation)

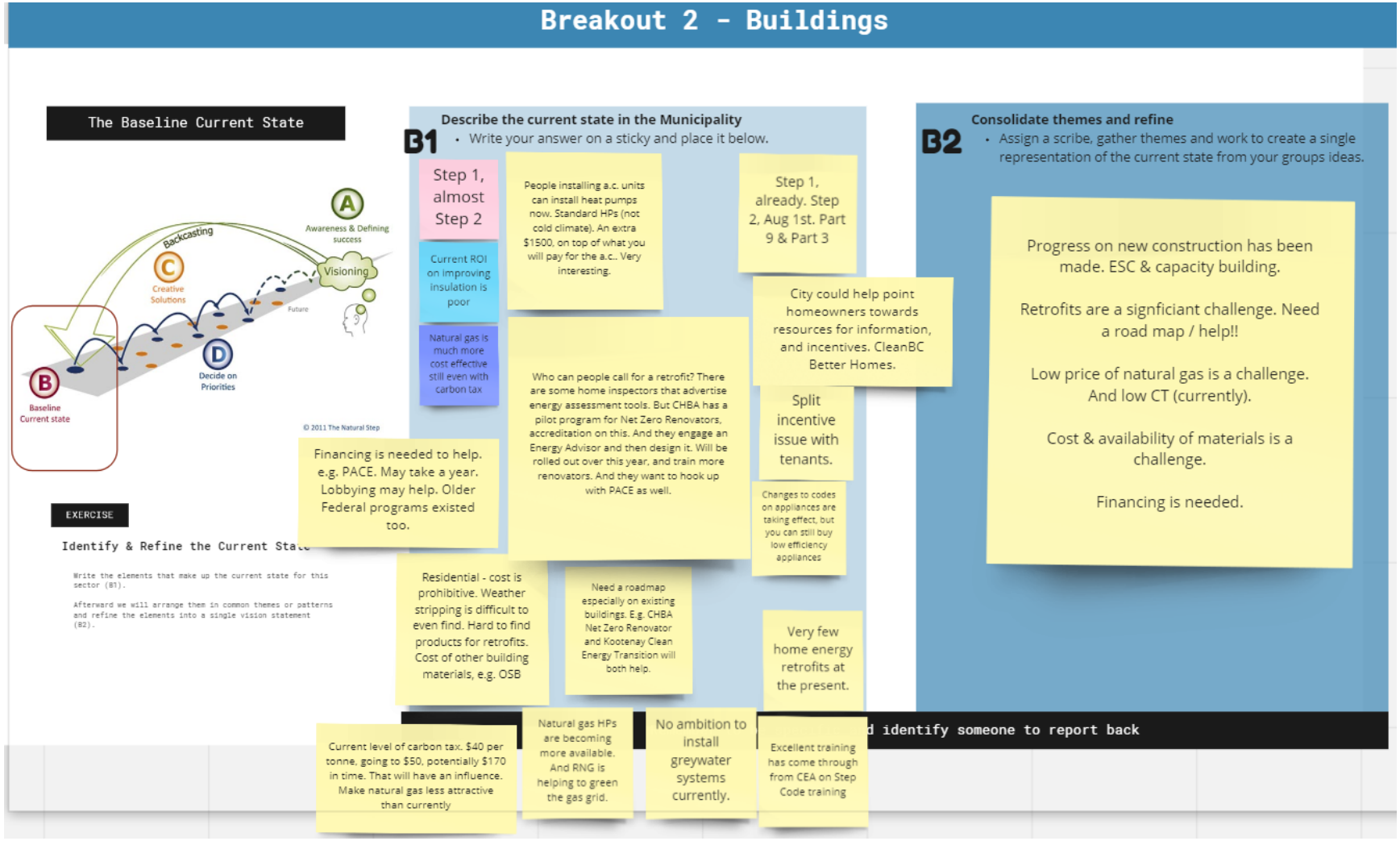


Figure 12: Activity B - Breakout 2 Miro Board (Buildings)

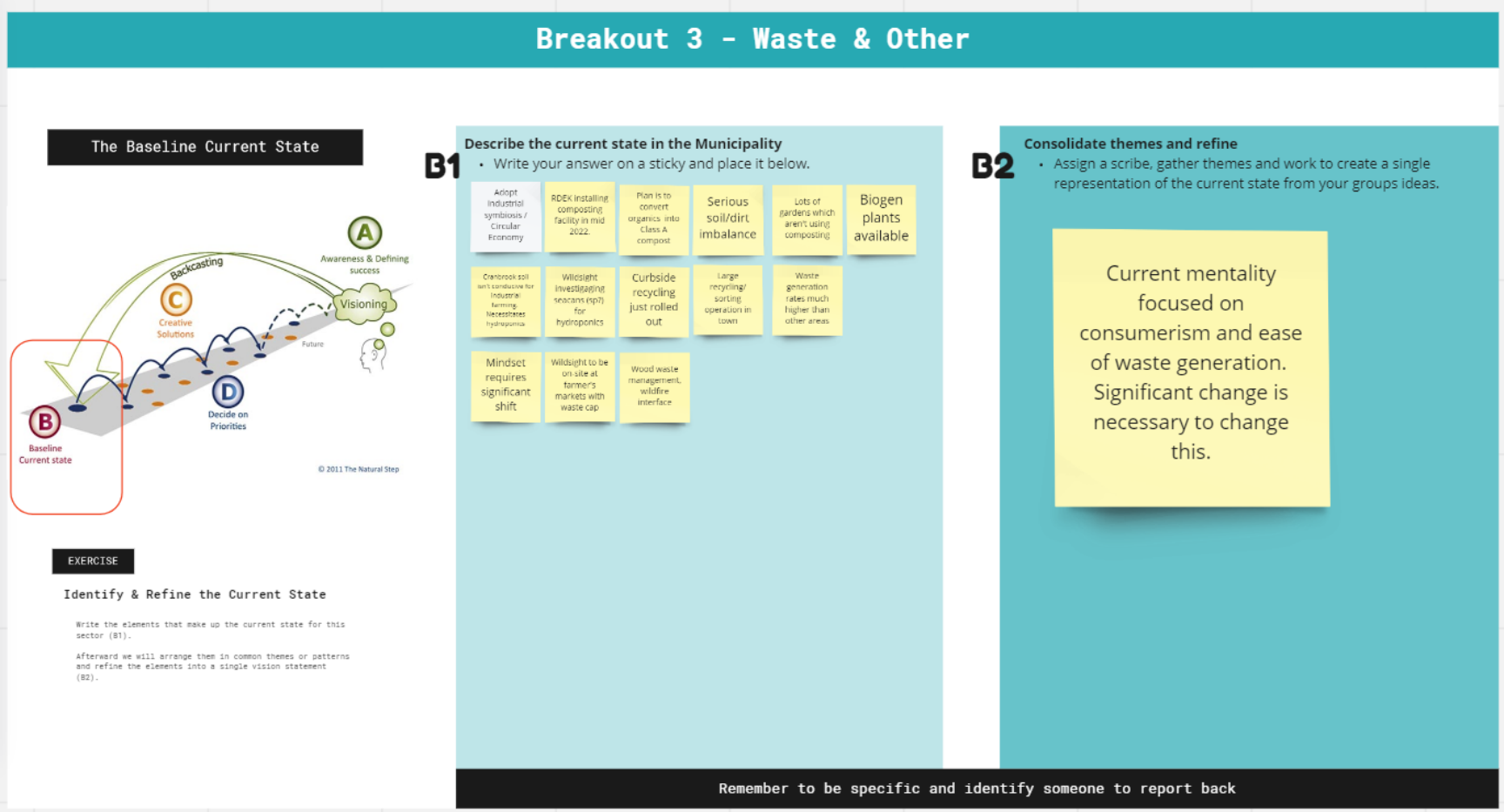


Figure 13: Activity B - Breakout 3 Miro Board (Waste & Other)

Workshop Two

Activities C and D – Identifying and Prioritizing Creative Solutions

In the third breakout session, participants were asked to consider a number of creative solutions provided by CEA and identify additional ones. These creative solutions, or strategies, were then prioritized according to possible implementation timelines. Strategies were prioritized in the following way;

- Short-term implementation (1 - 2 years)
- Medium-term implementation (3 – 5 years)
- Long-term implementation (5+ years)

Figures 14, 15 and 16 show the prioritization of the Buildings, Transportation, and Waste & Other strategies respectively.

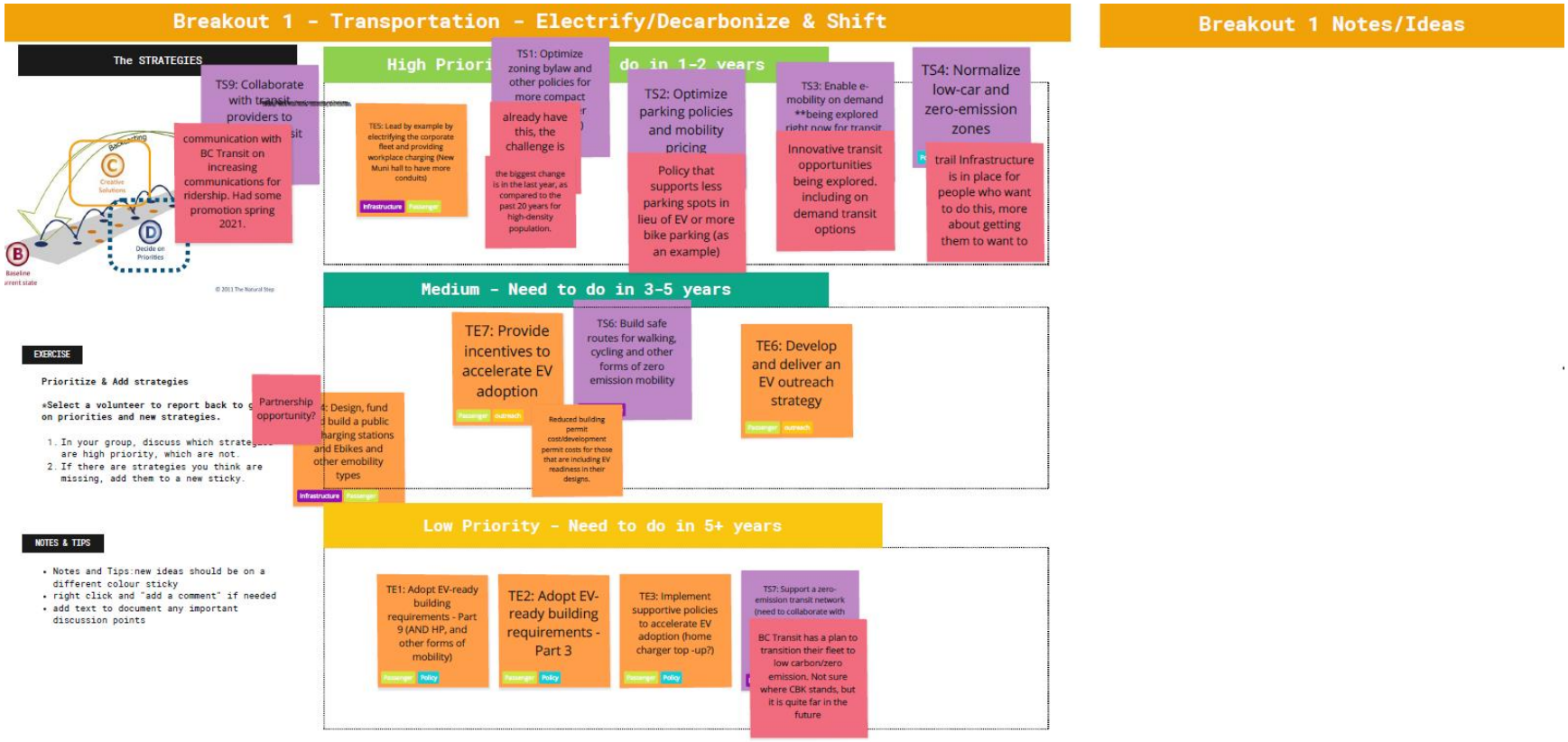


Figure 14: Activity C - Breakout 1 Miro Board (Transportation)

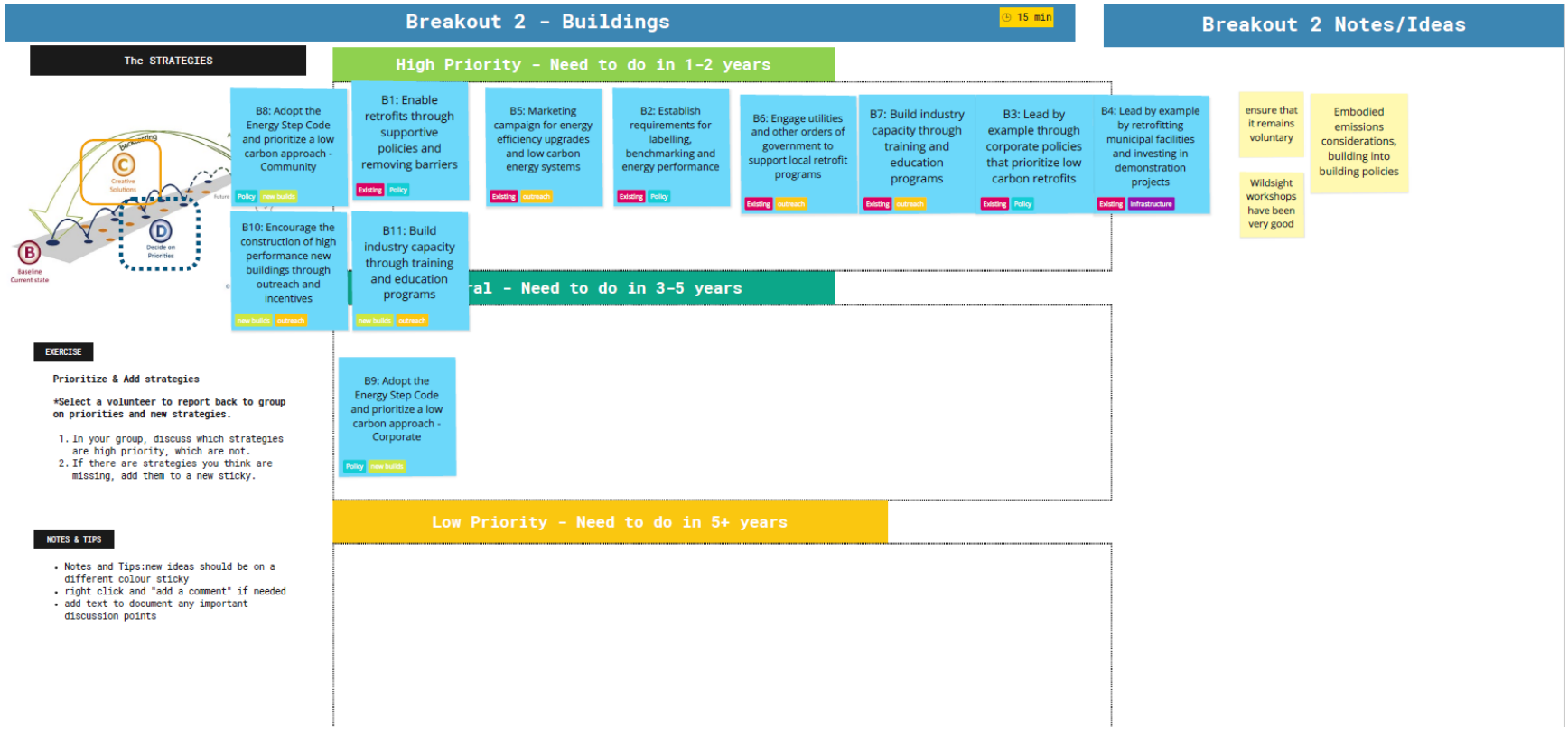


Figure 15: Activity C - Breakout 2 Miro Board (Buildings)

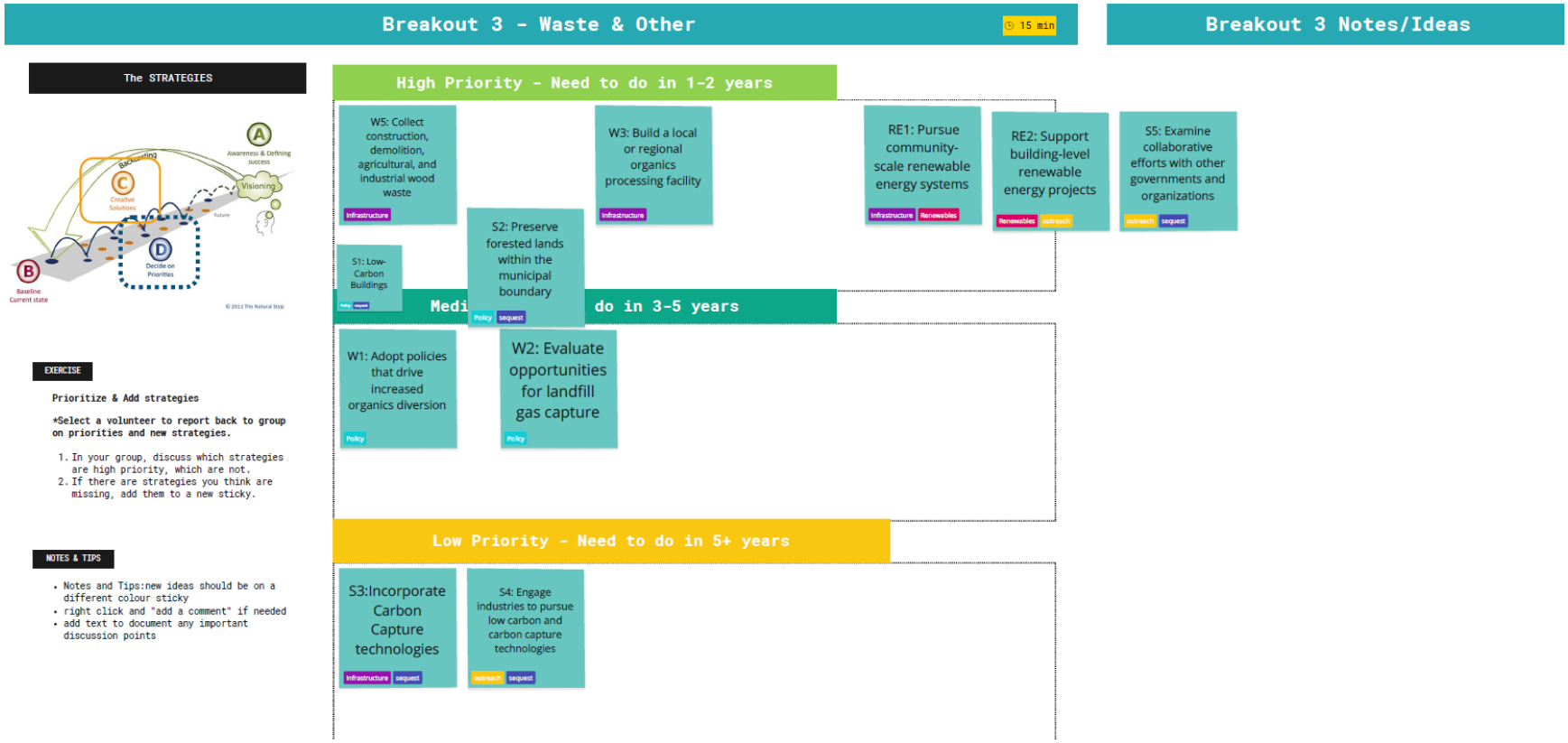


Figure 16: Activity C - Breakout 3 Miro Board (Waste & Other)

Deep Dive on Priority Strategies

In the final breakout session of workshop 2, participants were asked to select one or two of the priority strategies and do a deep dive in terms of co-benefits, local leverage points, barriers/challenges, catalysts/potential for collaboration, equity and next steps. The Miro boards for this exercise can be seen in Figures 17, 18 and 19.

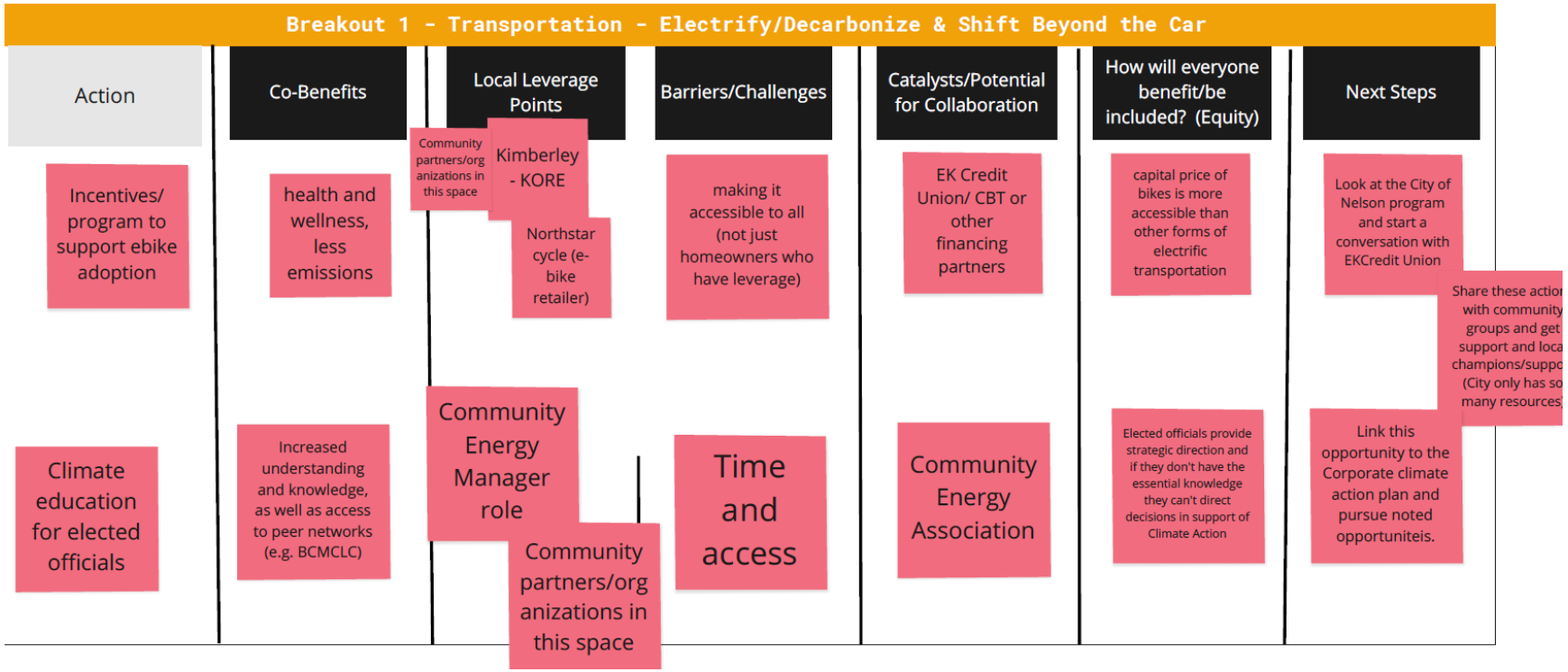


Figure 17: Workshop 2 - Breakout 1 Miro Board (Transportation)

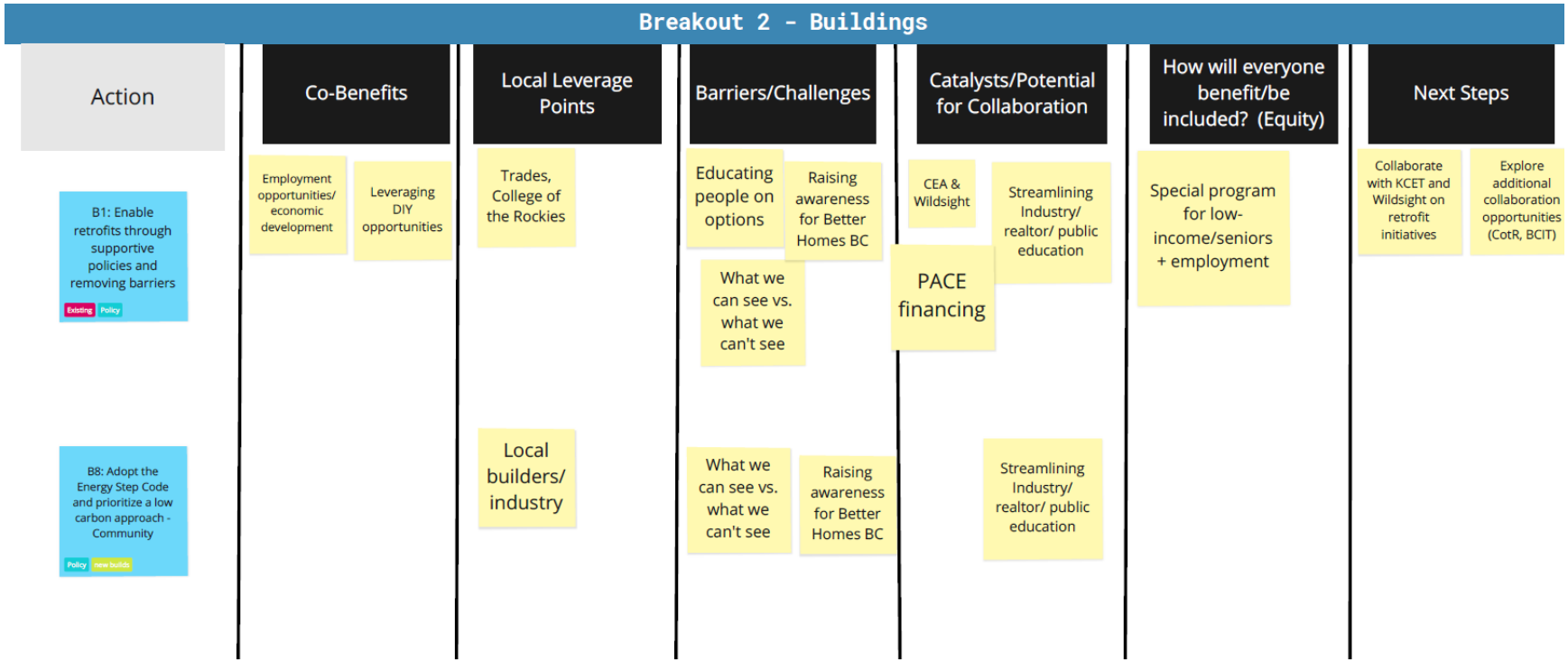


Figure 18: Workshop 2 - Breakout 2 Miro Board (Buildings)

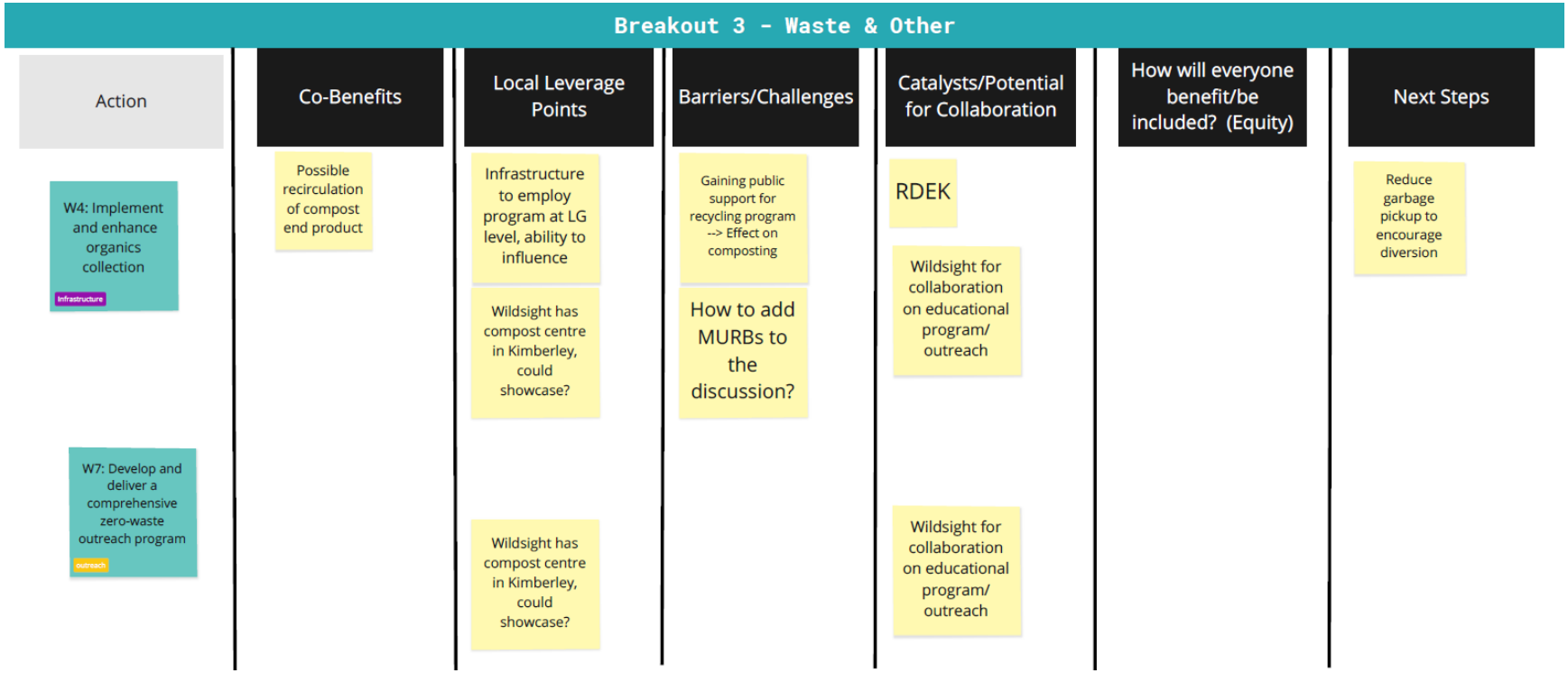


Figure 19: Workshop 2 - Breakout 3 Miro Board (Waste & Other)

Workshop Survey Results on GHG Target Setting

As part of the workshops, participants were offered the opportunity to provide their preferred targets for GHG reductions for 2030 and 2050. These can be seen in Figures 20 and 21.

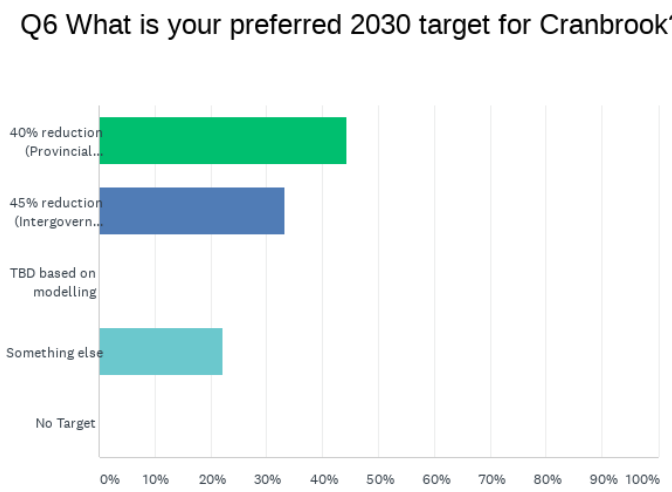


Figure 20: 2030 GHG Reduction Target

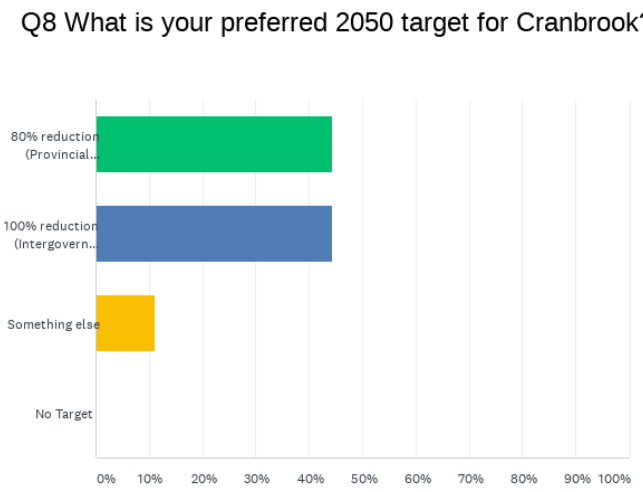


Figure 21: 2050 GHG Reduction Target