



Photo: Jason Filsinger

Burnaby Community Energy and Emissions Plan



Community
Energy and
Emissions
Plan



Adopted by Council
2016 November 7

High school students from Moscrop Secondary **providing input** on draft CEEP strategies and actions during a public engagement workshop (2016 June).

Transportation & Solid Waste

Order of priority: *the car will be at the end*

Reduce distances travelled → Reduce reliance on automobiles → Improve vehicle efficiency → Switch fuels

Burnaby's CEEP Transportation Strategies

1. Develop a Transportation Plan that emphasizes citizens' ability to move comfortably around Burnaby at any age as a pedestrian, cyclist, transit user or mobility scooter user.
2. Continue to develop and improve Burnaby's comprehensive pedestrian connections and cycling network.
3. Partner with school boards, community groups, businesses, business associations and the police to foster and support a culture of walking and cycling throughout all parts of the city.
4. Improve the transit experience in Burnaby like more bus stops and more shelters and bus priority measures.
5. Encourage electric vehicle use.
 - Develop electric vehicle use in new developments.
 - Provide charging stations.
 - Encourage electric vehicle use in all communities.
 - Encourage electric vehicle use in all modes of transportation.
 - Encourage electric vehicle use in all modes of transportation.
 - Encourage electric vehicle use in all modes of transportation.

Actions by Others

National, provincial and regional governments, Transit BC, BC Trans

Transportation demand management

- Develop a regional parking strategy
- Adopt a regional road pricing strategy
- Bring in distance-based insurance

Road improvements

- Invest in state and local roads, public transportation funding
- Support the investment for transit and bus rapid transit

Improve the regional cycling network and infrastructure

Vehicle efficiency and fuel switching

- Improve vehicle fuel efficiency programs
- Continue the electric vehicle incentive programs
- Local fuel charge electric vehicle incentive programs
- Improve low carbon fuel standards

Ideas in Action

The City of Burnaby is committed to providing a safe and accessible transportation network for all its residents. This includes providing a safe and accessible network for pedestrians, cyclists, and transit users. The City is also committed to providing a safe and accessible network for all its residents. This includes providing a safe and accessible network for pedestrians, cyclists, and transit users.

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Acknowledgements

Over 200 people have contributed to the creation of the Burnaby Community Energy and Emissions Plan (CEEP).

Mayor Derek Corrigan, Chair of the Environmental Sustainability Strategy (ESS) Steering Committee, and members of Council who served as Steering Committee members, Councillor Dan Johnston (Vice-Chair), Councillor Richard Chang, Councillor Sav Dhaliwal, and Councillor Colleen Jordan, sincerely thank the following members of the community for volunteering their valuable time, energy and ideas:

115	Members of the public
33	CEEP CAN Tool Community Stakeholder Workshop participants*
20	CEEP Steering Committee members*
17	CEEP Renewable Energy/District Energy Workshop participants*
15	ESS Steering Committee CEEP Workshop participants*
14	Community engagement staff*
	Members of the Project Team*
	Supporting Consultants*

*Listed in **Appendix A**.



High density, mixed use buildings in walkable neighbourhoods help to reduce emissions by providing energy efficient housing, stores, offices and energy efficient travel options. **Solo**, in Brentwood Town Centre, includes a geo-exchange system that uses heat from the ground to heat and cool several mixed-use high-rise buildings, that further reduces emissions.



Message from the Mayor

“In the context of a changing climate – not just the atmosphere but also the social and economic climate – we need to take pragmatic steps to improve the resilience of our City (and) to regenerate the health of our environment and community.”

In the CEEP, we will look closely at specific opportunities to improve air quality, make our buildings more efficient, shift to more sustainable transportation, and look for clean and affordable sources of energy – while also reducing emissions. In this way, our emissions target will be built on a sound foundation – not just a number that sounds good. By placing the CEEP within the Environmental Sustainability Strategy, we’ll also make sure the broader environmental, social and economic considerations are taken into account.”

Mayor Derek Corrigan

Speaking on the purpose of the Community Energy and Emissions Plan (2016 March).



The **BC Parkway** in Central Park is a popular bicycle commuting route and walking/jogging trail, giving people green, healthy travel options and helping to reduce emissions.

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B. ESS Phase 3 “Draft ESS” Public Consultation Results Summary	www.burnaby.ca/ess-report-D
C. List of Resources on how to get started	www.burnaby.ca/ess+you



All of **Burnaby's four Town Centres** are all well served by both SkyTrain and buses giving people green, healthy travel options and helping to reduced emissions.

1. What is the CEEP?

Burnaby's CEEP is a plan to reduce the community's overall energy use and greenhouse gas (GHG) emissions, in order to address climate change, improve local air quality, save money, and improve livability and health.

The CEEP was developed under the leadership of Burnaby Council, in support of the Environmental Sustainability Strategy (ESS), as shown conceptually in **Figure 1**, below.



Figure 1. The CEEP supports the ESS

The ESS provides a broad context and framework for sustainability, while the CEEP is a more detailed plan focused on community greenhouse gas (GHG) emissions and energy use. The CEEP supports and complements the ESS and shares the ESS vision and several goals and strategies, as described in **Section 4**.

The CEEP:

- includes targets for GHG reduction along with goals, strategies and actions.
- is a key deliverable of the ESS *Breathe* goal.
- also shares and supports five other ESS goals: *Live, Build, Move, Conserve* and *Manage*.

Why Reduce Emissions?

Climate change is one of the most pressing challenges currently facing society. Burning fossil fuels, including for heating buildings and fueling transportation, is one of the main sources of greenhouse gas (GHG) emissions, a key driver of climate change. The effects of climate change are already being experienced locally and globally. Burnaby's Community Energy and Emissions Plan (CEEP) will help to reduce the community's GHG emissions

while supporting many other goals of the ESS as well as those of Burnaby's economic and social sustainability strategies.

Reducing emissions also has many other benefits, such as:

- Health – as more people walk and cycle instead of drive, their health improves, they are happier, the air is cleaner.
- Reduced costs – buildings that are better insulated are more comfortable and cost less to heat/cool.
- Economic growth – 'green' jobs in building trades, green building materials and renewable energy support our economy in a positive way.
- Livable communities – walkable, 'complete' communities are attractive, lively and enrich our lives.

How Will the CEEP be Used?

Like the ESS, the CEEP challenges all of us to take action – the City, our partner agencies, other levels of government, businesses, community organizations and individual citizens.

The CEEP is intended to provide a clear but flexible framework (**Section 4**) to guide future decisions, as a foundation on which to develop more detailed policies and programs in the future. This flexibility will ensure that the overall intent of the goals and strategies can continue to be met even as opportunities, technologies and approaches evolve.

Burnaby's CEEP takes a unique approach. It identifies a target that can be reached through actions within the City's control – the **City Only target** – and also identifies a target (**Section 5**) that could be reached with all agencies and partners working together – the **City Plus Others target**. The CEEP framework focuses primarily on strategies and suggested actions to meet the **City Only target**.

Once adopted by Council, the CEEP will be referred to by staff across the organization in the development of new policies and programs, or as a basis for advocacy, and will inform the focus and priorities of other strategic plans and policies the City undertakes in the future, such as updates to the Official Community Plan, Transportation Plan and neighbourhood community plans, as well as new or updated bylaws.



Providing a mix of residences, offices and amenities near SkyTrain stations, like in this neighbourhood in the **Metrotown Town Centre**, allows people to get around within walkable neighbourhoods without driving a car, which reduces their transportation emissions.

2. Burnaby Today

Per Person Emissions

Burnaby's per-person emissions compare well with many other cities in BC, Canada and world-wide, as shown in **Figure 2**, below. In 2010 Burnaby's emissions were 4.3 tonnes per person, well below the BC average of 5.0 tonnes per person.

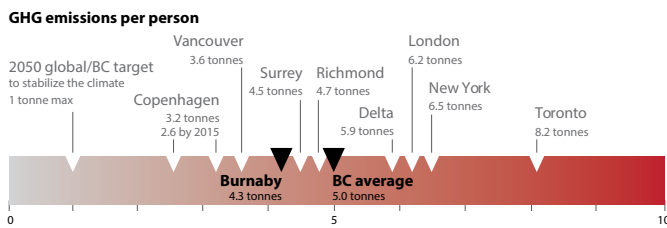


Figure 2. 2010 per-person emissions in Burnaby

Factors that contribute to Burnaby's relatively low per-person emissions include the use of low carbon hydroelectricity, compact land use and a high rate of transit use at 23% of daily trips, compared to a regional average of 14%.

In 2010, Burnaby residents and businesses spent over **\$300 million** on energy. Saving energy would help us all save money and reduce emissions.

Total Emissions

In 2010, Burnaby residents and businesses used over 21 million gigajoules (GJ) of energy, and produced almost one million tonnes of greenhouse gases. As shown in Figure 3, about 50% of Burnaby's emissions are from transportation, 45% from buildings and 5% from solid waste.

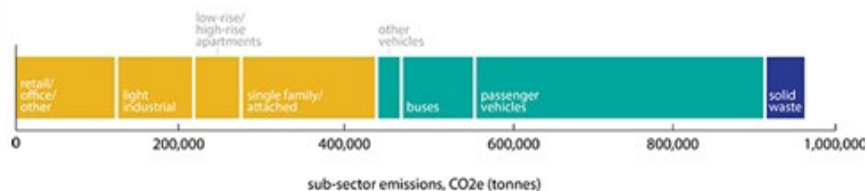
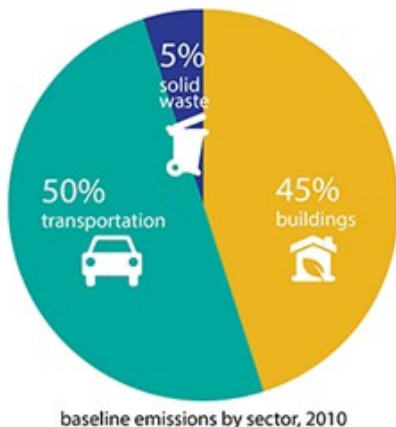


Figure 3. Burnaby's emission sources today, overall (left) and detailed breakdown (right).

Passenger vehicles are the largest single source of the City's emissions, at 37%, and the largest source of transportation emissions, while single-family and attached homes are the second largest source of emissions overall at 17% and represent the largest share of the building emissions, as shown in the right side of **Figure 3**, below.

The Challenge Ahead

Burnaby has made great progress in wise energy use and emissions management with compact land use around SkyTrain stations. However, the City also faces several challenges in reducing total emissions over time, which require careful consideration, including:

- Significant population growth (120,000 more people are expected by 2041);
- Limited control in some areas needed to reduce emissions, such as improving transit service;
- Limited local government resources, both human and financial.

As shown in **Figure 4** below, per-person emissions should continue to decline over time, (blue line at the bottom); however, we can expect significant population growth (the red line at the top), resulting in our total emissions continuing to grow if we do not take action (green line in middle).

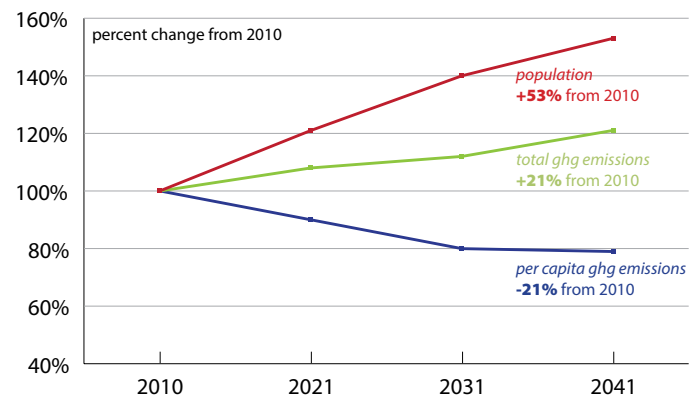


Figure 4. Projected trends in Burnaby's emissions, with no action



Public engagement for the CEEP and ESS took place at many locations, including the BCIT Open House where displays were set up next to the **AFRESH House**. This is a demonstration house with many energy saving and green energy features, and is a part of BCIT's Factor Four initiative, which aims to reduce materials and energy use by 75%. Read more at <http://commons.bcit.ca/factorfour/>

3. How Was the CEEP Created?

The CEEP was developed using a combination of technical work (Phase 1), stakeholder input (Phase 2) and public consultation (Phase 3), as shown in **Figure 5**, below.

The technical work in Phase 1 was based on a rigorous science-based model – the Climate Action Navigator (CAN) Tool – that was calibrated for Burnaby. The CAN Tool calculates today’s emissions and the potential impact of different strategies to reduce emissions in the future.

Proposed strategies were considered by staff, community stakeholders and industry experts in workshops during Phase 2. Draft CEEP strategies and targets were determined by assessing jurisdiction and asking the question: who can do what? The City also considered Burnaby’s ability to implement and deliver, resulting in achievable targets with feasible strategies and actions. This approach allowed participants to understand the impacts of various strategies, to provide input into choosing desirable and feasible strategies, and to have confidence that the chosen target will be achievable.

The draft strategies and proposed targets for the CEEP were shared with the public as part of the ESS public consultation during Phase 3. Public feedback was used to improve the final CEEP report.



CEEP stakeholder workshop, July 2013



CEEP stakeholder workshop, May 2016

Figure 5. The CEEP Process

Phase 1 – <i>Setting the Scene</i> January to July 2013	Phase 2 – <i>Exploring Alternatives</i> July 2013 to July 2015	Phase 3 – <i>Draft CEEP</i> July 2015 to June 2016
Technical Work	Stakeholder Input	Community Engagement
Burnaby Today – Current Emissions	Scenario and Policy Development	Community Engagement, Final Plan
<ul style="list-style-type: none"> • CEEP Steering Committee convened • CAN Tool model calibration • Baseline emissions modeling 	<ul style="list-style-type: none"> • Renewable/district energy workshop • Community stakeholder workshop • Input from CEEP Steering Committee • ESS Steering Committee workshop 	<ul style="list-style-type: none"> • Input from CEEP Steering Committee • Public consultation on Draft CEEP including targets and strategies • Incorporation of feedback into final CEEP, including goals, strategies and suggested actions
<p><i>Outcomes:</i></p> <ul style="list-style-type: none"> • Calibrated emissions model for Burnaby’s context • Projected emissions • Strengths and challenges identified 	<p><i>Outcomes:</i></p> <ul style="list-style-type: none"> • Draft CEEP targets and strategies • CEEP Technical Report 	<p><i>Outcomes:</i></p> <ul style="list-style-type: none"> • Confirmation of level of support for Draft CEEP • Suggestions on how to improve the Draft CEEP report • Final CEEP report

CEEP Framework

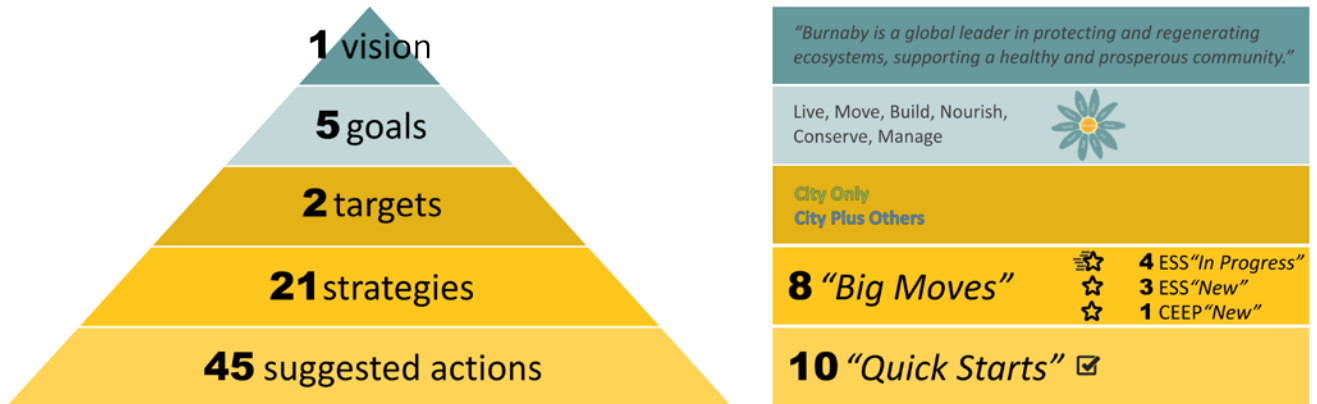


Figure 6. CEEP Framework



Figure 7. Petals (goals) of the ESS, with shared CEEP goals shown in orange.

4. The CEEP Framework

The CEEP framework is intended to support and complement the ESS.

Five Layers

The CEEP includes five layers, as shown in **Figure 6** (left), with each level being supported by more detail in the level below. The top two layers (vision and goals) are shared with the ESS, while the targets, most of the strategies, and the suggested actions are unique to the CEEP and focus more specifically on reducing emissions and energy use.

ESS Vision

The purpose of the ESS vision is to express a common direction for the City's environmental future.

"Burnaby is a global leader in protecting and regenerating ecosystems, supporting a healthy and prosperous community."

Reducing greenhouse gas emissions and energy use, as outlined in the CEEP, supports the ESS vision of a healthy ecosystem and community:

Goals

As shown in **Figure 7** (left), the ESS has ten goals. The ESS goal, *Breathe*, identifies creating and implementing the CEEP as a key ESS strategy and an ESS "Big Move".

As shown in orange on **Figure 7** (left), five other ESS goals are also used in the CEEP: *Live, Move, Build, Conserve* and *Manage*.

- **Live** – Land use planning and development
- **Move** – Transportation
- **Build** – Buildings and energy
- **Conserve** – Waste management
- **Manage** – Governance, education and partnerships

Targets

The CEEP includes targets for GHG emissions reduction, as described in **Section 5** (starting on page 9).

Strategies and "Big Moves"

The CEEP has 21 strategies, which represent ways in which the City proposes to meet each goal. Eight of the 21 strategies are identified as "Big Moves", which represent a significant opportunity, a key strategy necessary to achieve a goal, and/or received strong stakeholder/community support. As shown in

the right column of **Table 1** (on page 26), seven of the "Big Moves" included in the CEEP are ESS "Big Moves":

- **ESS In Progress** – Four ESS "Big Moves" that acknowledge and build on what we are already doing, lend strength and focus to our efforts, link to work in progress, and help to guide, shape and improve what we are doing now.
- **ESS New** – Three ESS "Big Moves" that introduce new areas of work (policies, programs, other actions) and highlight these as priorities for Council's consideration.
- **CEEP New** – One "Big Move" is an additional CEEP-specific "Big Move", included because electric vehicles have so much potential for significant emissions reduction, as shown in the CAN tool modeling.

Suggested Actions and Quick Starts

There are 45 suggested actions in total in the CEEP, supporting the CEEP strategies as listed under the five ESS Goals on pages 16 through 25. In addition, there are 10 ESS "Quick Starts", including one for every "Big Move". These "Quick Starts" are City actions intended to build momentum, demonstrate commitment to the CEEP, and help to initiate action on the more complex "Big Moves", as shown in **Figure 8** below.

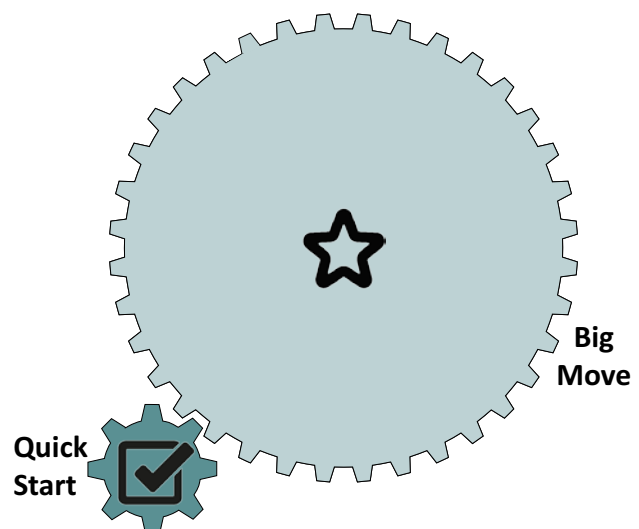
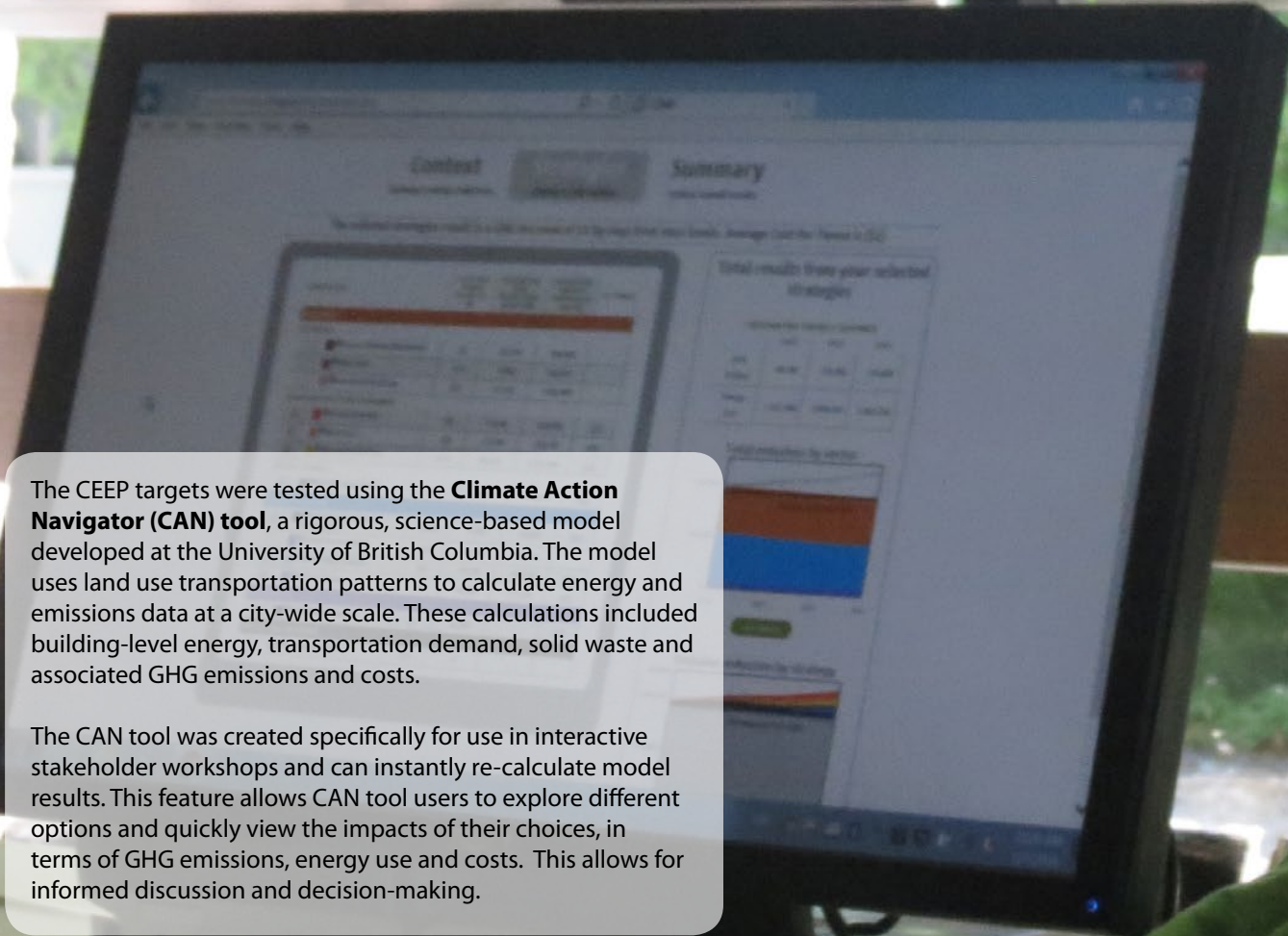
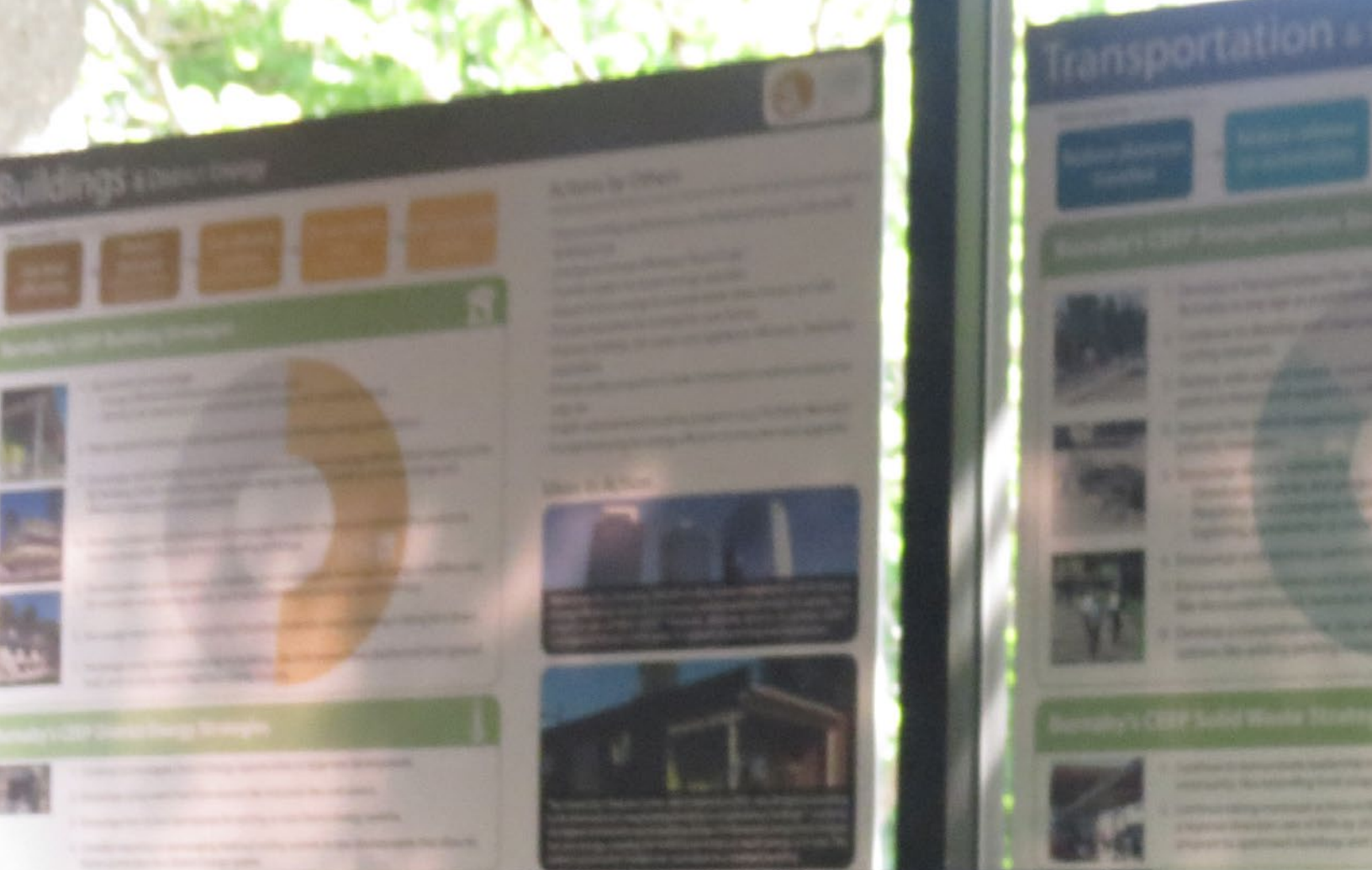


Figure 8. "Quick Starts" help get "Big Moves" going. The "Quick Starts" are also listed under each of the five ESS goals on pages 16 through 25, and summarized in **Table 2** (on page 27).



The CEEP targets were tested using the **Climate Action Navigator (CAN) tool**, a rigorous, science-based model developed at the University of British Columbia. The model uses land use transportation patterns to calculate energy and emissions data at a city-wide scale. These calculations included building-level energy, transportation demand, solid waste and associated GHG emissions and costs.

The CAN tool was created specifically for use in interactive stakeholder workshops and can instantly re-calculate model results. This feature allows CAN tool users to explore different options and quickly view the impacts of their choices, in terms of GHG emissions, energy use and costs. This allows for informed discussion and decision-making.

5. Meeting the Challenge

Reducing energy use and emissions is a shared responsibility and requires effort from the City, its partners, its citizens and other levels of government all working together.

A Unique Approach – Two Targets

Burnaby took a unique approach of setting two targets. A **City Only** target and a further **City Plus Others** target makes it clear how the City can take action and how others can take action.

The primary **City Only** target, in areas the City has control over, is a **5% reduction** in emissions by 2041 compared to 2010. This may sound like a ‘small’ target but it means that, by 2041, projected emissions will be reduced by **over 20%** when compared to the future trend if no action was taken at all. This is a big reduction, as shown in the green band on the right side of the ‘wedge’ diagram in **Figure 9** and **Table 3**, both below.

A second target, **City Plus Others**, shows how much emissions could be reduced if other agencies like the federal government, the provincial government and TransLink also took action alongside the City. The **City Plus Others** target shows that with this cooperation we could reduce community emissions by **over 40%** in total by 2041 compared to if no action were taken. This second part of the reduction is shown in the blue band on the right side of the ‘wedge’ diagram in **Figure 9**, below and **Table 3**, right.

Each of these targets would contribute about equally to a projected GHG reduction by the year 2041.

The CEEP also includes **per-person targets**, as shown in **Figure 10**, below. Burnaby’s 2010 per-person emissions of 4.3 tonnes (t) per year are expected to decrease slightly under “Business as Usual” (if no other action was taken), to 3.4t by 2041. This is because population is expected to increase faster than emissions in the future. The **City Only** per-person target is 2.6t per person by 2041 and the **City Plus Others** per-person target is 2.0t by 2041.

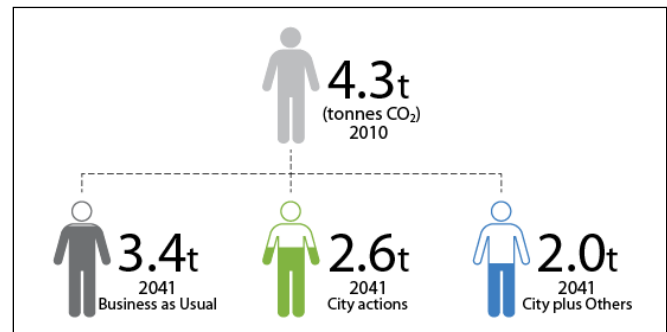


Figure 10. CEEP per-person targets

Table 3. 2041 Emission Reduction Targets

	Below 2010	2041 Reduction
City Only	-5%	-21%
City Plus Others	-29%	-42%

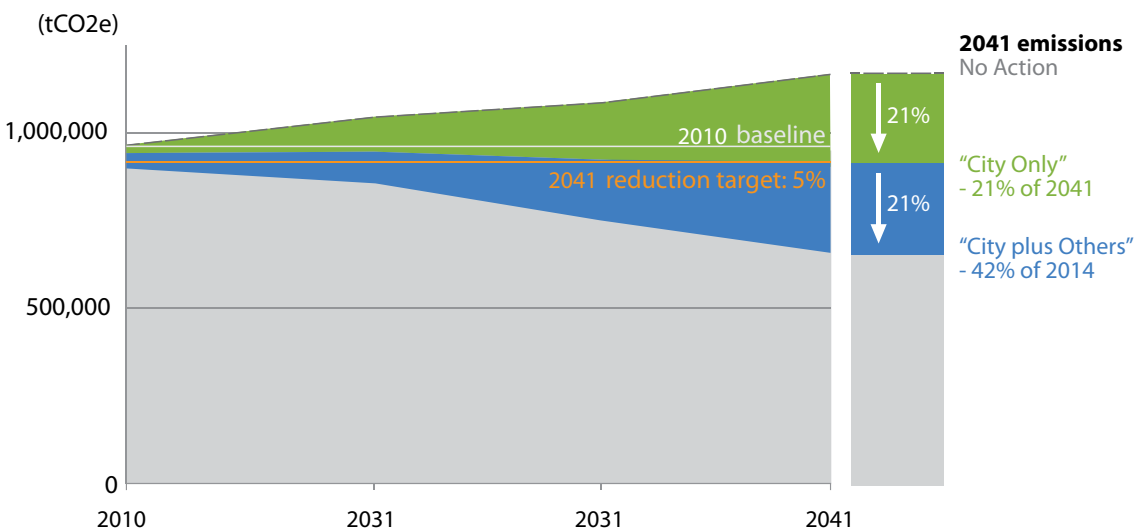


Figure 9. Burnaby’s CEEP Targets – the **City Only** target is for 5% below 2010 levels by 2041; the **City Plus Others** target is for 29% below 2010 levels by 2041; together they represent about equal reduction of emissions in 2041 compared to levels if no action were taken.

Metrotower III, is a 29-story, 400,000 square foot office tower completed in 2014, that features energy efficiency, reuse of stormwater, and exceptional indoor air quality. The project is pre-certified LEED™ platinum, allowing tenants to achieve LEED™ commercial interior certification, in support of greening their businesses.



Areas for Action – City Only Target

The **City Only** target focuses on five areas for action, each including an ESS goal, supporting CEEP strategies and CEEP suggested actions. These five areas of action are:

- **Live** – Land use planning and development
- **Move** – Transportation
- **Build** – Buildings and energy
- **Conserve** – Waste management
- **Manage** – Governance, education and partnerships

As shown in **Figure 11** below, the total **City Only** target is forecast to come mainly from the following three areas of action:

- Improving how we **Build** is Burnaby’s biggest opportunity for reducing greenhouse gas emissions and is 51% of the **City Only** target. Using District Energy to heat buildings in a few key locations could result in an additional 3% of the **City Only** target.
- Changing how we **Move** could result in over a third of our proposed emission reductions or 33% of the **City Only** target.
- Although increasing how much we **Conserve** is something we need to tackle together as a region, there are steps Burnaby can take to reduce our emissions. Reducing our emissions from solid waste helps us to achieve 13% of the **City Only** target.

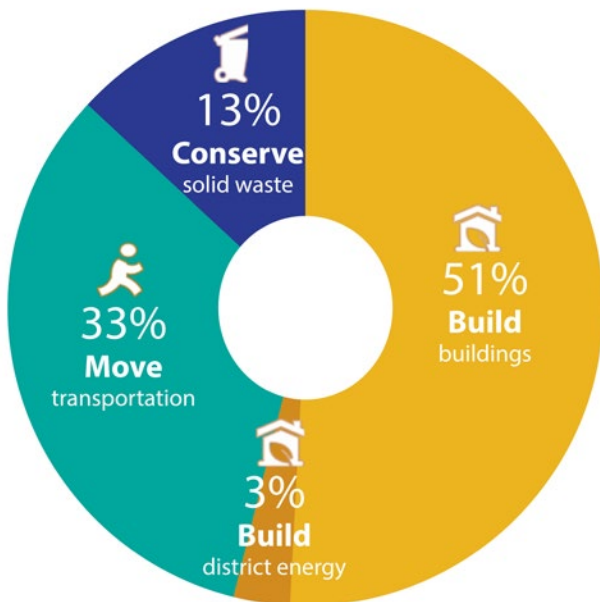


Figure 11. Percentage of the **City Only** target by goal
Note: *Live and Manage* were not modeled directly.

It is estimated that the total net cost to the community (all of us in total - residents, businesses, the City and others) of the proposed **City Only** target would be a savings of \$1 for every tonne of GHGs we reduce. Cost savings in some areas like more energy efficient buildings and reduced travel would offset increased costs in other areas like district energy, vehicle electrification, and waste.

Box 1. More About the Targets.

How Were the Targets Set?

Energy, emissions and costs were evaluated using the Climate Action Navigator (CAN) tool (see page 8). Proposed strategies were considered by staff, community stakeholders and industry experts in workshops using the CAN tool (see **Section 3**). City objectives were determined by assessing jurisdiction: who can do what. The City also considered Burnaby’s ability to implement and deliver, resulting in an achievable target with feasible objectives and actions.

How Will the City Only Target be Used?

A GHG target is simply a goal for reducing emissions, set for a particular date. Burnaby’s City Only target, a 5% GHG reduction compared to 2010 levels by 2041, will be included in the City’s updated Official Community Plan. This CEEP target includes the estimated emissions reduction from specific strategies and actions under the ESS goals of *Move*, *Build* (which includes District Energy), and *Conserve*. The ESS goals of *Live* and *Manage* were not directly modeled but are important and a necessary part of reaching this target.



Burnaby's **new street standards for town centres** contribute to Burnaby being a modern-day green city by providing mobility for all, street trees/habitat, rain-gardens, and social places. These new streets will be "places for people" and will help to reduce air pollution, improve air quality and encourage us to be more active and healthy.

6. CEEP Strategies and Actions

Five Areas of Action

There are five areas of action, each with its own section, within the CEEP – *Live, Move, Build, Conserve* and *Manage*. Each section starts with the related goal from the ESS to ensure the two policies are closely aligned. The supporting CEEP strategies and suggested CEEP actions within each section of the CEEP focus more on energy and emissions than those within the ESS.

Live (listed first) and *Manage* (listed last) provide the framework or structure that lets us achieve results in the other three areas of action - *Move, Build* and *Conserve*.

Move, Build and *Conserve* provide most of the detailed strategies and suggested actions as well as provide most of the estimated emission reductions, as described in **Section 5**.

Live

The City has already made great progress in planning and building an urban structure that supports lower GHG emissions, using higher density Town Centres and Urban Villages linked by SkyTrain and frequent transit service. This strong 'backbone' allows for deeper emissions reductions in the *Build* and *Move* sections of the CEEP. For example, by providing a mix of residences, offices and amenities near SkyTrain stations, people can get around within walkable neighbourhoods without driving a car, which reduces their transportation emissions.

There are also many new things the City can do to improve overall sustainability and livability, and these are identified in the ESS. For these reasons, the *Live* section of the CEEP has less detail.

Move

50% of Burnaby's 2010 emissions come from transportation, and for this reason the *Move* section of the CEEP includes a larger number of strategies and suggested actions. The approach taken for *Move* is based on a hierarchy, shown at the top of the *Move* section of the CEEP (on pages 18 and 19). This emphasizes the importance that we first need to *reduce the distances travelled* by designing communities to be compact, efficient and complete, for example, neighbourhoods where people can live, work and go to school nearby. Secondly, we need to *reduce reliance on automobiles* by providing efficient transit, and safe walking and cycling routes. Recognizing that vehicles for personal and commercial use will still be a part of our community for some

time, we need to *improve vehicle efficiency* and reduce their emissions as much as possible. Finally, we need to *switch fuels* to low-carbon fuels and zero emission vehicles like electric vehicles.

As shown in **Section 5**, improving how we *Move* could result in over a third of our proposed emission reductions or 33% of the **City Only** target.

Build

45% of Burnaby's 2010 emissions come from buildings, representing another large opportunity for specific strategies and actions to reduce emissions in this sector. The *Build* section is also based on a hierarchy shown at the top of the *Build* section of the CEEP (pages 20 and 21). The first priority is to ensure that buildings are designed to *use land efficiency*, again emphasizing compact communities instead of letting development 'sprawl'. Secondly, we need to *reduce demand* for energy by doing things like using 'passive' design to improve building envelopes and insulation. This ensures that a building can remain energy efficient over its lifetime, rather than relying on mechanical systems that can fail. Once demand has been reduced, we need to *use efficient systems* to heat and cool our buildings so they can be designed to be smaller and more efficient. In some cases, opportunities to *reuse waste heat* should also be encouraged, such as from a nearby industrial or commercial source or through a purpose-built district energy system. Finally, we can then make best *use of renewable energy* like solar power. This hierarchy helps to ensure the most efficient, economical and long-lasting gains in energy efficiency and emission reductions.

As shown in **Section 5**, *Build* is Burnaby's biggest opportunity for reducing greenhouse gas emissions at 51% of the **City Only** target and using District Energy to heat buildings in a few key locations could result in an additional 3% of the **City Only** target.

The **UniverCity Childcare Centre** is designed to meet the Living Building Challenge, including producing as much energy as it uses over the year (net-zero-energy). The building uses very little energy because it is very efficient, makes good use of natural daylight, and generates energy using a solar heated hot water system on the roof. The childcare centre also teaches children and visitors about the building's systems and local ecology.

Perhaps most surprising of all, the childcare centre was constructed for less than the budget for a "standard" building. Today's leading approaches may one day become the new standard for all buildings, which would greatly reduce energy use and GHG emissions.



Conserve

Solid waste (garbage) accounts for 5% of Burnaby's 2010 emissions. The City and region are already leaders in this area, therefore the approach for this section of the CEEP is to continue to look for opportunities to improve and expand existing programs.

As shown in **Section 5**, although improving how we *Conserve* is something we need to tackle together as a region, there are steps Burnaby can take to reduce our emissions from solid waste to achieve 13% of the **City Only** target.

Manage

The ESS already contains a number of strategies and actions for *Manage*, so this section of the CEEP has fewer details. However, this section is still critical, as it 'frames' the other CEEP goals by identifying opportunities to demonstrate leadership and work with others to effectively implement the CEEP. This can help to build support from the community and from other levels of government to take further action.

About the CEEP Action Sheets

The CEEP framework is presented in the following action sheets. Each page includes:

- **"Now"** describes some key features about what Burnaby is already doing to meet this goal.
- **"Future"** contains the related ESS goal, *"Actions by the City"*, *"Actions by Others"*, and ideas on *"Actions by You"*
 - *"Action by the City"* contains CEEP strategies and suggested CEEP actions that the City intends to pursue to meet the **City Only** target.
 - *"Actions for Others"* contains CEEP actions required by other organizations, to meet the **City Plus Others target**.
 - *"Actions by You"* points to details listed on pages 28 and 29 that are actions individuals can do at home, at school and in the workplace to help the City meet the targets and goals of the CEEP.



Live - Land Use Planning and Development

Now



Why it Matters:

- Walkable neighbourhoods improve our quality of life and the health of the environment.
- Having places to learn, work, play and shop near our homes allows us to walk, cycle and use transit more and drive less.
- Incorporating nature within our urban neighbourhoods makes them healthier for people, plants and animals.

Now:

Burnaby has many opportunities for convenient urban living, a wide range of housing choices, easy access to SkyTrain, bus routes, parks and community services.

Did you know?

- Burnaby has been planning and building its four town centres - Brentwood, Lougheed, Edmonds, and Metrotown - for over 30 years.
- In the past 20 years Burnaby's population has grown by 66,000 people.
- Another 89,000 people are expected to live in Burnaby 20 years from now.

UniverCity

UniverCity, Burnaby's award-winning sustainable mixed-use community beside Simon Fraser University atop Burnaby Mountain, is home to more than 4,000 people. A variety of people, including young families and working professionals, are choosing to live here for its proximity to nature, walkable and safe streets, local services, and good transit connections to other locations.

Future



Goal

A network of compact and complete communities, within a fabric of healthy ecosystems.

Control: High level of City control and influence.



Actions by City:

C1.1. Continue planning and developing complete communities and transit-oriented development.

Suggested Actions:

- Encourage new developments to use building siting and design to maximize energy efficiency gains.
- Consider opportunities to incorporate more diverse housing choices, such as family-sized units, and amenities in Town Centres and Urban Villages.
- Consider opportunities for smaller, more energy efficient homes in single and two-family neighbourhoods.



Quick Start #10

Review current opportunities to convert more streets for pedestrian use, including temporary car-free events (such as Hats-Off-Day) and opportunities for permanent conversions.



Big Move IN PROGRESS

C1.2. Create accessible outstanding outdoor public spaces that encourage active transportation, socializing and interacting with nature.

Suggested Actions:

See suggested actions under ESS Live 4.3



CEEP



Actions by Others:



Housing

- Fund energy-efficient market and non-market affordable housing programs in transit-oriented neighbourhoods



Childcare

- Provide capital and operating funding for childcare close to where people live/work



Schools

- Consider policies and programs to encourage more local school enrolment

Actions by You:

Want *more info* on how to *get started*?
Please go to page 28 or www.burnaby.ca/ess+you



Move - Transportation

Order of priority (highest to lowest)

Reduce distances travelled

Reduce reliance on automobiles

Now



Why it Matters:

- Walking, cycling and using transit improves our health, improves air quality and reduces carbon emissions .
- Walking, cycling and transit can improve mobility for all ages and abilities.
- Combining a mix of land uses, walkable neighbourhoods, and good transit service makes it easier to get around.

Now:

People in Burnaby have many transportation choices.

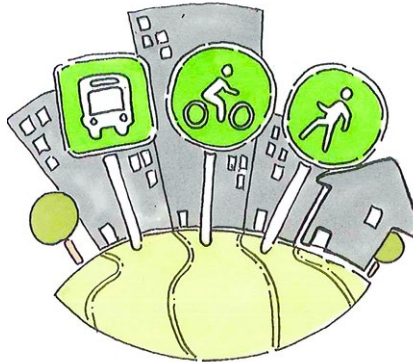
Did you know?

- Burnaby has 11 SkyTrain stations on two lines, and 34 bus routes.
- 23% of Burnaby's daily trips are by transit, higher than the regional average of 14%.
- 62% of Burnaby workers live within 10 kilometers of their jobs and 35% commute to work by transit.
- Burnaby has 145 kilometers of designated bike routes and trails.

Living Streets

Streets in Burnaby's four Town Centres are taking on a whole new look and feel, with wide sidewalks, public art, lush rain gardens and street trees, comfortable seating areas and separated bike paths. This is the result of Council's adoption of the new Town Centre Street Standards, and these features are intended to create delightful environments that encourage people to walk, cycle, and transit to their daily activities.

Future



Goal

A walkable, bikeable, and transit-supported city that supports a healthy community and environment.

Control: Medium level of City control and influence.



Actions by City:



Big Move IN PROGRESS

C2.1 Develop and implement green transportation policies that create vibrant streets, reduce pollution and support healthier, more active lifestyles.

Suggested Actions:

- Consider developing "Complete Streets" policies and supporting programs and budgets to improve mobility for all users, and incorporate spaces and features for environmental and social functions.



Quick Start #11

Review gaps in existing walking, cycling routes and develop recommendations and priorities.

C2.2 Make walking and cycling easier, safer and more comfortable.

Suggested Actions:

- Improve and expand pedestrian and cycling infrastructure to enhance safety, accessibility, connectivity and usability.

- Explore developing a comprehensive plan and programs to accelerate construction and improvements to the city's cycling network, including improving safety and connecting gaps.
- Consider improving usability of existing cycling networks with enhanced wayfinding such as additional signage, maps and navigation apps.

C2.3 Foster and support a culture of walking, cycling and taking transit throughout all parts of the city.

Suggested Actions:

- Look for opportunities to partner with organizations such as HUB, RCMP, Burnaby Board of Trade, and School District 41, to promote cycling and walking through events like Bike to Work/School Week.

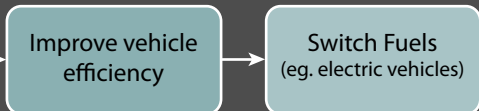


Quick Start #12

Encourage active lifestyles by developing and promoting Parks, Recreation and Cultural Services programs to encourage walking and cycling for fitness and transportation.



CEEP



- b) Encourage businesses and other organizations to provide programs and infrastructure to encourage fewer car trips to work, like bike lockers, showers, discount employee transit fares, modified work schedules, pricing parking, and programs to encourage carpooling.
- c) Lead by example by providing exemplary end-of trip facilities and programs such as listed in C2.3(b) at all City facilities

C2.4 Improve transit experience in Burnaby.

Suggested Actions:

- a) Continue to improve bus stops for safety and comfort, including adding shelters and improving accessibility.
- b) Consider opportunities to implement more bus priority signals.



NEW Big Move

C2.5 Transition to more efficient (including zero-emission) vehicles and more efficient use of vehicles.

Suggested Actions:

- a) Consider developing policy to strategically support deployment of electric vehicles, including appropriate types and density of charging infrastructure in new development and publicly accessible areas, and consideration for public fast-charge station(s).



Quick Start #13

Undertake a preliminary review and policy recommendations to support deployment of electric vehicles

- b) Consider opportunities for demonstrating leadership and accelerating EV adoption by including EVs in corporate fleets, and providing public charging in municipal buildings and parking lots.
- c) Encourage and develop partnerships to expand car-sharing and consider

bike-sharing opportunities in new development.

- d) Support car- and bike-share research to evaluate demand and new opportunities in Burnaby, and consider developing new supportive City policies.

C2.6 Consider developing a comprehensive, city-wide plan for parking that supports the shift toward more sustainable modes of transportation.

Suggested Actions:

- a) Continue to decrease parking demand, along with fewer vehicle trips, by planning and building complete communities that are walkable/bikeable and well served by transit.
- b) Consider opportunities to decrease parking supply such as reduced parking requirements in new development, where supported by measures that reduce the need for personal vehicles, and reviewing the supply and pricing of public on-street parking.
- c) Consider parking policies to encourage the use of more efficient and low-emissions vehicles such as carpool/vanpool, electric vehicles and car-share.

Actions by Others:



Travel Demand Management

- Bring in distance-based insurance
- Adopt a regional road pricing strategy
- Develop a regional parking strategy



Transit improvements

- Ensure stable and increasing public transportation funding
- Upgrade the Frequent Bus Network and/or, upgrade the express bus network.



Improve Cycling Network



Reduce Vehicles Emissions

- Improve vehicle fuel efficiency standards, including for trucks
- Continue the electric vehicle incentives
- Install electric vehicle fast-chargers
- Improve low-carbon fuel standards

Actions by You:

Want **more info** on how to **get started**?
Please go to page 28 or www.burnaby.ca/ess+you



Build - Green Buildings and Energy

Order of priority (highest to lowest)

Use land efficiently

Reduce demand
(efficient buildings, passive design)

Now



Why it Matters:

- Green buildings use less energy and water and cost less to operate.
- Green buildings support healthy ecosystems.
- Buildings can last a long time, so it's important to make smart choices.
- Green building knowledge and technologies are an important part of the green economy.

Now:

Burnaby already has many green residential, office, school and city buildings.

Did you know?

- UniverCity, Burnaby's award-winning sustainable community, is home to over 4,000 people. It has green buildings (energy efficient and water efficient), and a district energy system.
- UniverCity Childcare Centre is a "regenerative" building that produces all its own energy, treats its own waste water and uses only the safest materials.
- New City facilities like the Edmonds Aquatic and Community Centre and the Tommy Douglas Library have green features that help to reduce operating costs and protect the environment.

Living in Harmony with Nature

Harmony House is a "net-zero energy" house in south Burnaby designed to produce more energy than it uses - including charging the family's electric car!

Future



Goal

Buildings and infrastructure that have a positive impact on the environment.

Control: Medium level of City control and influence.



Actions by City:



Big Move IN PROGRESS

C3.1 Meet updated BC Building Code energy efficiency requirements for new buildings.

Suggested Actions:

- Explore ways to improve the skills and knowledge of professionals about energy efficiency requirements in the BC Building Code, for example supporting and promoting programs through BCIT, the Province, BC Hydro and APEGBC.



Quick Start #14

Review issues and possible opportunities to improve compliance, such as with requirements for review of development proposals by an energy professional.



NEW Big Move

C3.2 Improve building design and construction to meet higher standards of environmental performance.

Suggested Actions:

- Consider policy approaches to encourage higher levels of energy

efficiency than required in the BC Building Code, and reduced GHG emissions, in new larger (Part 3 BCBC) buildings, including:

- alignment with provincial Building Act and Step Code;
- integration with existing City development application policy;
- incentives such as grants for innovative projects.



Quick Start #15

Develop policy recommendations for encouraging higher performing buildings through the City's development application process, based upon provincial Step Code or other appropriate performance-based criteria.

- Encourage policy approaches to encourage higher levels of energy efficiency than required in the BC Building Code, and reduced GHG emissions, in new houses and smaller buildings (Part 9 BCBC), including consideration for:

- alignment with provincial Building Act and Step Code;
- integration with existing City development application policy;



CEEP



C3.3 Develop policies and programs to measure and communicate how much energy a building uses, for example using energy audits and EnerGuide labels and/or building benchmarking.

Suggested Actions:

- a) Explore requiring energy audits and reporting, for example EnerGuide labels, as part of the permitting process for new houses and smaller buildings (Part 9 BCBC).
- b) Explore requiring energy audits and reporting, for example EnerGuide labels, as part of the permitting process for significant renovations of houses and smaller buildings (Part 9 BCBC).
- c) Consider developing policy to encourage energy benchmarking (measuring and comparing energy performance) for new and existing commercial and institutional buildings.

C3.4 Develop programs and incentives to encourage residents, businesses and building owners to improve energy efficiency of existing buildings.

Suggested Actions:

- a) Consider ways to promote and communicate about programs, grants and incentives available for energy efficiency and other 'green' home improvements.



Quick Start #8

Provide information to encourage energy efficiency, for example a website/ phone number with information about opportunities for energy efficiency upgrades and grants for homes (new build and renovations).

- b) Consider providing incentives for building energy retrofits, such as a Revitalization Tax Exemption, and financing mechanisms.
- c) Consider ways to engage citizens, raise awareness and celebrate champions in reducing energy use and GHG emissions, such as with information campaigns, workshops and a community energy challenge.

- d) Consider additional ways to encourage energy efficiency upgrades during residential and commercial renovations.

C3.5 Investigate district and energy sharing opportunities and encourage their development in appropriate locations.

Suggested Actions:

- a) Explore developing policies to encourage or require investigation and development, where appropriate, of District Energy systems in new developments.
- b) Explore opportunities to use existing waste heat sources for District Energy systems.
- c) Consider policy approaches to require or encourage heating/cooling systems in new developments that allow for connection with an existing or future approved District Energy system.

C3.6 Encourage using renewable energy in buildings, like solar power/heat, geo-exchange (heat from the ground), and re-using waste heat from nearby sources.

Suggested Actions:

- a) Consider developing policies and incentives, and supporting research, to encourage renewable energy.
- b) Encourage and support leading practices in buildings, like Living Building Challenge, passive house and net zero energy.

Actions by Others:



Regulations

- Improve energy performance in the National Energy Code and BC Building Code
- Develop an energy efficiency "Step Code"
- Require home energy EnerGuide labels when houses are sold
- Improve heating and hot water efficiency standards/regulations
- Enhance appliance efficiency standards/regulations
- Improve lighting standards/regulations



Programs

- Provide utility programs to help commercial customers reduce energy use
- Enable national benchmarking programs (e.g. Portfolio Manager)



Incentives

- Provide a comprehensive rebate program for home energy upgrades
- Provide incentives for EnergyStar new homes
- Provide financing for energy efficient construction and retrofits

Actions by You:

Want **more info** on how to **get started**? Please go to page 28 or www.burnaby.ca/ess+you



Conserve - Waste Management

Now



Why it Matters:

- In nature, there is no such thing as “waste” – everything is recycled.
- Disposing of waste is very expensive and releases greenhouse gases.
- Creating new products from recycled materials can create local “green” jobs.
- Using waste as a resource can be good for our local economy while reducing the need for new resources.

Now:

Burnaby has a successful food-scrap collection and recycling program serving houses, townhouses and apartments.

Did you know?

- Burnaby diverts almost half of its waste by recycling and composting.
- Burnaby’s new Eco-Centre accepts a variety of materials for recycling including appliances, hard and soft plastics, metal, paints and household chemicals, and Styrofoam.
- The Waste-to-Energy facility, located in Burnaby since 1998, processes 25% of the region’s garbage and produces enough electricity to power 15,000 homes.

High Rise Recycling Champions

Seemingly “ordinary” citizens – residents and strata members of an older high-rise apartment building in Burnaby become recycling super-heroes who are now sought out to teach others the secrets of their success. They are a great example leading the way by doing.

Future



Goal

World-leading waste reduction, diversion and management.

Control: Medium level of City control and influence.



Actions by City:



Big Move IN PROGRESS

C4.1 Expand and improve waste reduction, recycling and food scraps programs.

Suggested Actions:

- Continue to collaborate with Metro Vancouver and other partners to expand existing programs and explore new opportunities for using organic waste as resources, for example composting yard waste and food scraps.
- Continue to explore new opportunities to reduce waste, and recycle and re-use materials, including those actions listed in the Conserve section of the ESS.



Quick Start #20

Conduct a policy and program scan of practices elsewhere and opportunities to Burnaby for neighbourhood recycling drop-off.

C4.2 Encourage more re-use and recycling of building materials when a building is being torn down.

Suggested Actions:

- Review City opportunities and work with Metro Vancouver to consider policies to encourage or require re-use and recycling of materials resulting from demolition, land clearing and construction.

C4.3 Continue to demonstrate leadership in waste reduction, recycling and re-use in City facilities and operations.

Suggested Actions:

- Continue and expand City programs and partnerships to reduce food waste, such as the “food runners” pilot program.
- Work with partners in the community to encourage waste diversion, including the School District and community groups.





Actions by Others:



Reduce

- Improve and expand Extended Producer Responsibility programs to reduce waste at source and fund collection and recycling programs



Recycle

- Consider right-sizing solid waste collection and servicing fleet vehicles for greater efficiency
- Continue to support implementation on the current regional waste plan

Actions by You:

Want *more info* on how to *get started*?
Please go to page 28 or www.burnaby.ca/ess+you



Manage - Governance, Education and Partnerships

Now



Why it Matters:

- Cities are leading the way in many areas of sustainability around the world.
- Burnaby relies strongly on its partnerships with others in the community.
- Education provides a foundation of knowledge and understanding for tomorrow's leaders.

Now:

Burnaby was recognized as the "Best Run City in Canada" in 2009 by Maclean's Magazine.

Did you know?

- Burnaby was the first city to celebrate World Rivers Day in 1993.
- Streamkeepers help to protect and restore many waterways across the city.
- Every year Burnaby hosts Environment Week activities and presents Environment Awards to leaders in the community.
- Burnaby provides public education on many environmental topics, including food scraps recycling, water conservation, and invasive species control.

Networks of Blue and Green

Initiated in 1972, Burnaby's Open Watercourse Policy has had far-reaching effects directly influencing the ecology and form of the city as we know it now. Today there are over 90 open streams in the city, supported by many City programs for stream protection.

Future



Goal

Environmentally aware and engaged community working together to improve Burnaby's environmental performance.

Control: High level of City control and influence.



Actions by City:



NEW Big Move

C5.1 Demonstrate leadership in sustainability through City facility and operations management by reducing energy and GHG emissions, conserving water, reducing and diverting waste and enhancing ecosystems.

Suggested Actions:

- Look for opportunities to incorporate leading green building practices and energy retrofits in City projects, and share learnings broadly.



Quick Start #23

Review upcoming civic building projects for opportunities to demonstrate energy-efficient passive design and net-zero energy.

- Explore developing a corporate energy and emissions plan.



NEW Big Move

C5.2 Improve sustainability management through enhanced City business practices, system development, and leadership.

Suggested Actions:

- Consider options to resource and support implementation of the CEEP.
- Seek to improve communication and coordination of energy and emissions reduction initiatives among departments.



Quick Start #24

Provide an annual report via the Environment Committee of Council on progress and implementation of the ESS and CEEP.

- Consider approaches and tools to monitor and report on progress toward the CEEP targets.

C5.3 Continue to develop partnerships with community-based organizations, businesses, developers, public agencies, utilities, and institutions to advance action on community energy.

Suggested Actions:

- Look for opportunities to partner with others in programs to reduce emissions and energy in the community, for example including BBOT, SFU, BCIT, SD41, developers, utilities, HUB, car-share providers.





C5.4 Advocate for federal, provincial and regional policies, regulations and programs that support Burnaby's CEEP and the transition to a low-carbon future.

Actions by Others:



Policies

- Adopt and implement progressive provincial and federal climate and sustainable energy policies



Incentives

- Increase the carbon tax while continuing low-income rebates
- Provide funding for local government climate action
- Provide incentives for homeowners, businesses and vehicle owners to make sustainable choices
- Fund sustainable infrastructure projects like transit and cycling that support local climate action



Information

- Provide up-to-date BC-wide community energy and emissions inventories

Actions by You:

Want *more info* on how to *get started*?
Please go to page 28 or www.burnaby.ca/ess+you

Table 1: Summary of the CEEP “Big Moves”

“Big Moves” are priority strategies intended to set long-term directions, while allowing flexibility to be pragmatic so that the City can better meet the needs of a changing world at every level of the organization. Seven of the eight “Big Moves” included in the CEEP are from the ESS and all seven of these use the ESS strategies as the CEEP strategies as well. Only the last “Big Move” is unique to the CEEP. This helps to ensure the ESS and CEEP are closely aligned.



ESS Big Moves IN PROGRESS

Five ESS “Big Moves IN PROGRESS” have also been included in the CEEP. These “Big Moves” build on what we are already doing, lend strength and focus to our efforts, link to work in progress, and help to guide, shape and improve what we are doing now.

Goal	Big Move IN PROGRESS	ESS Strategy	CEEP Strategy
BREATHE	Reducing Emissions	3.1. Reduce community greenhouse gas (GHG) emission rates, including in the areas of transportation, buildings, district energy and waste.	Development and implementation of the CEEP as a whole.

Goal	Big Move IN PROGRESS	ESS #	Shared Strategies	CEEP #
LIVE	Public Spaces	4.3	Create accessible outstanding outdoor public spaces that encourage active transportation, socializing and interacting with nature.	C1.2
MOVE	Transportation Shift	5.1	Develop and implement green transportation policies that create vibrant streets, reduce pollution and support healthier, more active lifestyles.	C2.1
BUILD	Building Better	6.1	Meet updated energy performance building code requirements for new buildings.	C3.1
CONSERVE	Reducing Waste	9.3	Expand and improve waste reduction, recycling and food scraps programs.	C4.1



ESS NEW Big Moves

Three ESS “NEW Big Moves” have also been included in the CEEP. These Big Moves identify new areas of work (policies, programs, other actions) as priorities for Council’s consideration.

Goal	Big Move NEW	ESS #	Shared Strategies	CEEP #
BUILD	Regenerative Buildings	6.2	Improve building design and construction to meet higher standards of environmental performance.	C3.2
MANAGE	Leading by Example	10.3	Demonstrate leadership in sustainability through City facility and operations management by reducing energy and GHG emissions, conserving water, reducing and diverting waste and enhancing ecosystems.	C5.1
MANAGE	Community Sustainability	10.4	Improve sustainability management through enhanced City business practices, system development, and leadership.	C5.2



CEEP NEW Big Move

One additional “NEW Big Move” has been identified for the CEEP based upon strong stakeholder and public feedback and the opportunity it represents for significant emissions reduction, as shown through modeling.

Goal	Big Move NEW	ESS Strategy	CEEP Strategy
MOVE	Encouraging Electric Vehicles	5.6. Transition to more efficient (including zero-emission) vehicles and more efficient use of vehicles.	C2.5. Transition to more efficient (including zero-emission) vehicles and more efficient use of vehicles.

Table 2: Summary of CEEP “Quick Starts”



Quick Starts

For every “Big Move” there is a supporting “Quick Start” to get things moving. “Quick Starts” are City actions designed to take advantage of short term opportunities and demonstrate commitment to the CEEP. All 10 of the “Quick Starts” included in the CEEP are ESS “Quick Starts”. This helps to ensure the ESS and CEEP are closely aligned.

“Quick Start”		Goal (Strategy #)		“Big Move”
#	Quick Start (ESS & CEEP)	Goal & Strategy # (ESS/CEEP)	Strategy (ESS & CEEP)	Big Move (ESS & CEEP)
8	Provide <u>information</u> to encourage energy efficiency , for example a website/phone number with information about opportunities for energy efficiency upgrades and grants for homes (new build and renovations).	Breathe 3.1 Breathe C3.4	Develop programs and incentives to encourage residents, businesses and building owners to improve energy efficiency of existing buildings .*	
10	Review current opportunities to <u>convert more streets</u> for pedestrian use , including temporary car-free events (such as Hats-Off-Day) and opportunities for permanent conversions.	Live 4.3 Live C1.2	Create accessible outstanding outdoor public spaces that encourage active transportation, socializing and interacting with nature.	
11	Review gaps in existing walking, cycling routes and develop <u>recommendations</u> and <u>priorities</u> .	Move 5.1 Move C2.1	Develop and implement green transportation policies that create vibrant streets, reduce pollution and support healthier, more active lifestyles.	
12	Encourage active lifestyles by developing and promoting <u>Parks, Recreation and Cultural Services programs</u> to encourage walking and cycling for fitness and transportation.	Move 5.4 Move C2.3	Foster and support a culture of walking, cycling and taking transit throughout all parts of the city.*	
13	Undertake a <u>preliminary review</u> and <u>policy recommendations</u> to support deployment of electric vehicles .	Move 5.6 Move C2.5	Transition to more efficient (including zero-emission) vehicles and more efficient use of vehicles.	
14	Review <u>issues</u> and <u>possible opportunities</u> to improve compliance , such as with requirements for review of development proposals by an energy professional.	Build 6.1 Build C3.1	Meet updated energy performance building code requirements for new buildings.	
15	Develop <u>policy recommendations</u> for encouraging higher performing buildings through the City’s development application process, based upon provincial Stretch Code or other appropriate performance-based criteria.	Build 6.2 Build C3.2	Improve building design and construction to meet higher standards of environmental performance.	
20	Conduct a <u>policy</u> and <u>program scan</u> of practices elsewhere and opportunities to Burnaby for neighbourhood recycling drop-off.	Conserve 9.3 Conserve C4.1	Expand and improve waste reduction, recycling and food scraps programs.	
23	Review upcoming civic building projects for opportunities to demonstrate energy-efficient <u>passive design</u> and <u>net-zero energy</u> .	Manage 10.3 Manage C5.1	Demonstrate leadership in sustainability through City facility and operations management by reducing energy and GHG emissions, conserving water, reducing and diverting waste and enhancing ecosystems.	
24	Provide an <u>annual report</u> via the Environment Committee of Council on progress and implementation of the ESS and CEEP .	Manage 10.4 Manage C5.2	Improve sustainability management through enhanced City business practices, system development, and leadership.	

*Two of the CEEP strategies (Breathe C3.4 and Move C2.3) have more detailed wording that is unique to the CEEP.

What Can You Do?

This section lists some ideas for how you can help.



LIVE

Walkable Neighbourhoods

- Walk or bike for short trips.
- Team up with other parents to walk kids to school.
- Shop locally.
- Organize a block party with neighbours.

Get involved

- Learn about proposed development in your neighbourhood.
- Support features in new development like sidewalks and bike paths that improve walking and biking.
- Encourage environmentally friendly city planning.



MOVE

Walk

- Walk to close-by places (2-5 km), if possible.
- Shop, eat and play at walkable destinations.
- Get children used to walking early on.

Cycle

- Cycle to medium distance places if possible.
- Cycle to work or school one day per week, or more!
- Teach children safe cycling skills.
- Consider buying an electric bike for longer distances.

Transit

- Take transit rather than a car, whenever possible
- Choose to live in a place well served by transit.
- Support improvements to transit.

Reduce Driving Emissions

- Avoid idling.
- Combine your trips.
- Keep your car tuned up.
- Share a vehicle within your household or by joining a car co-operative.
- Walk, cycle or take transit when possible.
- Carpool to work, schools and for longer trips.
- If moving to a new home, consider a location close to work/school and amenities.
- If buying a new car, consider electric or hybrid.



BUILD

Conserve Energy at Home

- Replace incandescent bulbs with LED.
- Choose ENERGY STAR appliances.
- Have a home energy EnerGuide assessment done.
- Consider an energy efficient renovation rather than rebuilding.
- Fix leaky windows and doors in your home.
- Take advantage of free or discounted energy savings offers.

Home Renovations

- Add extra insulation.
- Install energy efficient appliances.
- Use Energy Star windows/doors.
- Have a home energy EnerGuide assessment before you renovate and apply energy label after.
- Choose low-impact, sustainably sourced or recycled materials.
- If doing a large renovation, consider designs that holistically and substantially reduce energy use.

New Green Buildings

- Support development of green buildings.
- Consider energy efficiency when choosing a new home.
- Design your new home for energy efficiency.
- Include an energy assessment and energy label in the home.
- Recycle demolition and building materials from construction.

Regular text items are identified in the ESS and underlined items are new items added in the CEEP.



CONSERVE

Reduce

- Buy less and only what you need.
- Avoid wasting food.
- Buy higher quality products that last longer.
- Use refillable water bottles and coffee cups.
- Challenge yourself and your family to produce as little garbage as possible!

Re-use

- Re-sell or donate items.
- Use salvaged materials and appliances for renovations.
- Re-purpose and re-use construction materials.
- Compost food scraps at home or in City green bin program.

Recycle

- Sort recycling, food scraps and garbage properly.
- Recycle everywhere, including at home, school, work, restaurants, while traveling and at public events.
- Use available food scraps recycling stations whenever they are available, like at the mall.
- Return batteries, oil, metal, paint, plastic, Styrofoam, glass, paper, etc. to the Eco-Centre.
- Return bottles and electronics to the Return-It Depot.



MANAGE

Educate

- Learn about energy, climate and sustainability issues that interest you.
- Support environmental education in schools.
- Enroll in a cycling course on safe commuting skills.

Get engaged

- Participate in events like Earth Hour, Bike to Work and School weeks, and Car-Free Festivals.
- Vote!
- Give feedback to the City – write letters, attend open house events or attend Council meetings.
- Volunteer with an environmental community organization.
- Organize a neighbourhood clean-up and recycling day.

Communicate and Network

- Share your knowledge with others at work, school and at home.
- Write an article or blog.
- Host a neighbourhood party or event with an energy conservation theme.



The **Energy OASIS** at BCIT uses solar photovoltaic (PV) panels to generate 142MWh of electricity per year. The power generated is used to charge electric vehicles and to offset the electricity used on the Burnaby campus.



7. Next Steps and Conclusion

Next Steps

Like the ESS, putting the CEEP into action will involve an iterative process of taking action, tracking and reporting, evaluating and updating, as shown in **Figure 12**, below. Reporting out on the CEEP progress will occur regularly, likely in conjunction with the ESS.

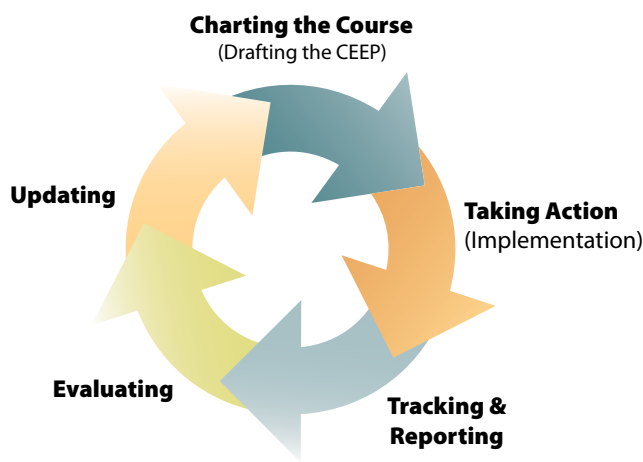


Figure 12. The iterative approach of carrying out the CEEP

Reducing Emissions Supports Broader Sustainability Goals

Climate change is one of the most pressing concerns faced by society worldwide, and we all have a responsibility to reduce greenhouse gas (GHG) emissions. Local governments have a lot of direct influence to reduce community emissions, and can also benefit from these actions. Undertaking the CEEP in coordination with the ESS has underscored the strong linkages between energy and emissions and other sustainability priorities. For example, making our community more walkable and bike-able will not only reduce emissions but also improve our health. High quality and efficient buildings use less energy, improve comfort and also save us money. Industries and businesses with a strong focus on sustainability and low-carbon products and services can contribute to a prosperous local economy.

Working Together is Key

The major shifts required to significantly reduce our GHG emissions also require strong cooperation and the combined efforts of individual citizens, businesses, non-profit organizations, schools and universities, utilities, and governments at all levels. For this reason, Burnaby's CEEP has taken a unique approach, in setting a **City Only** target, which includes actions within the City's control, and a **City Plus Others** target, which will require working together with others.

The CEEP is Just the Beginning

There are many reasons to be optimistic, and positive change can often happen in unexpected ways. For example, changes in technology and new social movements can happen quite quickly. For this reason, the CEEP is not intended to be the end of the process, but rather the beginning. The CEEP sets Burnaby's framework for managing its future energy and emissions as a flexible and pragmatic plan that can be adjusted to respond to new opportunities.



Appendix A



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Appendix A

Acknowledgements

In addition to the 115 members of the public, the following individuals all contributed to the creation of the CEEP.

33 CEEP CAN Tool Community Stakeholder Workshop Participants

We extend our thanks to the following people who attended the day-long CAN Tool Stakeholder Workshop on July 10, 2013.

Community Stakeholders

Julie Alcock	BCIT Facilities
Jeff Carmichael	Metro Vancouver
Connie Chan	student intern, MOSAIC
Sherman Chan	MOSAIC
Emory Davidge	HBL Golder
Dennis Hansen	HUB Cycling
Gary Hamer	BC Hydro - residential (net zero homes)
Jesse Koehler	Senior Transportation Planner, TransLink
Bohdan Kostecky	Facilities Management, Simon Fraser University
Toby Lao	BC Hydro, Codes and Standards
Michael Liu	Fortis
Courtney Miller	Sustainability Planner, Architect
Jeremy Moorhouse	SFU student with Professor Jaccard
Josh Munroe	Energy Specialist, School District 41
Martin Nielsen	Dialog
John O'Donnell	Ledingham McAllister
Bill Petrovas	Edmonds Business and Community Association
Dave Schick	Chevron
David Switzer	Heights Merchants Association and ESS Steering Committee member
Alex Tsang	Electric Vehicles Specialist, BC Hydro
Tessa Vanderkop	Burnaby Board of Trade
Robyn Wark	Sustainable Communities, BC Hydro
Taylor Zeeg	Compass Resource Management

Burnaby Staff

Richard Ching	Energy Coordinator
Kel Coulson	Environmental Engineer
Dion Doepker	Civil Engineer, Development Services
Leah Libsekal	Transportation Planner
Rebekah Mahaffy	Social Planner
Margie Manifold	Social Planner
Alan Scales	Financial Planning & Capital Equity
Mark Sloat	Environmental Planner
Johannes Schumann	Community Planner
Lise Townsend	Ecosystem Planner

20 CEEP Steering Committee members

We extend our thanks to the following people who contributed to the project as members of the CEEP Steering Committee at several key decision points during the project from 2013 through 2015.

Jeff Carmichael	Division Manager, Utility Research and Innovation, Metro Vancouver
Gisele Caron	Purchasing Manager, City of Burnaby
Richard Ching	Energy Coordinator, Engineering Facilities Management, City of Burnaby
Kel Coulson	Environmental Engineer, City of Burnaby
Dion Doepker	Civil Engineer, Development Services, City of Burnaby
Mia Edbrooke	Senior Policy Analyst, Utility Research and Innovation, Metro Vancouver
Lee-Ann Garnett	Assistant Director, Long Range Planning, City of Burnaby
Karin Hung	Senior Current Planner, City of Burnaby
Jesse Koehler	Manager, Strategy and Plan Development, TransLink
Peter Kushnir	Deputy Chief Building Inspector, Plan Checking, City of Burnaby
Leah Libsekal	Transportation Planner, Long Range Planning, City of Burnaby
Rebekah Mahaffey	Social Planner, Long Range Planning, City of Burnaby
Margie Manifold	Senior Social Planner, Long Range Planning, City of Burnaby
Tom Ng	Assistant Director Engineering, Facilities Management, City of Burnaby
Simone Rousseau	Environmental Engineer, Environmental Services, City of Burnaby
Alan Scales	Research Analyst, Support Services, City of Burnaby
Patrick Shek	Chief Building Inspector, City of Burnaby
Mark Sloat	Environmental Planner, City of Burnaby
Zeralynne Te	Current Planner, City of Burnaby
Robyn Wark	Team Lead, Senior Key Account Manager, BC Hydro

17 CEEP Renewable Energy/District Energy Workshop participants

We extend our thanks to the following people who attended the CEEP Renewable Energy/District Energy Workshop on May 21, 2013.

Stakeholders	Jeff Carmichael, Division Manager, Utility Research and Innovation, Utility Planning, Metro Vancouver Jason Emmert, Air Quality Planner, Metro Vancouver Matt Foley, Manager, Facilities Services/District Energy Manager, Burnaby SD41 Mike Homenuke, KWL Bohdan Kosteckyi, Facilities Management, SFU Dale Mikkelsen, Director of Development, SFU Community Trust Josh Munro, Energy Specialist, Burnaby SD41 Rory Tooke, PhD candidate, UBC Robyn Wark, Senior Key Account Manager, BC Hydro Taylor Zeeg, Associate, Compass Resource Management
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Burnaby Staff	Richard Ching, Energy Coordinator David Clutton, Long Range Planner Dipak Dattani, Assistant Director Engineering, Environmental Protection Dion Doepker, Development Services Engineer Ed Kozak, Assistant Director, Current Planning Lise Townsend, Ecosystem Planner
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15 ESS Steering Committee CEEP Workshop Participants

We extend our thanks to the following people who attended the CAN Tool Stakeholder Workshop on July 3, 2013.

ESS Steering Committee Members

Chair	Derek Corrigan, Mayor, City of Burnaby
Vice Chair	Dan Johnston, Councillor, City of Burnaby
	Sav Dhaliwal, Councillor, City of Burnaby
	Colleen Jordan, Councillor, City of Burnaby
	Mark Angelo, Chair emeritus of the Rivers Institute at the British Columbia Institute of Technology (BCIT)
	Paul Cipywnyk, Owner and editor of Cipko Consulting Ltd and citizen rep on the City of Burnaby Environment Committee
	Diane Gillis, President of the Kingsway Imperial Neighbourhood Association (KINA)
	Paul Holden, President & CEO, Burnaby Board of Trade
	Isabel Kolic, Executive Director, Heights Merchants Association BIA
	Jennie Moore, Director of Sustainable Development and Environmental Stewardship, British Columbia Institute of Technology
	Dirk Odenwald, CFO, ABC Recycling
	Bill Schwartz, Principal of Polestar Communications Inc.
	Tom Sigurdson, BC Building Trades
	Dave Switzer, Businessman and Director, Heights Merchants Association BIA

Biographies for the ESS Subcommittee members can be found at www.burnaby.ca/ess-sc.
Terms of Reference for the Steering Committee can be found at www.burnaby.ca/ess-sc-tor.

Additional Guests	Gavin Yao, Zhongshan Overseas and Foreign Affairs Bureau (Burnaby's Sister City) Robyn Wark, BC Hydro
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Burnaby Staff	Dipak Dattani, Assistant Director Engineering, Environmental Protection Karen Leach, Communications Lou Pelletier, Director Planning & Building Mark Sloat, Environmental Planner Lise Townsend, Ecosystem Planner Blanka Zeinabova, Administrative Officer
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Consultants	Duncan Cavens, C2MP Emory Davidge, Golder Associates Ltd. Sara Muir-Owen, C2MP Ellen Pond, C2MP Rory Tooke, Climate Action Navigator (CAN) Tool Workshop Facilitator Michael Vanderlaan, Climate Action Navigator (CAN) Tool Workshop Facilitator
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14 Community Engagement Staff

We extend our thanks to the following people who helped us connect with so many and helped us collect so much valuable input to the CEEP process.

Beriban Ravandi	Recreation Leader
Denise Relke	Recreation Leader
Katherine Cosco	Recreation Leader
Angela Essak	Recreation Leader
Carollynn Fong	Recreation Leader
Sonica Gurjal	Recreation Leader
Karishma Harpalani	Recreation Leader
Janice Hum	Recreation Leader
Ranoo Jaswal	Recreation Leader
Beth Tucker	Recreation Leader
Tracy Klewchuk	Recreation Leader
Lauren Kutashi	Recreation Leader
Shaun Leong	Recreation Leader
Kathryn Norada	Recreation Leader

Supporting Consultants

We extend our thanks to the following people who were the technical experts who supported the CEEP project.

Duncan Cavens	Project Manager, C2MP
Ellen Pond, Project Manager	C2MP
Sara Muir-Owen	C2MP
Nicole Miller	C2MP



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