Town of CANMORE

Town of Canmore

Climate Action Plan

December 2018

Prepared in consultation with URBAN systems

Contents

1.0 Introduction

Surrounded by provincial protected areas and Banff National Park, Canmore is well recognized for, and expected to be, a leader in environmental stewardship. As a result, in 2010 the Town adopted its Environmental Sustainability Action Plan (ESAP) with revisions in 2013, which set commitments for energy and climate protection, resource conservation and waste management, water management/conservation, toxin reduction and community education and engagement. In 2015, the Town renewed its leadership in climate action by committing to the Global Covenant of Mayors (COM) – a global movement that supports local actions related to climate change mitigation and adaptation. The COM uses a standard format to measure, report, and track climate emissions and risk. The platform empowers municipalities to:

- Position themselves as climate change leaders;
- Introduce climate change actions and measure progress;
- Show commitment to a global problem at a local level;
- Support transparent standards by encouraging direct public and private sector engagement; and
- Demonstrate climate actions by building detailed and consistent data.

As of 2017, 658 municipalities around the globe committed to the COM, representing about half a billion people.[1] For the Town of Canmore, the Global Covenant of Mayors offers an opportunity to create momentum for real action and change within the community.

The COM asks local governments to take action on both climate change mitigation and adaptation; this Climate Action Plan addresses GHG mitigation. The adaptation component of the Town's COM commitment has been addressed in a separate initiative (the *Town of Canmore Climate Change Adaptation and Resilience Plan* approved by Council in 2016). This Climate Action Plan is organized as follows:

- Section 2: Process – outlines the methodology used to complete the requirements of the COM and create the Climate Change Action Plan;
- Section 3: Inventory – summarizes the GHG inventory for both corporate and community GHG emissions;
- Section 4: Plan – outlines renewed targets and actions supporting emissions from buildings, transportation, and waste;
- Section 5: Implementation – outlines implementation strategies and short-term wins to create momentum;
- Section 6: Monitoring – suggests ongoing reporting and monitoring strategies.

[1] https://www.globalcovenantofmayors.org

2.0 Process

The Climate Action Plan (CAP) was developed following the four steps of the COM using a combination of technical analysis, examples from leading communities, and stakeholder engagement. The COM process is as follows:

The methodology established by the Global Covenant of Mayors for the Inventory phase aligns with the Climate*n*carbon Reporting (CCR) tool. The Greenhouse Gas (GHG) Protocol – Global Protocol for Community-Scale (GPC) GHG Emission Inventories is an accounting and reporting standard for communities, and is used as a standard to guide the process. The Town of Canmore has committed to the Basic level of reporting for the COM, which focuses on three sectors: buildings, transportation, and waste. Table 1 highlights the types of emissions recorded in the Inventory.

TABLE 1: SECTORS INCLUDED IN THE COM INVENTORY

Sector	Type
Energy – energy use & energy generation	Buildings: Residential, Commercial, Institutional
Transportation	Within Town limits: vehicles, trucks, transit etc.
Waste	Operations: wastewater treatment plant Transportation of solid waste

Building the Inventory involved significant input from all Town departments, and utilized a variety of data sources, including:

- Buildings energy and emissions data;
- Census data and population projections;
- Previously compiled ESAP and GHG Inventory;
- Corporate waste statistics;
- Average vehicle statistics;
- Town fleet statistics and mileage;
- Community solid waste and landfill estimates.

Appendix A includes a list of all data utilized. Section 3.0 highlights key findings from the Inventory.

Phases 3 (Target) and 4 (Plan) of the COM were developed in conjunction with Town Administration and the Town's Environmental Advisory Review Committee (EARC). A workshop was held with each group to communicate the results of the Inventory, and establish a framework for setting challenging, but achievable targets. The participants had the opportunity to provide input on climate action ideas and strategies, and offered an opportunity to explore the Canmore context. A summary of the ideas generated during each workshop can be found in Appendix B.

The Climate Action Plan draws on targets and actions developed by leading communities and is grounded in the context of Provincial and Federal actions related to climate change mitigation. The CAP is outlined in Section 4, and includes targets, strategies for buildings, transportation and waste sectors.

3.0 Inventory

The Town of Canmore has been tracking its community and corporate GHG emissions since 2007. The Global Covenant of Mayors represents a level of rigour not before followed for GHG emissions accounting in the Town and reflects a trend towards increasing standardization of emissions reporting.

As an example of this, the 2007 to 2014 inventories included an assessment of community and corporate buildings, and account for only electricity and natural gas consumed. As identified in Figure 1, the Inventory shows a minor increase in emissions during that time, along with fluctuations from year to year. This trend is different from some municipalities whose strong population growth has resulted in equally large increases in annual building emissions.

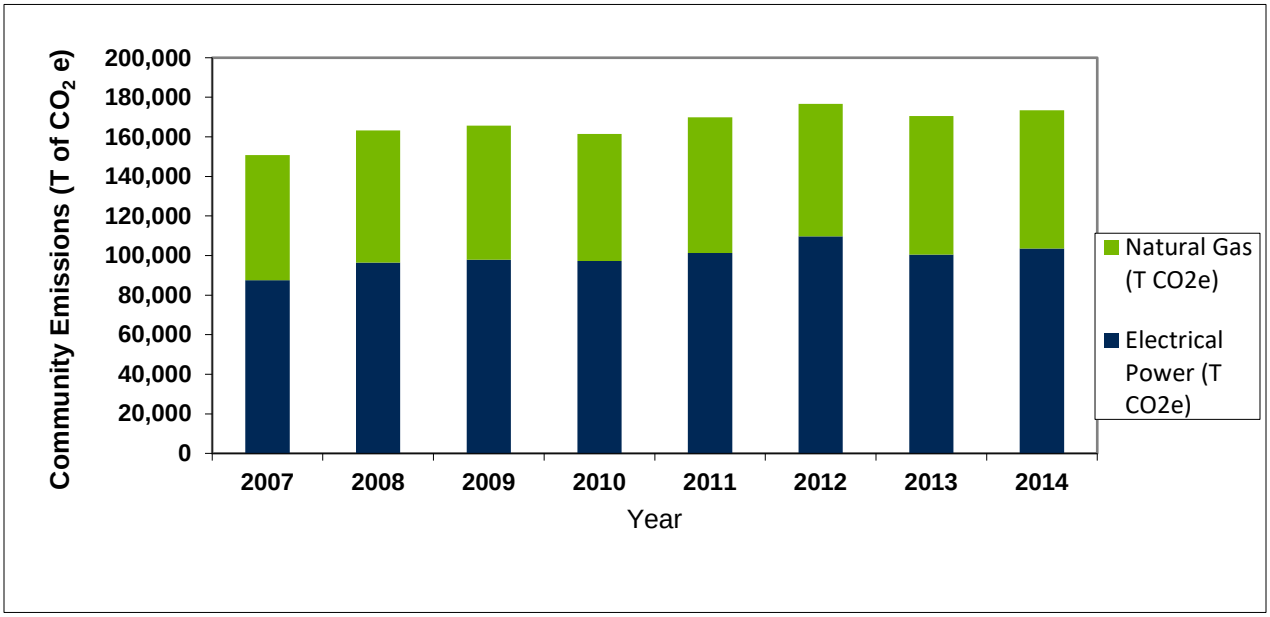

FIGURE 1: CANMORE'S 2007 TO 2014 COMMUNITY EMISSION INVENTORY[2]

The Global Covenant of Mayors includes emissions from buildings, but also from the transportation and waste sectors. Additionally, the new inventory updates emission factors and global warming potentials to standards utilized by the COM. [3] For these reasons, it is difficult to directly compare the Town's 2007-2014 inventories to the updated 2015 Inventory.

[2] Biosphere Institute of the Bow Valley (2014). Community Monitoring Report. Town of Canmore.

[3] The COM Inventory uses the most recent global warming potential values from the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report.

The following identifies key findings from the Town's Baseline year of 2015. The first part highlights the emissions from the entire Community, while the second part outlines data pertaining to the Town's corporate buildings and activities.

COMMUNITY EMISSIONS (2015)

Taken together, residential, commercial and institutional buildings in Canmore contribute over half (54%) of the total community emissions. Of those, residential buildings contribute 33%, and commercial and institutional buildings contribute 21%. Emissions from transportation contribute about 40%, while waste, including from municipal solid waste (MSW) and the wastewater treatment plant (WWTP) biosolid waste contributes about 6 % [see Figures 2 and 3]. This emission profile is similar to other communities in Alberta.

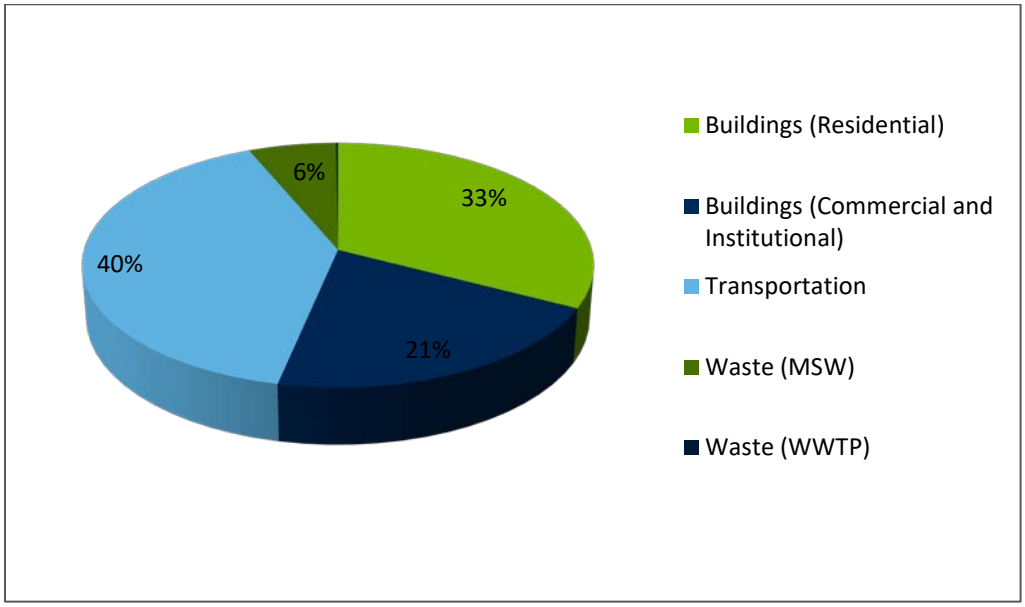

FIGURE 2: 2015 BASELINE COMMUNITY EMISSIONS (TCO_2E) BY SECTOR (PERCENT)

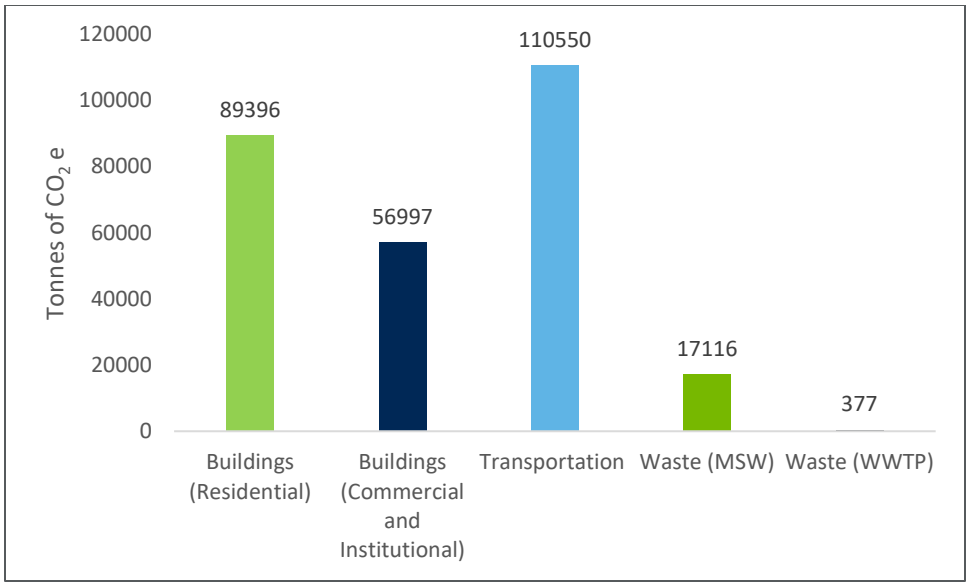

FIGURE 3: 2015 BASELINE COMMUNITY EMISSIONS (TCO_2 E) BY SECTOR (ACTUAL)

Business-As-Usual GHG Emissions Forecast

Business as usual (BAU) emissions forecasts predict emissions into the future assuming that nothing changes in the Town apart from population growth. A BAU forecast is useful because it represents a high GHG emission forecast in the absence of the Town, Province or Federal governments doing anything else to impact GHG emissions in the community. Targets to reduce the Town's GHG emissions will be compared to the BAU forecast. As such, it offers a baseline forecast that can be compared to future inventories to help track progress.

The variable used for the BAU community emissions forecast is the anticipated population growth in the community (a growth rate of 4.5% was used, based on the 2016 Town of Canmore Utility Master Plan). As shown in Figure 4, emissions continue to rise in concurrence with anticipated population growth.

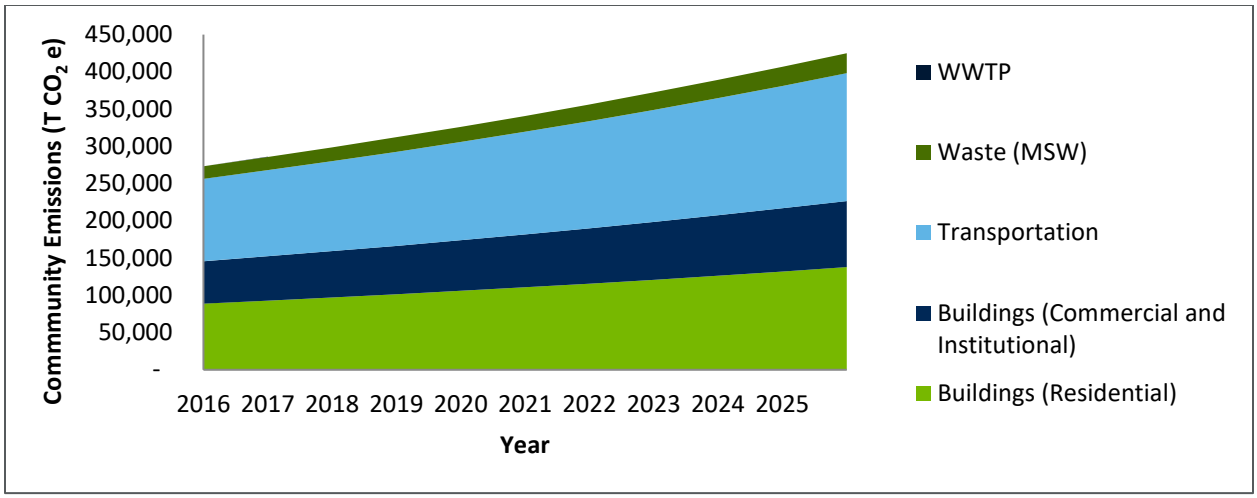

FIGURE 4: 2016-2025 BUSINESS AS USUAL COMMUNITY EMISSIONS (TCO_2E) BY SECTOR

CORPORATE EMISSIONS (2015)

The Corporate inventory demonstrates that the greatest contributor to corporate emissions are our buildings at 80%. Street and traffic lights make up 9% of the emissions, followed by the energy required to operate the wastewater treatment plant at 6%. The Town's fleet accounts for 5%[4] of emissions [see Figures 5 and 6]. Figure 7 demonstrates the corporate energy use (in GJ) for various corporate facilities.

[4] The transportation emissions associated with waste and recycling collection are included in the transportation sector, not the waste sector.

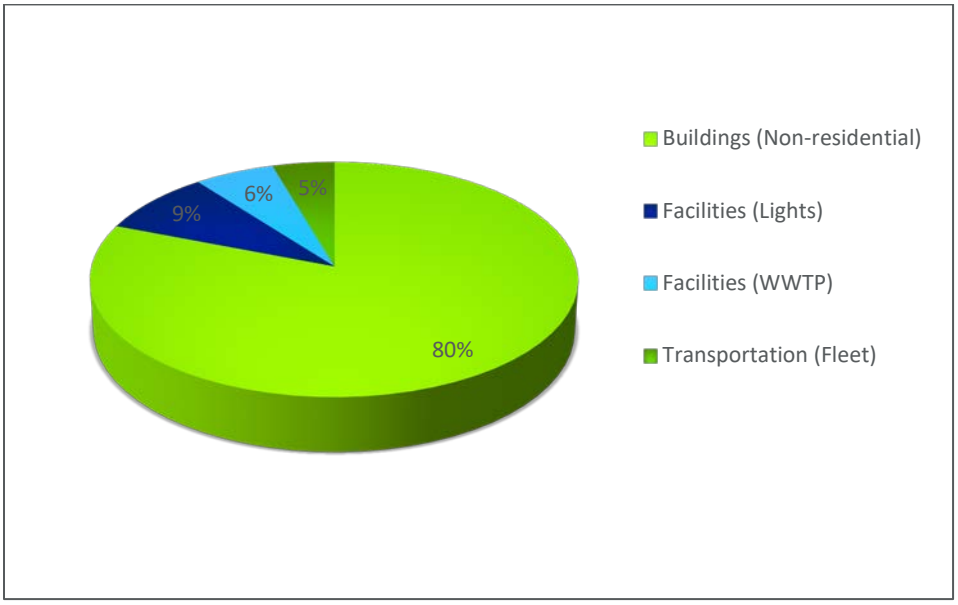

FIGURE 5 2015 BASELINE CORPORATE EMISSIONS (TCO_2E) BY SECTOR (PERCENT)

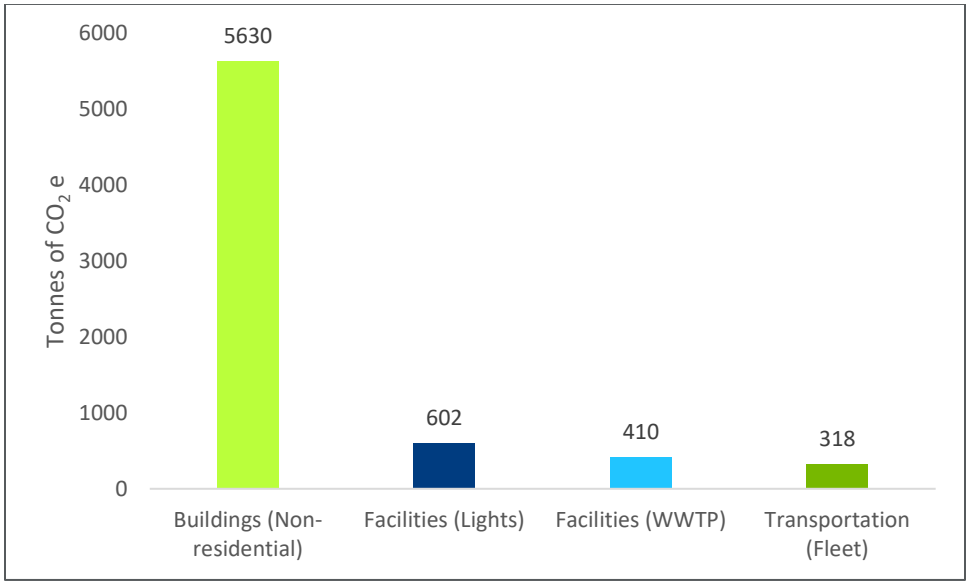

FIGURE 6 2015 BASELINE CORPORATE EMISSIONS (TCO_2E) BY SECTOR (ACTUAL)

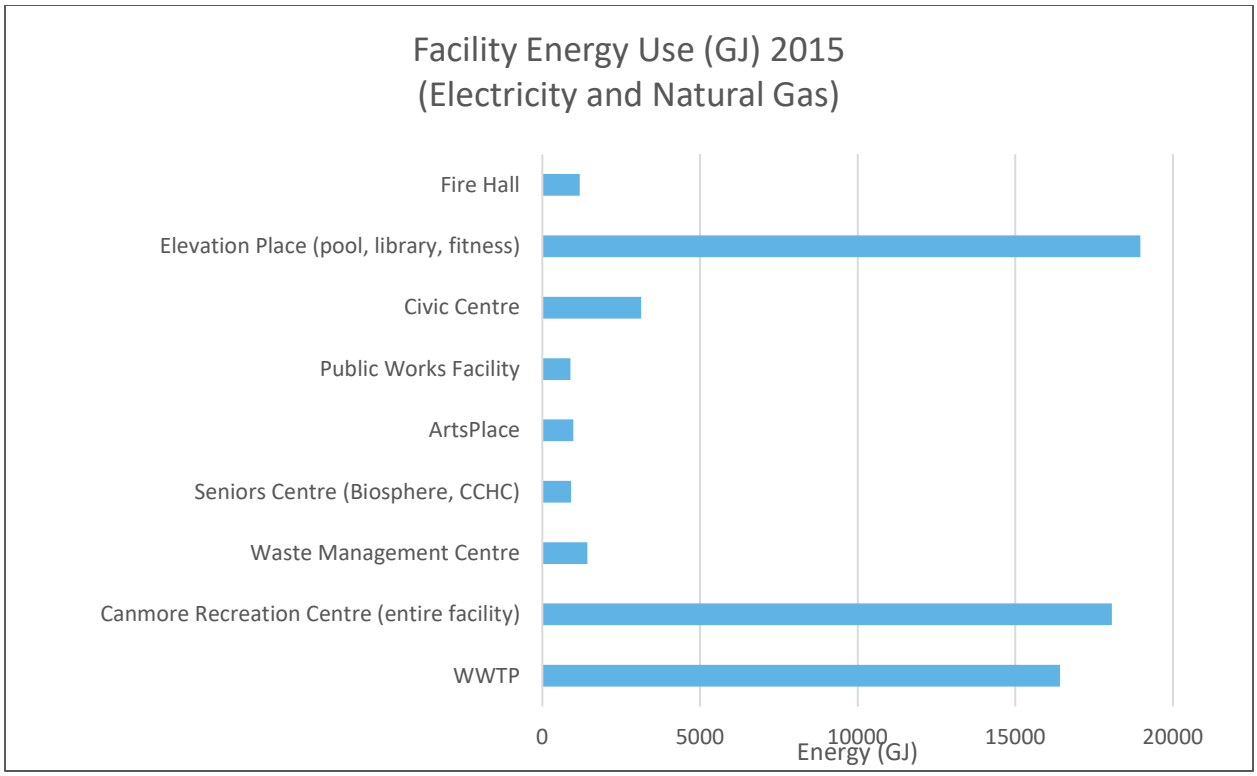

FIGURE 7 2015 CORPORATE FACILITY ENERGY USE (GJ) FOR VARIOUS CORPORATE FACILITIES

4.0 Climate Action Plan

The Climate Action Plan sets out short and long term targets for each sector of measured GHG emissions in Canmore: buildings, transportation, and waste. In order to achieve the targets, the Plan identifies specific actions that support GHG emissions reduction in each sector. While the Town has an essential role in providing leadership and setting expectations related to climate action, particularly in the areas of land use and development, it does not have direct control over how citizens utilize energy in their private homes. Thus, the Climate Action Plan must also set the stage for the Town to engage community members, and help support citizen involvement in implementing parts of the Plan. For this reason, the Plan highlights opportunities to engage the public and build excitement for the actions contained in the Plan. Similarly, the Monitoring section of the Plan highlights a series of strategies for the Town to monitor and report on the implementation of the strategies.

CANMORE'S GHG EMISSION REDUCTION TARGETS

The Town of Canmore introduced GHG emission reduction targets in its Environmental Sustainability Action Plan (2010). By 2020, the Town aimed to reduce Corporate emissions by 50% below 2007 levels, and reduce community emissions to 2007 levels.[5] Although the Plan set out actions to help monitor progress, the Town has struggled to effectively monitor and report progress on those targets. Additionally, it has been challenging for the Town to deliver on these targets amidst population growth and continued development. For example in 2013, the Town opened Elevation Place (pool, library, climbing gym, fitness centre) – as a significant new asset, the facility increased the Town's Corporate energy use and emissions.

For this reason, the targets are intended to provide big-picture emissions reductions, along with more specific targets related to high priority activities. The intent is to offer a vision for climate action, while also offering opportunities to measure progress by more than simply the entire community's GHG emissions. In this way, the targets strike a balance between two approaches to target setting. The top down method sets general to specific targets, while the bottom up approach uses specific targets to achieve a general goal (see Figure 8). The bottom up approach is often used to describe shorter term actions, and can be rooted in the local context and linked to implementation plans more accurately. However, it can be challenging to build an overarching single target using the bottom up approach, as doing so would require detailed modeling for each action proposed. Bottom up approaches have been criticized for being too incremental, rooted only in what we know and can imagine today, and therefore do not communicate significant enough aspirations for emission reductions compared to the climate change threat. Similarly, top down targets are useful because they can be designed to align with other

[5] A summary of the energy and emissions targets in the ESAP plan are included in Appendix C.

jurisdictions and often offer a more aggressive perspective. It is challenging to accurately link actions and costs with top down targets, and thus many jurisdictions have been unable to meet emissions goals.

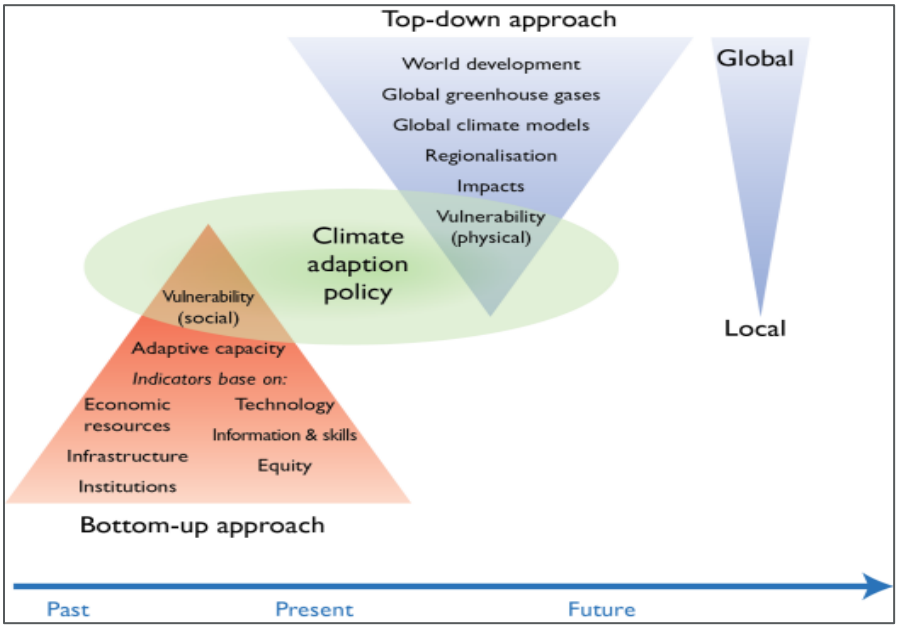

FIGURE 8: TWO TARGET SETTING APPROACHES

Ultimately, the targets outlined below should be utilized to guide the Town's actions related to climate mitigation. Increasingly bold targets over time indicate the need for the Town to establish momentum related to climate action immediately, and continue to take on increasingly significant projects to lower community emissions.

Targets in Context: International, Federal & Provincial

The Town of Canmore is part of a complex milieu of higher level climate targets at the international, national and provincial levels. Internationally, the Paris Agreement (2016) unified most countries in an agreement to maintain global average temperature rise below 2 degrees Celsius above pre-industrial levels. Nationally, the Federal government has signed onto the international agreement, and set targets to achieve a 30% GHG emission reduction below 2005 levels by 2030, and an 80% reduction by 2050. The Government of Alberta's 2015 Climate Leadership Plan builds on the international and Federal targets by focusing climate action in three key areas:

- Phasing out emissions from coal-generated electricity by 2030 and replacing that capacity with electricity produced by renewable sources and natural gas;
- Legislated oil sands limit of 100 megatonnes (Mt) per year;
- Implementing a new methane emission reduction strategy with the goal of reducing methane emissions from the oil and gas sector by 45% from 2014 levels by 2025.

Further, in 2017 the Government of Alberta introduced a Carbon levy that places an economy-wide price on GHG emissions, and is rolling out a number of investments to support a climate friendly energy transition in the province.

Canmore's 2030 Community and Corporate Targets

By 2030, the **community** of Canmore will reduce its GHG emissions by 30% below 2015 levels. It is proposed the Town of Canmore adopt a **Corporate** target to achieve a 50% reduction in its Corporate emissions by 2030, given that it has much greater control over its own buildings and operations emissions. Figure 9 illustrates specifics within each of the three sectors of emissions – buildings, transportation, and waste, to assist the Town achieving the target.

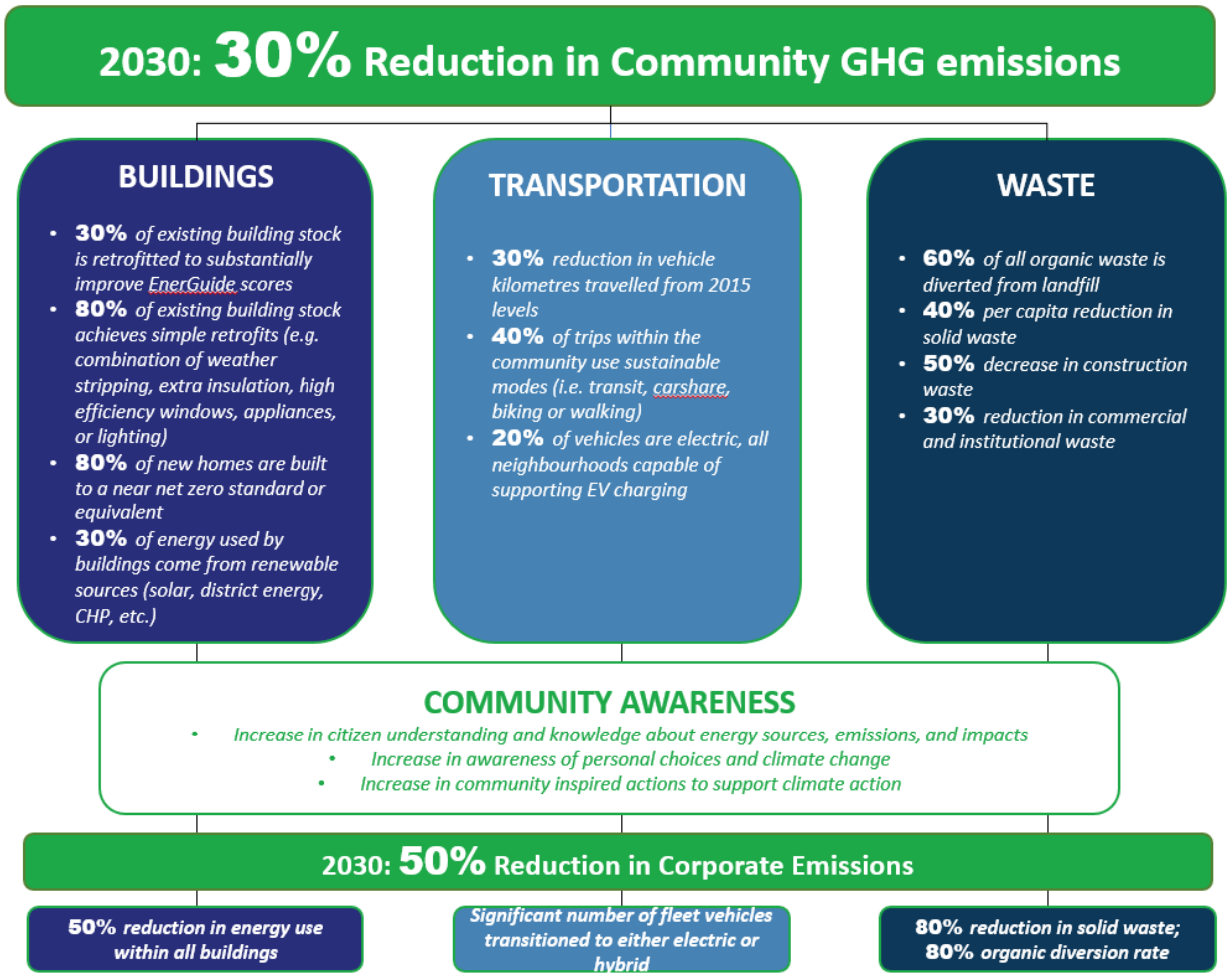

FIGURE 9: 2030 COMMUNITY AND CORPORATE TARGETS

Canmore's 2050 Community and Corporate Targets

By 2050, the Town will reduce community and Corporate emissions by 80% below 2015 levels, which is closely aligned with Federal GHG emission targets. This target is important because it signals much greater emission reductions are necessary after 2030. Although it is anticipated that some of these emission reductions will be achieved through step changes in technology (*e.g.* electric vehicles), action is required immediately in all of the sectors in order to set up the community for success. By adopting a 2050 aspirational target, the Town is signaling to citizens, businesses and industry that significant emission reductions are required now and into the future.

Renewable Energy/Low Carbon Target

In addition to the 2030 and 2050 targets listed above, the Town of Canmore will consider adopting renewable energy/low carbon targets for the community and Corporate operations. Development of these targets are a work in progress; what the targets will look like requires further discussion. Considerations for setting renewable energy/low carbon targets include the scope of energy use, the sector of energy end use, and the spectrum of legal bindingness.

Canmore should consider meeting targets through a combination of local renewable energy production within town limits, drawing from regional energy sources in surrounding areas, or through the import of renewable/low carbon energies and fuels. In order to do so, Canmore will need to implement various policies such as regulation and incentives, or make infrastructure decisions to reduce overall energy use and shift production toward renewable energy sources.

Including a place maker for these targets in this Climate Action Plan demonstrates community support for the shift to renewables and low carbon fuels and builds awareness among stakeholders and businesses.

Climate Actions

Continuous implementation of climate actions will help the Town and community achieve its GHG reduction targets. Although the Town does not have direct control over many behaviours and actions taken by citizens, it helps to establish the tone and momentum in the community. This is the role of a leader and convener. By leading in its own Corporate operations and building management, the Town signals to the wider community that climate action is possible, necessary, and important. As well, the Town has significant convening power – to help citizens organize their own climate activities, to help raise awareness about climate actions, or to help community members collaborate. By convening and leading, the Town starts to build support for more and more impactful regulation and services. In particular, the Town holds significant regulatory power over land use and development, and the provision of transportation and waste services can that support climate action.

It is important to take the Climate Actions outlined below as an integrated roadmap supporting GHG reduction in Canmore. The actions do not ***all*** have to be implemented immediately. However, without significant attention to the implementation of ***many*** of the actions, it is unlikely the Town will see much significant progress towards its targets. The Climate Actions below are organized according to each of the areas of the inventory: buildings, transportation, and waste.

It is important to recognize this list is not exhaustive of all the actions the Town of Canmore may undertake to reduce its energy consumption and lower its greenhouse gas emissions. There will be actions to consider that are not currently included on the following lists. Implementation of the Plan should provide for the flexibility to contemplate those actions as well, provided they are practical and fiscally responsible. Further, the Plan encourages a cautious and flexible approach to our energy transition, which is careful not to place "all eggs in one basket" nor take high risk positions that could lock in sub-optimal solutions for a long time.

Buildings

In general, there are three areas where the Town can influence the energy use and emissions in residential, commercial and institutional buildings:

- existing buildings (energy efficiency and conservation);
- new buildings (energy efficiency and conservation);
- implementation of renewable/low carbon energy.

Climate Actions for **Existing Buildings**	Implementation
Community	
Establish an energy labeling program for buildings, including homes, Industrial/Commercial/Institutional buildings.	Energy labelling (*e.g.* Energuide) can be triggered at time of sale (*e.g.* through MLS system), or could be established as an annual reporting requirement. As a first step, the Town can convene a group of stakeholders including real estate agents, developers, builders, and community members to assess implementation details. The Federal government is also considering implementing energy labelling requirements.
Establish an energy benchmarking program for commercial, industrial, and institutional buildings. Benchmarking introduces annual disclosure of energy use and associated costs, and allows sector wide comparison to similar buildings.	Introduce as a voluntary measure for existing buildings for 2-3 years, moving to mandatory disclosure. Given Canmore's significant tourism industry, the Town should encourage and support all tourism and accommodations to perform energy audits and implement recommended upgrades.
Establish and increase over time minimum energy performance targets for new and major renovations (for homes and Industrial/Commercial/Institutional buildings).	Update and strengthen the existing Green Building Regulations in the Land Use Bylaw, and further establish a procedure to guide renovations.
Initiate and earmark franchise fees & local access fees	Direct franchise fees and local access fees to a dedicated fund to help finance and promote energy efficiency and GHG reduction measures. This will ensure a stable source of funding for this work.
Provide enhanced energy billing information to customers	Work with the local energy providers to introduce energy reports that compare individual energy use to the neighbourhood or other similar buildings, or to similar conditions from previous years.
Simplify and streamline the retrofit process for citizens	Work with local industry partners, agencies and contractors to establish a Town led one stop shop for all energy retrofits. It may be appropriate for the Town to establish this function, or work with a partner to deliver it.
Identify and assess the feasibility of new financing arrangements to assist citizens with energy efficiency and clean energy investments, *e.g*. PACE (Property Assessed Clean Energy) program	The Town of Canmore should consider passing a PACE Bylaw once the Provincial legislation and regulations are in place allowing property owners in the community to take advantage of this financing tool.
Establish an innovation fund to test new energy efficiency and conservation technology	Include initial innovation funding in 2020 budget, and for subsequent years if successful.
Raise awareness and promote efficient building operations and maintenance practices in all commercial and multi-family buildings, including tourism businesses.	Establish a communications campaign to promote energy efficiency and conservation measures. Convene businesses and residents to share knowledge and raise awareness. Create an annual energy efficiency competition. Engage local partners (*e.g.* BOWDA) to encourage/facilitate ongoing professional development on energy efficient building practices.

Corporate	
Energy Audits/Building Re-Commissioning	Ensure buildings are re-commissioned every 5 years; conduct Building Condition Assessments every 10 years; and conduct an energy audit every 10 years or sooner if required.
Each year, or triggered with major renovations, or as opportunities present, conduct comprehensive retrofits to Town facilities	Secure funding to support retrofits from Provincial carbon levy program or another source of funding. Apply deep retrofits to support all systems in buildings. Build partnership with local industry partners, agencies and contractors to support the work.
Conduct training program for operations staff	Offer retrofit workshops on all systems in building including: o Building envelope o Mechanical systems (HVAC), and o Electrical systems (lighting and appliances) Generate lessons learned booklet.
Ensure Town has capacity to support climate actions	Current capacity is limited and could benefit from additional resources to access grants, oversee sustainability initiatives, address reporting needs *etc.* Provide training opportunities for staff and Council. Ensure funding is available for training and conferences. Ensure capacity funding is allocated in annual budgets.
Leverage Funding Models and Partnerships	Look for opportunities to improve efficiency and save money *e.g.* Fortis LED Streetlight Conversion, Johnson Controls and Teric Combined Heat and Power models. Use the cost savings to fund an operating/financial plan.
Sustainability Implementation	Ensure recommendations from various building studies are included in capital planning and appropriately funded.
Pursue grant funding opportunities	Apply for various grant initiatives, especially as carbon tax funds generate new funding opportunities.

Climate Actions in **New Buildings**	Implementation
Community	
Revise and update Green Building Regulations, moving towards net zero construction or similar high green building standards	Draw on developers and industry associations to evaluate and continually improve regulations, moving towards net zero energy buildings or similar. Consider periodic updates of the Green Building Regulations. Consider the creation of incentives for construction of net zero or similar homes/developments.
Introduce home demonstration projects	Partner with industry to deliver single-family and multi-family demonstration projects that are near net zero or similar high green building standard.
Encourage the development of green subdivisions	Work with developers to plan and develop green subdivisions to embed energy conservation initiatives into the development, *e.g.*

	district energy systems, passive solar design, solar ready, EV ready construction.
Raise awareness of the importance of energy efficiency and conservation in new buildings	Establish a communications campaign. Provide information during the building permit application process.
Updated Building Codes	Advocate to the Province of Alberta for timely adoption of the National Model Building Code.
Corporate	
Ensure all new Town facilities including affordable housing projects are built to near net zero or similar high green building standard	Adopt near net zero or similar high green building standard policy.
Ensure Town has capacity to support climate actions	Current capacity is limited and could benefit from additional resources to access grants, oversee sustainability initiatives, address reporting needs *etc.* Provide training opportunities for staff and Council. Ensure funding is available for training and conferences. Ensure capacity funding is allocated in annual budgets.

Climate Actions to Support Renewable/Low Carbon Energy	**Implementation**
Community	
Establish Renewable and/or Low Carbon Energy Targets	Canmore should consider setting renewable and/or low carbon energy targets and determine how targets will be met. The feasibility of collaborating on projects with neighbouring jurisdictions and First Nations should be included in planning.
Introduce street and neighbourhood designs to support renewable energy and consider regulating solar ready (in areas with solar potential), EV ready and district energy ready requirements in new construction	Include requirements in the Green Buildings Regulations. Could also request these initiatives in Area Structure Plans, Area Redevelopment Plans, or subdivision plans. Assess new developments for their use of passive and active solar energy and shading. Site new developments to take advantage of excess/waste heat.
Consider district energy	Conduct a town wide district energy feasibility study to understand the potential for district energy systems in Canmore and establish these systems where economically justified. Develop business models for designing, constructing and operating district energy systems.
Consider Combined Heat and Power (CHP) systems	Establish a CHP pilot program to determine the economic feasibility of CHP and understand the opportunities for combined heat and power systems and encourage their installation where economically justified.
Consider geo-cooling systems	Conduct a town wide geo-cooling feasibility study to understand the potential for these systems in Canmore and establish them systems where economically justified.

	Develop business models for designing, constructing and operating geo-cooling systems.
Raise awareness about renewable energy	Educate citizens and business owners about the benefits and costs associated with renewables.
Encourage solar energy on homes and businesses	Continue to support and improve solar energy incentive program.
Evaluate opportunities for the Town and the community to generate electricity or heat	Conduct a feasibility analysis of all potential opportunities in the Town.
Partner with Universities and Technical Institutions	Utilize academic resources to test/pilot technologies, collect and analyze data and trends, develop best practices and learn about international projects.
Cross Jurisdictional Partnerships	Work with neighbouring municipalities, First Nations and industries to determine shared goals and potential projects. Focus on information sharing and joint initiatives.
Inventory Canmore's Solar Potential	Determine Canmore's solar potential on residential, commercial, institutional buildings, town lands and utility corridors.
Consider the ongoing use of Renewable Energy Certificates (RECs) to help meet renewable targets	Consider RECs as a tool to achieve our renewable target. Establish guidelines around the purchasing of RECs.
International Partnerships	Seek out and engage a 'sister city' to collaborate with which already demonstrates leadership in energy management for knowledge sharing and acceleration of best practices.
Corporate	
Increase Town of Canmore renewable energy generation	Establish and implement a program to evaluate the feasibility of micro generation technology (*e.g*. solar photo voltaic, combined heat and power and others) on existing Town buildings and infrastructure.
Increase Town's commitment to solar energy	Dedicate Corporate land to solar arrays. Install solar on all municipal buildings with adequate solar potential.
Consider mandating combined heat and power (CHP) or district energy systems in new municipal developments	Determine feasibility of offsetting Corporate emissions with CHP or district energy systems.
Ensure Town is accountable to climate actions	Consider establishing a Climate Action Program Coordinator or Energy Management Specialist. Include in annual budgets.

In addition to the specific opportunities to influence energy efficiency and conservation in new and existing buildings, as well as to encourage renewable energy, the Town has an important advocacy and partnerships role with senior levels of government. Specific actions to support these roles include:

- Maintain a list of grants and funding opportunities to track funding from senior government.
- Explore opportunities to leverage carbon levy programs and funding.
- Build long-term partnerships with the Province and other local governments to help implement:
    - Smart grids;
    - Innovative energy financing models;
    - Property assessed clean energy (PACE); and

- Programs such as MEETS (Metered Energy Efficiency Transition Structure) (see Appendix D).

- Advocate for and support the Province in its efforts to reduce the carbon intensity of electricity.

Transportation

The Town has considerable opportunity to influence where people live, work, and access amenities. These factors, coupled with the availability of various transportation options, contribute to how citizens choose to get around the community.

Climate Actions to Support a **Compact Community**	Implementation
Community & Corporate	
Develop complete neighbourhoods	Introduce and support quality infill development. Restrict single use development on the outskirts. Consider prioritizing new development projects according to their potential to reduce energy use and GHG emissions. Intensify vacant or underutilized lands.
Encourage walkable developments	Require a walkability assessment for all new developments that shows walking distances to transit and amenities.
Introduce complete streets (*i.e.* tree cover, cycling, pedestrian infrastructure, traffic calming)	Amend subdivision servicing agreements, and introduce a complete street retrofit program in conjunction with other roadworks and upgrades.
Support affordable and employee housing development around central and transit supported centres (Transit Oriented Development – TODs)	Utilize a suite of regulatory and voluntary tools.

Climate Actions to Support **Low Carbon Mode Choice – Walking, Cycling, Transit, Vehicle Sharing**	Implementation
Community	
Better understand average vehicle kilometers travelled by residents in Canmore	Introduce a pilot program for a diverse group of citizens to track vehicle kilometers traveled, and include question on annual citizen survey.
Implement tactics to support the Integrated Transportation Master Plan mode shift targets and promote alternative modes of transportation, such as walking, biking and public transportation	Continue to invest in infrastructure and upgrades such as separated bike lanes, multi-use trails, or pedestrian only streets. Allocate budget for seasonal snow removal along bike commuter routes. Support partnerships to build/operate/maintain a bike share program. Host bi-annual car-free day.

Support wise transportation capital investments	Review all transportation capital investments for their alignment with the Town's climate mitigation goals.
Support car-sharing	Provide a supportive environment for the introduction of car-sharing, and consider supporting its launch by transferring the Town's fleet into the program.
Review parking policy to align with climate goals	Review parking fees in high traffic areas. Encourage shared parking in new and existing parking areas. Consider citizen programs to encourage temporary alternative uses of parking stalls (i.e. parklets).
Support an efficient transit service	Consider implementing a transit tax to support additional investments. Consider fare free transit for all or part of the year to encourage ridership.
Corporate	
Encourage TOC employees to lead by example	Introduce and enforce a series of incentives to support employees using low carbon modes of transportation to get to work.

Climate actions to Support Low Emission Vehicles	**Implementation**
Community	
Encourage citizens to operate vehicles at optimal efficiency levels	Offer semi-annual vehicle maintenance workshops to promote optimal vehicle efficiency. Host seasonal green driving education training to educate citizens on vehicle maintenance, fuel efficient driving tips and accessing tips and tools to select fuel-efficient vehicles. Partner with community organizations to educate and create anti-idling materials to residents and visitors.
Support the buildout of EV infrastructure throughout the community	Conduct a study to understand how Canmore should prepare for electric vehicles in the community. As part of the study, assess infrastructure needs and supporting bylaws. Introduce/expand public and private charging infrastructure throughout the Town. Introduce preferred parking rates or other incentives to support citizen adoption of EVs. Work with development industry to introduce reasonable EV charging requirements in new developments.
Corporate	
Transition Town fleet vehicles to zero emissions	Update purchasing policy. Monitor and assess the applicability of electric vehicles for the Town of Canmore fleet.
Fleet management	Accelerate the retirement of less fuels efficient vehicles with the most fuel efficient technology available for the application, where justified.

Waste

There are two components to reducing emissions from waste: reducing overall consumption and the generation of waste and capturing energy from waste.

Climate Actions to **Reduce Waste**	Implementation
Community & Corporate	
Introduce an organics collection program	Implement organic waste collection program in residential neighbourhoods and the commercial sector. Educate the public on food waste prevention strategies, food storage, and meal planning.
Reduce construction, demolition, and renovation waste	Update policies and procedures related to construction, demolition, and renovation waste to encourage reuse and recycling.
Reduce food waste	Investigate opportunities to reduce the community's food waste and partner with community organizations on implementation.

Climate Actions to **Capture Energy from Waste**	Implementation
Community & Corporate	
Incorporate waste to energy technology	Consider waste to energy projects within the community. Consider implementing a waste to energy policy for new developments. Complete study to determine energy supply from WWTP.
Generate energy from water infrastructure	Perform study on water infrastructure to determine feasibility of generating energy from the installation of pressure reducing valves (PRV) or other technologies.

5.0 Implementation

Act

The recommended actions listed in Section 4 serve as a 'shopping-list'. Town staff and other community stakeholders should establish priorities from the listed actions, and begin implementation as soon as practical. Consideration should be given to forming a cross-departmental and cross-community implementation team to oversee implementation of the Action Plan. Some actions can be implemented quickly with minimal investment, whereas others have longer-term timeframes, require a higher level of investment, and may require a more detailed implementation strategy with specific budgets and funding sources, timelines and milestones for specific activities, and defined roles and responsibilities for specific stakeholders and groups.

One task that should be considered immediately, is to quantify the greenhouse gas reductions embodied in the actions and generate a future forecast taking these actions into consideration. Detailed business cases and budgets will also need to be developed for many of the actions.

Mainstream

This Action Plan is developed as a 'stand-alone' document. However, it is important that climate mitigation is integrated (*i.e*. 'mainstreamed')—as a matter of routine—into Town strategies, plans, policies, programs, projects, and administrative processes. For example:

- Climate mitigation should be considered in future land use and development decisions;
- Strategic plans (*e.g*., the Municipal Development Plan, Land Use Bylaw, Engineering Design Guidelines) and neighborhood scale plans should consider potential future climate change mitigation; and
- Decisions related to the design, maintenance, and upgrading of long-life infrastructural assets and facilities should likewise consider energy consumption, greenhouse gas emissions and their impacts.

Review and update

Climate mitigation and greenhouse gas reduction is not a static process. The opportunities identified in this Action Plan should be viewed as a preliminary step in Canmore's journey towards a climate resilient future; the action planning process is dynamic. This Action Plan should be reviewed and updated every 5 years to ensure it remains relevant and effective, taking account of:

- Lessons learned from the implementation of actions;
- New scientific information about climate projections and corresponding impacts; and
- Changes to the Town's goals and policies.

In order to achieve the Town's short and long-term Climate Action Plan (CAP) goals, assigning responsibility is key to ensure accountability. As such, directing individuals and groups will ensure continuity and progress through changes in staff and leadership.

It is suggested that the Town's **General Manager**:

- Build Town staff capacity to ensure the actions can be implemented effectively. This may include greater interaction with industry, direct mentorship, or formalized training.
- Promote collaboration amongst departments to ensure all actions can be implemented. Clearly define the responsibilities of Town departments on each action.
- Re-evaluate actions and identify possible new actions.
- Provide an update to Council on climate action plan actions, implementation and lessons learned in the second year of each council term.
- Secure funding to support an annual community and Corporate inventory update.
- Town Council direct the Manager of Communications to begin a communications campaign that shares climate success stories and raises awareness about how climate action can improve affordability for Canmore in the long-term.
- Establish Renewable Energy targets.
- Identify secure funding for sustainability initiatives – climate action items.

The **Manager of Planning**:

- Identify any Town activities that may contradict the goals and actions of this plan in order to immediately address these so that GHG emissions can be addressed on a comprehensive level.
- Ensure capacity for this work is met.
- Work on amendments to statutory plans and other relevant policies to advance the goals of the climate action plan.

The **Sustainability Coordinator**:

- Advocate Provincial and Federal Governments for Program funding or financing.
- Review municipal policy documents for any inconsistences with the plan and update accordingly.
- Develop business cases to support specific actions included in the Town's CAP goals.
- Explore the feasibility of software and information systems to track and monitor performance of the action plan, as well as real time GHG emissions monitoring.
- Establish key performance indicators for each of the key actions that can be used throughout the monitoring and implementation process.

- Share status information pertaining to plan actions implemented with the community to re-evaluate actions and also identify possible new actions.
- Share information with appropriate governing bodies: Minister of the Environment and Climate Change (Alberta), Minister of Municipal Affairs (Alberta), Minister of Energy (Alberta), Minister of Infrastructure (Alberta), Minister of the Environment and Climate Change (Canada), and the Minister of Infrastructure and Communities (Canada).
- Foster linkages to universities and technical institutions.

The **Managers of Facilities, Public Works, Engineering**:

- Advance the implementation of the climate action plan and suggest and implement further climate actions that will help us achieve our goals.

It is suggested that the Town's Council support a collaborative partnership between the **Sustainability Coordinator and community non-profit partners** to:

- Cultivate well-known community leaders that support climate change action to help residents, businesses and the development community get on-board.
- Clearly define and communicate responsibilities to all involved stakeholders.
- Draw on community volunteer organizations to work together with the Town to implement the actions.

It is important that the Town begin with small actions that create momentum and build support for more challenging, and more impactful implementation. For this reason, a series of short term wins in Figure 10 can accelerate Canmore's leadership and commitment to climate action.

FIGURE 10: SHORT TERM WINS FOR COMMUNITY & CORPORATE EMISSION REDUCTION

6.0 Monitoring

Ongoing monitoring and reporting of the Town's climate actions is essential to build awareness and keep climate actions top of mind for staff, Council, businesses, and citizens in Canmore. The following is a list of suggested metrics which may be considered and added to.

General

- Update the Town's GHG emissions inventory annually or biennially.
- Report on key success stories resulting from climate actions annually.
- Track and report on the progress of all of the Town's climate actions (see Figure 11).

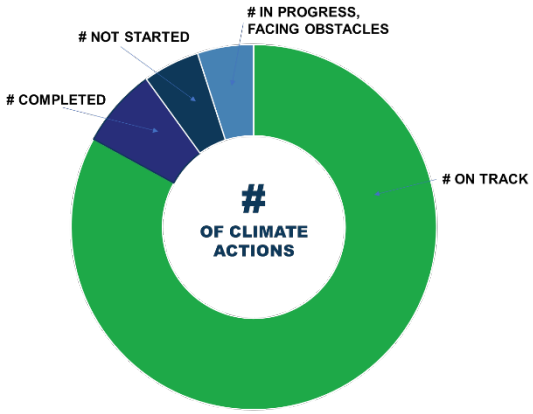

FIGURE 7: CLIMATE ACTION MONITORING

Buildings

- Track the number of homes with an energy label, and number of homes which have undertaken energy retrofits.
- Report annually on the successes associated with the Green Building Regulations.
- Report annually on the installation of renewable energy on buildings.
- Conduct an annual inventory of buildings to adopt energy benchmarking.
- Report annually on the number of energy audits and implementation of recommendations for Corporate facilities.
- Track Corporate energy consumption by building compared to national averages

Transportation

- Track and report annual, vehicle kilometers traveled.
- Measure the walking distance from new developments, particularly affordable housing, to amenities and public transit annually to determine the future level of intensification needed.
- Audit existing active transportation infrastructure annually to generate a list of future improvements.
- Report the number of participants in car-free day and the breakdown of cyclists, walkers, and transit-users for the day (on home-work trips).

- Review parking area vehicle counts.
- Create an inventory of the number of electric vehicle stations in the Town and review annually.
- Monitor Transit Ridership and mode shift.
- Survey residents and visitors regarding their modes of transportation – monitor trend over time.

WASTE

- Report on volume of organics collected.
- Conduct annual audits of local restaurants track organic diversion.
- Require local food banks and shelters to report monthly the number of food items recovered.
- Monitor Waste Diversion Rates.
- Conduct Waste Characterization Audits.
- Monitor Construction/Renovation/Demolition Waste.

Appendix A: Data Utilized to Build Inventory

Sector	Data Source
Buildings	ATCOgas FortisAB
Transportation	1990-2013 National Inventory Report National Energy Use Database: Comprehensive Energy Use Database --> Transportation Sector
Waste	EPCOR Public Works 1990-2013 National Inventory Report, Part 1 IPCC, 2006 Volume 5 Chapter 6 table 6.5 GHG GPC – Section 8

Appendix B: Community Engagement Ideas/*Brainswarm* Activity

Table A: B. 1. Highlights ideas and resources generated from Community engagement session.

Actor	Sector	Ideas	Resources
Community	Stationary	Energy audits: - Hotels - Homes - Commercial	- Fortis AB - ATCOgas - EPCOR - BOWDA - Bullfrog - AB Parks/Parks Canada - Provincial grants - New provincial rebate program - Municipal neighbours o Town of Banff - Municipal grants - Library - Biosphere Institute - Property managers – Asset West Peka - Local Hotel Association - Canmore Community Cruisers - School board to involve local schools - Consultants
		Energy audit incentives - Free energy audits for older homes	
		Retrofits - Motion sensor lighting - LED Smart home technology	
		Retrofit incentives - Deep retrofits - Lighting retrofit incentive - Regulation to follow through on energy audit efficiency recommendations	
		Renewables - Power signage lighting with PV - More solar rebates -	
		Design - Update green building regulation - Efficient design to ensure conservation of resources - Net Zero Energy building code	
	Transportation	Public transport - Increase access - Increase ridership	
		- No idling awareness education - Car share program o Pilot	
		Roads - Improve winter road and trail maintenance for cycling Vehicle - Electric fleet	

Actor	Sector	Ideas	Resources
		- Increase charging stations (clean power)	
	Waste	Organic collection and recycle	
	Misc.	GHG education - Municipal - Social - Non-for-profit Tax incentives for specific programs Best practices for homes	

Table A: B. 2. Highlights ideas and resources generated from Corporate engagement session.

Actor	Sector	Idea	Resource
Corporate	Stationary	Renewables - Dedicate land, e.g. parking lots to solar farm - Develop regional solar PV - Solar on all south-facing roof o Commercial o Residential o Institutional - Increase municipal residential solar program incentive - Co-generation o Commercial o Residential o Institutional	- Solar assessment incentive - Commission solar import map o Highlight best potential locations
		Design - Solar ready homes - Green neighbourhoods or districts - Energy modelling as part of DP requirement	- Stable funding for green initiatives vs offset projects - Franchise purchase agreement $ Green fund - Revise/update LUB Green Building Regulations

Actor	Sector	Idea	Resource
			- Re-use waste heat from apartments/ multi-family building e.g. Sharc technology - Mixed residential and commercial use
	Transportation	Vehicle - Car free day - Car share program o Enterprise car rental o Ogo car share - Purchase electric fleet - Anti-idling publicity - Measure VKT/year	- Carbon tax
		Street design - Pedestrian only street - Separated bike lanes - Road diet and complete streets - Intercept parking - Safe routes to school - Increase bike lanes and trails	- Year-round snow removal along all bike commuter routes - Gas tax
		Alternative modes - Bike share - Free public transit - Bus service to Calgary - Rail service to Calgary	- Ridership - Parting expensive transit fee - E-bikes - Tourism tax toward bus transport - Provincial and Federal – active transportation funding
	Waste	Organic recycling - Private collection - Municipal collection Transport distance - Reduce trucking distance for waste	- Waste to energy - Minimum waste diversion target for building demolition

Actor	Sector	Idea	Resource
			- LUB – require space for compost bins
	Misc	- Look to the Netherlands - Non-essential energy penalty - asset management	- Disincentives for high GHG users and divert $ to green fund - Public opinion - Council strategic priorities - Community Cruisers

Appendix C: 2013 ESAP Energy & Emissions Targets

Table A: C.1. Summarizes Corporate and community targets for energy and climate protection.[6]

Corporate	Community
2015 • Maintain and/or reduce Corporate emissions (T CO_2/year) from 2007 levels	**2015** • Maintain and/or reduce CO_2 emissions (T CO_2/year)
2020 • Reduce GHG e by 50% from 2007 levels	**2020** • Reduce CO_2 emissions to 2007 levels (T CO2/year)
2050 • Reduce GHG e by 80% from 2007 levels and/or operations are carbon neutral	**2050** • Reduce CO2 emissions by 50% from 2007 levels (T CO_2/year)
Fuel Goal • Reduce Corporate fuel consumption	
Emission Goal • Reduce GHG emissions from Corporate fuel to 265,277 kg by 2015 and hold.	

[6] Town of Canmore Environmental Sustainability Action Plan (2013)

Table A: C.2. Highlights Resource Conservation and Waste Management targets[6].

Targets for Town of Canmore (Corporate) and the Community
Total Solid Waste Land-Filled The amount of municipal solid waste land filled will be reduced to: • 0.60 tonnes/person/year by 2015 • 0.45 tonnes/person/year by 2020 • 0.30 tonnes/person/year by 2035
Residential and ICI Wastes Sent to Calgary-Area Landfills The amount of municipal solid waste from the residential and ICI sectors sent to Calgary area landfills (or other landfills) for disposal will be reduced to: • 0.35 tonnes/person/year by 2015 • 0.30 tonnes/person/year by 2020 • 0.20 tonnes/person/year by 2035
C&D Wastes Land Filled at Francis Cooke Landfill The amount C&D wastes from the residential and ICI sectors and the Town of Canmore land filled at the Francis Cooke landfill will be reduced to: • 0.25 tonnes/person/year by 2015 • 0.15 tonnes/person/year by 2020 • 0.10 tonnes/person/year by 2035

Appendix D: The MEETS Coalition

The Bullitt Center, Seattle WA

How It Works

- The utility receives the yield from metered energy efficiency from a customer facility – not the facility
- The metered energy efficiency savings (yield) is billed to the facility by the utility
- Utility resource grade standards are met through a dynamic metering baseline system

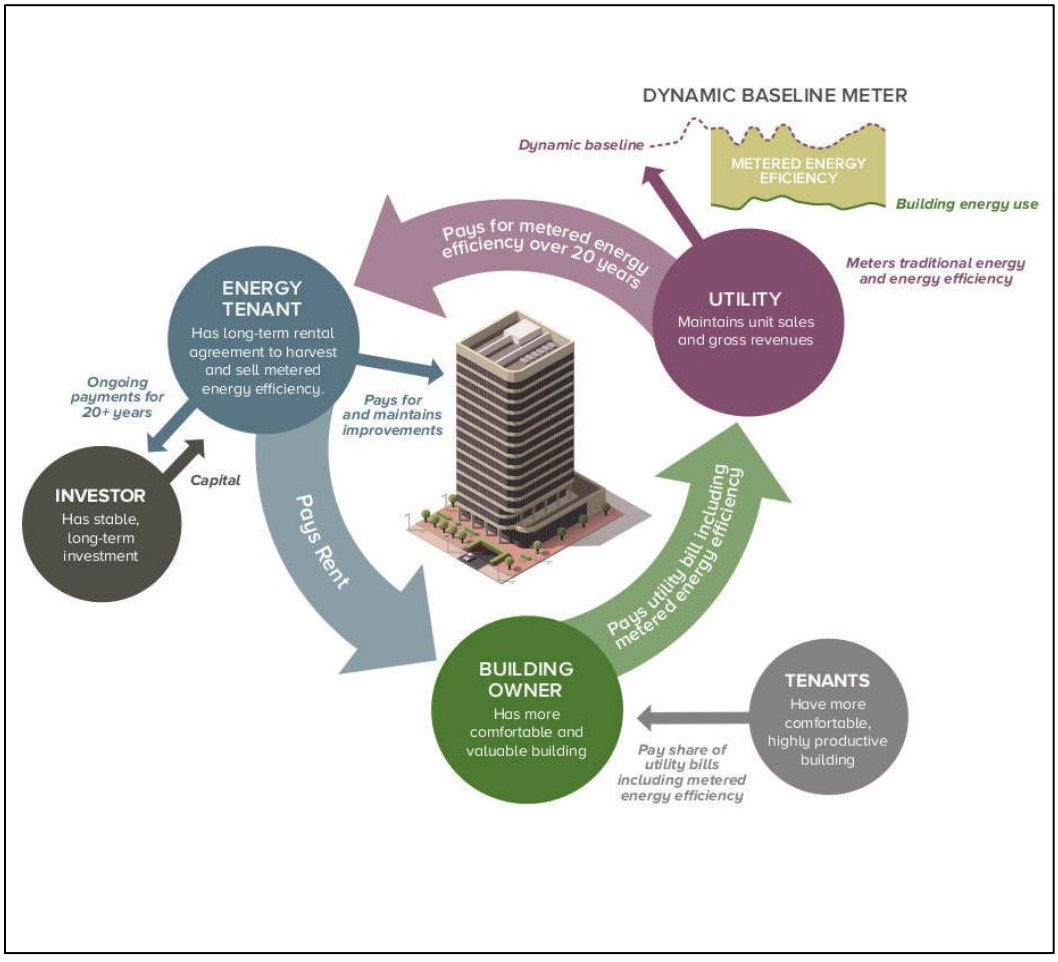

Figure 12 MEETS Coalition[7]

Results

- Utility

[7] http://www.meetscoalition.org/

    - Increase in revenue and unit sales
    - Regulate rate of return investment opportunity
    - Proven delivery for payment systems
    - Are scale load resources that are new, reliable and location-specific
    - Report provable measurements, not “deemed” estimates to regulators
- Building Owner
    - Adds value to building based on outside investment
    - Removes owner capital risks
    - Provides additional income as building acts as an energy efficiency investment vehicle
    - Delivers benefits of an upgrade without entering energy business.
- Investor
    - Offers a stable, asset-based investment from a long-term reliable cash investment
    - Ensures lower and rated payment risk
    - Safeguards investment through well-understood instruments (Power Purchase Agreement, Independent Power Producer and utility equity and bonds for utility-invested model)
    - Provides enhanced liquidity through utility-level portfolio amalgamation
- Societal
    - Promotes a green economy and employment opportunities
    - Reduces at-scale carbon through a new model
    - Fosters confidences in a continuous conservation model
    - Promotes an opportunity to build alliances with all parties involved

Key Success Factors

- The success of each party involved is symbiotically dependent all parties
- Energy efficiency equipment is licensed to the MEETS Coalition
- Members share lessons learned to continuously improve model
- MEETS Coalition is entirely funded by membership fees, thus enabling a self-sustaining model