CITY OF VANCOUVER

ADMINISTRATIVE REPORT

Report Date:	October 1, 2015
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Meeting Date:	November 3, 2015

TO: Vancouver City Council

FROM: Director of Sustainability

SUBJECT: Greenest City Action Plan 2015-2020 Strategy

RECOMMENDATION

A. THAT Council adopt the 51 high priority actions and 19 areas of advocacy outlined in the Greenest City Action Plan 2015-2020 Strategy, as presented in Appendix A, as the second phase of the Greenest City 2020 Action Plan.

B. THAT Staff continue to report back annually on the status of the Greenest City Action Plan targets to Council and the public.

REPORT SUMMARY

The purpose of this report is to update the Greenest City Action Plan to present a new suite of high priority actions to be delivered by 2020.

Fifty-one new high-priority actions and 19 advocacy items, across ten goal areas, are proposed, providing concrete steps to ensure Vancouver reaches the 15 quantitative Greenest City targets and become the greenest city in the world by 2020.

The original Greenest City Action Plan, adopted by Council in 2011, included 125 high-priority actions and actions underway due to be completed by the end of 2014. Eighty per cent of these original 2011-2014 Greenest City priority actions are complete as we approach the halfway point to 2020. Accomplishments such as implementing the food scraps collection program and the creation of 3,200 green jobs have enabled Vancouver to be recognized internationally as a leading sustainable city. Community members, businesses, and organizations have played a tremendous role in Vancouver's success to date, and this holistic buy-in to our collective vision of a green city has

been the focus of many of the national and international awards Vancouver has received for this work.

Despite this success to date, significant and concentrated action is still needed for Vancouver to achieve the 15 quantitative targets established in the GCAP and be a truly sustainable city. Over the past year, in collaboration with over 300 internal and external advisors, staff identified high-priority actions and opportunities for advocacy to undertake between 2015 and 2020 in order to meet these targets. The strategy and actions were further refined based on direct, written input from over 850 community members.

As a result, staff recommend that 51 new priority actions and 19 areas of advocacy be approved in principle as outlined in the Greenest City Action Plan 2015-2020 Strategy attached in Appendix A.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

In June 2015, staff provided Council with the fourth annual implementation update on the status of the Greenest City Action Plan. Staff presented the draft 2015-2020 high priority actions and provided an overview of the public engagement process.

In October 2014, the Healthy City Strategy was adopted by Council, providing a comprehensive and integrated plan for social sustainability that complements the environmental sustainability focus of the Greenest City Action Plan. The Vancouver Economic Action Strategy was created in September 2011, and acts as the City's economic sustainability plan.

In July 2011, the Greenest City Action Plan was adopted by Council.

In January 2011, Council adopted 14 Greenest City targets as Council policy. Staff were directed to develop a 15th target on greening existing workplaces, as well as to continue the public engagement process with the purpose of finalizing the Greenest City 2020 Action Plan in consultation with stakeholders and the community.

In February 2010, Council adopted the long term goals recommended by the Greenest City Action Team (GCAT) and directed staff to proceed with the development of a Greenest City 2020 Action Plan.

In October 2009, Council received the Greenest City Action Team's report entitled *Vancouver 2020: A Bright Green Future*, which recommended ten long-term goals and thirteen 2020 targets that would chart Vancouver's course in becoming the greenest city in the world by 2020. Council approved a motion directing staff to report back with an implementation plan for the recommended actions.

In May 2009, Council received the GCAT *Quick Starts* report, which recommended early actions the City could take to help Vancouver become the greenest city by 2020. Council approved a motion directing staff to report back with an implementation plan for the recommended actions.

For many years preceding this, Council has directed staff to develop policy and plans that have been built upon in the current Greenest City work including Clouds of Change, the Community Climate Change Action Plan, EcoDensity, the Vancouver Food Charter, and others.

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

Since the adoption of the Greenest City Action Plan in 2011, implementing the long term goals and short term priority actions have been a priority for the organization. In implementing the plan, innovative partnerships have helped to engage thousands of residents and businesses. They've taken action at home and at work to support the greening of Vancouver. New programs that emerged from GCAP, such as CityStudio and the Greenest City Grants have become international models. The collective work of staff, council, residents, business and our partners have helped, among many other outcomes, to reduce waste and carbon, create green jobs, and grow local food. This work has been recognized over the last five years with numerous awards. While there is much to be proud of, we have learned from efforts that haven't been successful, and there is much work ahead; Achieving such an ambitious plan isn't easy and there remain significant challenges ahead. This GCAP refresh will guide our actions for the years leading to 2020 to ensure we overcome the remaining challenges to becoming the greenest city in the world by 2020. The Acting City Manager recommends approval of the foregoing.

REPORT

Background/Context

The City of Vancouver is committed to becoming the greenest city in the world by 2020. This commitment to environmental sustainability is complemented by the Healthy City Strategy (social) and the Vancouver Economic Action Strategy (economic), forming the three pillars necessary for long-term sustainability.

At the halfway mark of implementing the Greenest City 2020 Action Plan, it is being updated. The report attached in Appendix A succeeds the original Greenest City 2020 Action Plan and outlines the next round of high priority actions to 2020 for Council approval. Staff recommend 51 high priority actions and 19 areas of advocacy to be pursued over the next five years after extensive input from internal and external advisors and public consultation.

Since Council's approval of the GCAP in 2011, 80% of the 2011-2014 high-priority actions have been completed. Significant progress has been made including meeting two transportation related targets. Continued effort is required to achieve the remaining GCAP targets, and to maintain those that we've already met despite Vancouver's growing economy and population.

The GCAP 2015-2020 Strategy will continue to follow the accountability structure established in the original plan; it will be implemented by the various responsible departments. The Sustainability Group will lead or co-lead some actions, support others and monitor all actions.

Strategic Analysis

Climate change is the most pressing environmental issue of our time. The root cause of many of today's economic and humanitarian crises can be traced back to resource scarcity, either caused by, or heightened by the changing climate. Whether in response to economic, social, or environmental challenges, as a global leader in sustainability, Vancouver has a unique opportunity to model sustainable development solutions for the world.

The Greenest City 2020 Action Plan sets the course for this work. This updated 2015-2020 strategy continues to demonstrate this leadership, now with an even stronger emphasis on actions that reduce human-made carbon emissions. Following over a year of consultation with goal area advisors, sustainability experts, partners, and the public — staff recommend a total of 51 priority actions and 19 advocacy items.

Further, this updated strategy begins to look beyond 2020 to set the city up for success in achieving related 2050 goals established by Council. The Renewable City Strategy, a companion strategy to GCAP set to come to Council in the winter of 2015, establishes long-term priorities to 2050 under three of GCAP's ten goal areas (Climate and Renewables, Green Transportation, and Green Buildings). The Renewable City Strategy and its long-term priorities are referenced throughout the GCAP 2015-2020 Strategy.

Many of the targets established by the Greenest City 2020 Action Plan remain aggressive. The 2014-2015 GCAP implementation update illustrated that significant action is required on the part of the organization and key partners to achieve many of the 15 GCAP 2020 targets.

In contrast, the GCAP 2020 transportation targets were achieved early. Specifically, with respect to mode share, as of early 2014, 50% of all trips in the city are taken on foot, by bike, or on public transit. Beyond 2020, a mode shift target of two-thirds by 2040 has been established in the Transportation 2040 Plan.

Significant public consultation was executed in 2010 and 2011 during the initial development of the Greenest City 2020 Action Plan. The 2015-2020 strategy builds on the ideas generated during the initial consultation period. The GCAP staff responsible for each of the ten goal areas collaborated with over 300 internal and external advisors including many partner organizations to determine the next round of actions and helped to shape this refreshed strategy. Priority was given to actions that the City has capacity to deliver, and that can significantly impact City's ability to meet the established targets.

Supporting and enabling policy from other levels of government is often necessary when action is beyond Vancouver's jurisdiction. This is particularly true as it relates to building and transportation energy sources, transportation systems, food systems, air quality and the economic landscape. The 2015-2020 strategy identifies nineteen opportunities of advocacy to direct our efforts where action by other jurisdictions is imperative.

A lot has been learned in the first several years of implementing the plan about what has worked and where bolder action is needed (see Successes, challenges and external

landscape sections for each goal in Appendix 1). These lessons helped to inform the development of this strategy.

Public consultation aimed to re-engage residents, businesses and community partners, and to collect feedback on the proposed 2015-2020 actions and opportunities for advocacy. Feedback received during the public engagement process was used to further refine the actions contained in the strategy.

- The strategy was reviewed and endorsed by the Greenest City Advisory Group (GCAG), a team co-chaired by Andrea Reimer (Deputy Mayor) and Dr. David Boyd consisting of ten individuals with broad experience, expertise and interest in each of the goal areas.
- The public provided input from June through October 2015. Over 46,000 people participated in this process, 13,000 of these people were engaged (introduced to GCAP, reminded of GCAP, and asked to participate in the process), including 854 who provided detailed feedback on the proposed 2015-2020 actions and areas of advocacy. The survey results showed broad public support. In summary, across the goal areas, 78% respondents were supportive of the proposed actions (15% were not supportive and 7% were unsure). Further, 78% were supportive of the areas for advocacy (13% were not in support and 9% were unsure).

Continuing to empower Vancouver's highly engaged public is key to ensuring the City meets its 2020 goals and targets.

Monitoring and Reporting

Staff will continue to report annually on the GCAP to Council and the public. Reporting will consist of two main elements: An update on progress toward each of the 15 quantitative GCAP targets, and; Key successes and challenges experienced in implementing the plan over the year.

Implications/Related Issues/Risk

Financial

Similar to the Greenest City 2020 Action Plan, which focused on the first five years of implementation, the actions outlined in this report that require significant resources for implementation will be presented to Council through the annual Capital and Operating budget processes.

Significant new policy, regulatory, planning or programmatic recommendations will be brought to Council independently as they are developed.

As has been the case during the first five years of GCAP implementation, and due to the collaborative and cross-sector nature of this plan it is anticipated that opportunities for leveraging funding and resources with other levels of government and external partners will continue to arise.

Environmental

The core purpose of the Greenest City Action Plan 2015-2020 Strategy is to create a more environmentally sustainable city. By achieving the goals set by this plan, Vancouver is positioned to be the greenest city in the world by 2020.

Legal

Any legal impacts will be presented to Council for their consideration as they arise. No major impacts are anticipated.

Communications

Sharing information on the City's progress with the public and engaging and mobilizing citizens to undertake their own green actions is critical to our success. Communications and public engagement plans for citizens and stakeholders will continue to be developed for relevant GCAP initiatives in collaboration with the Director of Corporate Communications.

CONCLUSION

The Greenest City Action Plan 2015-2020 Strategy introduces 51 high-priority actions and 19 advocacy items, across ten distinct goal areas, outlining an approach to achieving and measuring the greening of Vancouver. It provides concrete steps to ensure Vancouver continues to be an international leader on green, and, by 2020, the greenest city in the world.

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GREENEST CITY 2020 ACTION PLAN

2015-2020

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THE GREENEST CITY. A RENEWABLE CITY.

Vancouver has a bold goal to be the greenest city in the world by 2020. This is our plan to get there. The Greenest City 2020 Action Plan (GCAP) includes 10 goals and 15 measurable targets to get there. In 2011 Vancouver City Council approved the plan and the first round of high priority actions. Since then, 80% of these actions are now complete — like the food scrap collection program, an increase in farmers markets and community gardens, and the creation of 3,200 green jobs since 2010. This work is not the City's alone: our collaboration with neighbours and communities has made progress towards our ambitious vision of the future possible. Vancouver is sharing this hope with cities around the world by becoming a model for green, sustainable living.

We're proud of what we have achieved, but there is a significant amount of challenging work yet to do before we meet the targets laid out in the GCAP and become a truly sustainable city. Together with the guidance of over 300 advisors and experts, direct input from over 850 residents (written feedback), and the engagement of over 13,000 members of the public (in-person and social media feedback), City of Vancouver staff have identified the next round of high priority actions to take to ensure our 2020 targets are met. These actions are outlined in this report.

At this half-way point of the implementation of the GCAP, we are also upping the ante.

The fact is, cities are responsible for three-quarters of global greenhouse gas emissions. Globally, cities are acknowledging that averting the worst impacts of climate change will require cutting greenhouse gases by at least 80% by 2050. To help meet this challenge, Vancouver joined 16 other cities in the Carbon Neutral Cities Alliance to commit to achieving these aggressive long-term carbon reduction goals. We have also made the commitment to transform Vancouver into a city powered completely by renewable energy by 2050. To achieve this, longer term actions are needed to act on renewable energy opportunities in Vancouver's building and transportation systems.

Together, Vancouver's communities, businesses, and organizations have shown the world what it means to build a healthy, connected, and sustainable future. We will continue to show the world that Vancouver is leading in the global movement for a more sustainable world.

VANCOUVER, WE HAVE WHAT IT TAKES.

Ambitious, necessary, and possible –
Vancouver's GCAP is our
road-map to becoming the greenest city in the world by 2020.

The race to become the greenest city in the world is a friendly but fierce competition. It's friendly because when one city succeeds, we all benefit from the shared knowledge, improved health of our planet, and new opportunities for the green economy. The race is fierce because the stakes are high. In fact, the earth requires a world full of greenest cities if we hope to maintain our collective standard of living for generations to come.

There are four key ingredients required for us to succeed: vision, leadership, action, and partnerships.

Vision
The GCAP is a strategy for staying on the leading edge of city sustainability. Our vision is to create opportunities today while building a strong local economy, vibrant and inclusive neighbourhoods, and an internationally recognized city that meets the needs of generations to come. This is a vision that has an important role for each of us.

Leadership
Leadership is required from City staff and elected officials, from organizations operating in diverse sectors across the city and from Vancouver residents —many of whom have already contributed to the development of this plan. The City will need to lead the way in its own operations as well, demonstrating what a greenest city looks like in City-run buildings, facilities and operations. Leadership from other levels of government and other public sector agencies will also be critical to our success.

Action
A plan like this is only useful when it is acted upon. The GCAP gives clear targets and baseline numbers to indicate where we were when this plan was created and where we are going. The highest priority actions for the first four years are mainly complete, and new priority actions and strategies have been identified to achieve our GCAP targets. We have begun to look beyond 2020 — with plans to green transportation through 2040 and to build a city that runs completely on renewable energy by 2050.

Partnerships
The City of Vancouver can't achieve the GCAP by itself, with its limited sphere of influence and resources. That means partnerships continue to be key to achieving this plan. The process of developing the GCAP has demonstrated the power of partnerships in building our future city.

HISTORY OF A GREEN CITY

Vancouver's path to be the greenest city in the world started decades ago. Thanks to the passion of the people who choose to call Vancouver home, it will continue long after 2020.

PRE 2009: VANCOUVER'S HISTORY OF ENVIRONMENTAL SUSTAINABILITY

Decades ago, Vancouver residents decided that the way of the past was not for us. We chose a different path.

Together, over the years, we've made the kinds of choices that have turned our home into one of the world's most livable cities.

In the 1960s, residents of Vancouver's Strathcona neighbourhood stopped the construction of a freeway into downtown that would have levelled their community and altered the shape of the city forever. Because of this action, Vancouver is one of few cities in North America that does not have a major highway cutting through its core. We are the birthplace of Greenpeace, the home of David Suzuki, and one of the first cities in the world to recognize the importance and gravity of climate change. In 1990, the ground breaking Clouds of Change Task Force recommended the city begins to reduce its carbon dioxide emissions.

We created dense neighbourhoods that have made urban lifestyle a model for other cities around the globe. Our air and water is among the cleanest of any urban city. We have a spectacular urban forest. The natural beauty of our city is a valued asset that we preserve and protect.

2009-2011: THE DEVELOPMENT OF GCAP

The Greenest City 2020 Action Plan builds on the 2009 work of Mayor Robertson's Greenest City Action Team to take this work to the next level. This group of local experts researched best practices from leading green cities around the world, and established the goals and targets that would make Vancouver the world's greenest city. This work was published in two reports: *the Quick Starts Report* which recommended 44 immediate actions (of which two-thirds were implemented) and, *Vancouver 2020: A Bright Green Future,* which set ten long-term goals and thirteen 2020 targets. City staff were tasked with coming up with a complete plan.

More than 35,000 people from around the world participated in the development of the resulting *Greenest City 2020 Action Plan (GCAP)* through social media, online, and in face-to-face workshops or events.

External advisory groups were formed for each goal area with representatives from key partner organizations such as business and industry associations, other levels of government, non-

government organizations, and academia. Staff consulted with these groups and included community input from the engagement process as they developed their implementation plans.

In the end, over 60 City staff, more than 120 organizations, and thousands of individuals contributed to the creation of the GCAP.

Involvement by participants built their enthusiasm for taking the ideas that were generated and realizing them in their own neighbourhoods and businesses. The development of the plan not only set the course toward realizing a livable, prosperous, and sustainable future for our city, but it also became best practice in citizen collaboration and built the kinds of partnerships required to achieve the GCAP goals and targets.

2011-2015: ACTIONS FOR A GREENEST CITY

Much has been done to accomplish the GCAP goals and targets established in 2011. Of the high priority actions identified as most necessary to achieve the targets, 80% are now complete.

We have taken steps to reduce our waste and recycle more. We restored beaches, shorelines, and waterfronts throughout Vancouver to clean up our waters and bring back wildlife. We took steps to clean our air and improve our transit options.

Here are some of the key achievements of the first four years of the GCAP:

- Together we're **tackling carbon pollution.** Greenhouse gas emissions (GHGs) have been reduced by 7% across the city, an 18% decrease per capita since 2007.
- We passed one of the **greenest building codes in North America.** Homes built in Vancouver will now use 50% less energy than those built elsewhere in the province.
- We increased the proportion of trips in the city made by sustainable transportation to 50% of all trips, and approved a comprehensive **2040 Transportation Plan** that maps our route forward to an even more sustainable transportation network.
- We **expanded our walking and cycling network,** including completing the final leg of a 28 kilometer cycling path along the ocean.
- We **established a two million dollar Greenest City Fund** in collaboration with the Vancouver Foundation to support community-led projects to green Vancouver.
- We **opposed the Kinder Morgan pipeline**, which would see a sevenfold increase in oil tanker traffic in Vancouver's harbor, putting our shorelines and the climate at risk.
- We opposed the creation of a new coal export terminal on the Fraser River, and **banned any future coal facilities** from being built in Vancouver to protect residents from toxic dust and the planet from rapid climate change.

Since 2011, a dozen complimentary strategies and plans have been approved, embedding green even more deeply into how the City does business. From the Food Strategy to the

Transportation 2040 Plan and Urban Forest Strategy Framework the City has delved deeply into the development of a holistically green city. (See page 11 for a full list).

While we are proud of successes to date, implementation of GCAP has not been without its challenges.

First, in many cases, the City faces limited jurisdictional control. Our success, therefore, relies in part on action taken by other levels of government, residents, businesses, and our community partners. Second, as an integrated and diverse city, clear communication, consultation, and engagement in multiple languages and formats with many stakeholders is a necessity for buy-in.

Third, Vancouver is a growing city with a vibrant economy. This growth obviously places increasing demands on our resources. By setting targets to reduce carbon and waste in absolute terms, the GCAP is more ambitious than if applied to a city that is stable or declining in size.

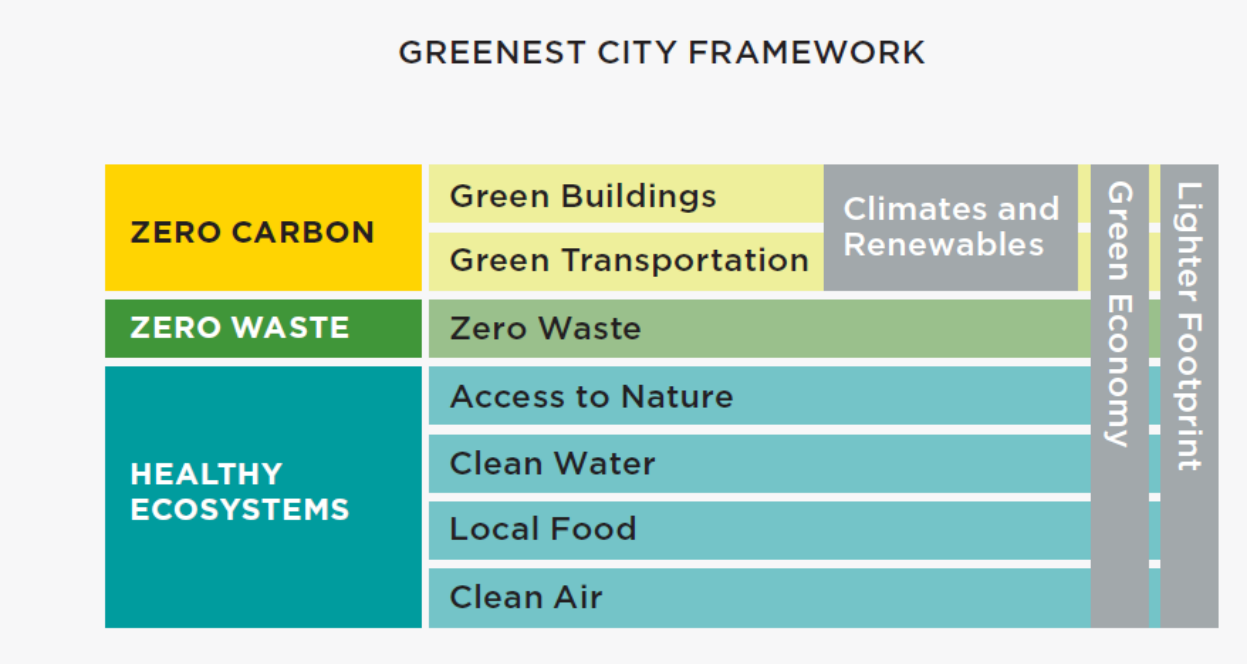
Fourth, accurately tracking progress, which is a foundational piece of the GCAP, requires constant attention. The point isn't to look good, it's to get results. Being able to clearly track and report on results is imperative. At times, measuring our progress presents a challenge. When the GCAP was established, we chose the best available data to establish our plan and how we would track progress. Much of that data was collected and provided by external agencies. We have since found in certain cases that some sets of data are not available or that changes made by other agencies leaves us with data that is inconsistent (e.g. changes to the Federal Government census or the frequency with which TransLink releases mode share data). In some cases the available data has improved. Our Climate and Renewables goal now tracks progress using the latest science, which means we've been able to increase the accuracy of our numbers.

Despite these challenges, we have seen many successes. We've built great momentum for our continued journey to be the greenest city in the world by 2020. Vancouver is well positioned to achieve the plan's greenest city goals. It's up to all of us to help make this vision a reality.

PLANNING A GREEN CITY

The GCAP is divided into 10 smaller plans, each with a long-term goal and 2020 targets. Recently, we've also set long-term targets for Climate and Renewables to 2050.

The goal areas and actions work together to form one integrated plan. For example, increasing composting and gardening helps to achieve the Green Economy, Zero Waste, and Local Food targets. Improving transit service supports Climate and Renewables, Green Transportation, and Clean Air targets. Actions with such co-benefits have been prioritized.



SUPPORTING STRATEGIES: SUSTAINABILITY EMBEDDED IN CITY PLANNING

The City of Vancouver is committed to becoming the greenest city in the world by 2020. This commitment to environmental sustainability is complemented by the Healthy City Strategy (social) and the Vancouver Economic Action Strategy (economic), forming the three pillars necessary for long-term sustainability.

Since 2011, an environmentally sustainable future has been front of mind during much of the City's strategic thinking. A number of recently approved City and regional strategies and plans support our bright green future.

SUPPORTING STRATEGIES	
GOAL 1 — Climate and Renewables	
	Renewable City Strategy *(2015)*
	Neighbourhood Energy Strategy (2012)
	Climate Adaptation Strategy (2012)
GOAL 2 — Green Transportation	
	Transportation 2040 (2012)
GOAL 3 — Green Buildings	
	Vancouver's Building By-law (2013)
	Building Retrofit Strategy (2014)
GOAL 4 — Zero Waste	
	Metro Vancouver Integrated Solid Waste and Resource Management Plan (2010)
GOAL 5 — Access to Nature	
	Urban Forest Strategy Framework (2014)
	Bird Strategy (2015)
	Rewilding Plan (2014)
GOAL 7 — Local Food	
	Food Strategy (2013)
	Park Board Local Food Action Plan (2013)
GOAL 8 —Clean Air	
	Metro Vancouver Integrated Air Quality and Greenhouse Gas Management Plan (2011)
	Metro Vancouver Regional Ground Ozone Strategy (2014)
GOAL 9 — Green Economy	
	Green Jobs Roadmap (2015)

HOW FAR WE'VE COME - PROGRESS TO DATE

AN AMBITIOUS YET MEASURABLE PLAN

In the first four years since the plan was approved by Council, measurable progress has been made towards reaching our 10 Greenest City goals. The following table shows the progress towards each of our 15 targets.

GOALS AND TARGETS	INDICATOR	BASELINE	2014	CHANGE OVER BASELINE	IMPROVED OVER BASELINE	2020 TARGET
Green Economy						
Target 1: Double the number of green jobs over 2010 levels by 2020.	Total number of local food and green jobs	16,700 jobs (2010)	19,900 jobs (2013)[1]	+19%	Yes	33,400 jobs
Target 2: Double the number of companies that are actively engaged in greening their operations over 2011 levels, by 2020.	Per cent of businesses engaged in greening their operations	5% of businesses engaged (2011)	Survey to be conducted in 2016	- -	- -	10% of businesess engaged
Climate Leadership						
Target: Reduce community-based greenhouse gas emissions by 33% from 2007 levels by 2020	Total tonnes of community CO2e emissions from Vancouver	2,805,000 tCO_2e (2007)[2]	2,610,000 tCO2e3	-7%	Yes	1,895,000 tCO2e
Green Buildings						
Target 1: Require all buildings constructed from 2020 onward to be carbon neutral in operations.						
Target 2: Reduce energy use and GHG emissions in existing buildings by 20% over 2007 levels.	Total tonnes of CO2e from residential and commercial buildings	1,145,000 tCO_2e (2007)	1,085,000 tCO2e	-5%	Yes	920,000 tCO2e
Green Transportation						
Target 1: Make the majority of trips (over 50%) by foot, bicycle and public transit.	Per cent mode share by walk, bike and transit	- -[4]	50% of trips	- -[4]	- -[4]	50% of trips
Target 2: Reduce average distance driven per resident by 20% from 2007 levels.	Total vehicle km driven per person	5,950 km (2007)	4,680 km	-21%	Yes	4,760 km
Zero Waste						
Target: Reduce total solid waste going to the landfill or incinerator by 50% from 2008 levels.	Annual solid waste disposed to landfill or incinerator from Vancouver	480,000 tonnes (2008)	394,600 tonnes (2013)5	-18%	Yes	240,000 tonnes
Access to Nature						
Target 1: Ensure that every person lives within a five minute walk of a park, greenway or other green space by 2020.	Per cent of city's land base within a 5 min walk to a green space	92.6% (2010)	92.7%	+0.1%	Yes	95%[6]
Target 2: Plant 150,000 additional trees in the city between 2010 and 2020.	Total number of additional trees planted	- - (2010)	37,000 trees	+37,000	Yes	150,000 trees
Lighter Footprint						
Target: Reduce Vancouver's ecological footprint by 33% over 2006 levels.	Proxy: Number of people empowered[7] by a City-led or City-supported project to take personal action in support of a Greenest City goal and/or to reduce levels of consumption (cumulative)	600 people (2011)	10,700 people	+10,100	Yes	To be determined
Clean Water						
Target 1: Meet or beat the most stringent of British Columbian, Canadian and appropriate international drinking water quality standards and guidelines.	Total number of instances of not meeting drinking water quality standards	0 instances (2006)	0 instances	0	Yes	0 instances
Target 2: Reduce per capita water consumption by 33% from 2006 levels.	Total water consumption per capita	583 L/person/day (2006)	490 L/person/day	-16%	Yes	390 L/person/day
Clean Air						
Target: Meet or beat the most stringent air quality guidelines from Metro Vancouver, British Columbia, Canada, and the World Health Organization.	Total number of instances of not meeting of air quality standards for ozone, particulate matter (PM 2.5), nitrogen dioxide and sulphur dioxide from both the Kits and Downtown stations combined[8]	27 instances (2008)	0 instances[9]	-100%	Yes	0 instances
Local Food						
Target: Increase city-wide and neighbourhood food assets by a minimum of 50% over 2010 levels.	Total number of neighbourhood food assets[10] in Vancouver	3,344 food assets (2010)	4,556 food assets	+36%	Yes	5,158 food assets

HOW DOES VANCOUVER COMPARE?

Since 2011, Vancouver's efforts to be the greenest city in the world by 2020 have been recognized both regionally and internationally. While Vancouver is emerging as a leading sustainable city in the global context, Vancouver still trails many leading European cities and will need to accelerate progress to catch up and surpass them.

Year	Issued by:	Award or Ranking
2011	Economist Intelligence Unit and Siemens	Green City Index: 2nd in North America
2011	Corporate Knights	Most Sustainable Cities Ranking: Canada's Most Sustainable Mid-Size City
2011	Union of BC Municipalities	Climate & Energy Action Award
2011	Spacing Magazine	Top 100 Public Spaces in Canada
2011	Economist Intelligence Unit	Global Livability Index - Third
2012	Federation of Canadian Municipalities	Sustainable Community Award
2012	Canada's Top 100 Employers Project	Canada's Greenest Employer Award
2012	Recycling Council of BC	Public Sector Achievement Award
2012	United Cities and Local Government and City of Guangzhou	Guangzhou International Award for Urban Innovation
2012	Economist Intelligence Unit	Global Livability Index - Third
2013	World Wildlife Fund	Earth Hour City Challenge: Global Earth Hour Capital
2013	World Wildlife Fund	Earth Hour City Challenge: People's Choice
2013	Corporate Knights	Sustainable Cities Scorecard: Top 5
2013	Mediacorp Canada Inc	Canada's Top 55 Greenest Employers
2013	Tides Canada	Tides Canada Top Ten Award
2013	Ashoka U Exchange and Cordes Foundation	Innovation Award
2013	World Green Building Council	Global Government Leadership Award: Best Overall Green Building Policy
2013	100 Best Fleets	Government Green Fleet Award: Greenest Municipal Fleet in Canada
2013	Canadian Association of Municipal Administers	Willis Award for Innovation
2013	Canadian Institute of Planners	Award for Planning Excellence – Sustainable Mobility, Transportation, and Infrastructure
2013	Walkscore	Most Walkable City in Canada
2013	Canadian Institute of Transportation Engineers	Bill Curtis Award – Project of the Year
2013	Planning Institute of BC	Gold Award – Excellence in Policy Planning (City and Urban Areas)
2013	Economist Intelligence Unit	Global Livability Index - Third
2014	Global Green Economy Index	Top 10 Green City Perception Ranking
2014	Time Magazine	Healthiest City in the World
2014	Grosvenor Resilient Cities	Most Resilient City in the World (2nd)
2014	Federation of Canadian Municipalities	Green Champion Award (Municipal)
2014	Federation of Canadian Municipalities	Sustainable Communities Award: Transportation
2014	Mediacorp Canada Inc	Canada's Greenest Employers

2014	Government Green Fleet Award	Top 50 and Greenest Municipal Fleet in Canada
2014	Canadian Green Building Awards	Award-Winning Project
2014	Stewardship Centre for BC	Green Shores Gold Award
2014	Economist Intelligence Unit	Global Livability Index - Third
2015	World Wildlife Fund	Earth Hour City Challenge: National Earth Hour Capital
2015	Mercer Quality of Living Survey	5th overall globally; 1st in North America
2015	Mediacorp Canada Inc	Canada's Greenest Employers

MOVING FORWARD

STATUS OF PREVIOUSLY APPROVED ACTIONS

We're proud of what Vancouver has achieved since the Greenest City goals and targets were adopted by City Council in 2011. As we approach the halfway point on the path to be the Greenest City in the world by 2020, 80% of the original high priority actions are now complete. Implementation of projects like the food scrap collection program, an increase in farmers markets and community gardens, and the creation of 3,200 green jobs since 2010 have moved us closer to our goals. While we are tracking well to meet most of the GCAP targets, new and bolder action will be needed to meet others. Specifically, concentrated effort is required to achieve our 2020 climate, trees, and green jobs targets. Appendix 2 includes the status of each of the 2011-2014 high priority actions identified in the Greenest City 2020 Action Plan.

Our accomplishments are huge, and we are recognized internationally as a leading sustainable city as a result of our work. Community members, businesses, and organizations have played a tremendous role in our success to date. This holistic buy-in to our collective vision of a green city has been the envy of other cities and the focus of many of the national and international awards we have received.

"Green" is no longer hypothetical, we are making it happen. With five years left, we've worked with the community to identify new actions that will help us meet the targets set out in the Greenest City 2020 Action Plan.

SUMMARY OF NEW ACTIONS

Over 50 new actions have been identified for 2015 to 2020 that will help us achieve our targets and distinguish Vancouver as the greenest city in the world by 2020.

Over the course of a year, in collaboration with over 300 internal and external advisors, staff identified these high-priority actions and opportunities for advocacy, see Appendix 3. The public provided their input during the summer of 2015. Over 46,000 people were included in this process, of which over 13,000 were considered engaged (in-person and social media feedback). The strategy and actions in this strategy have been further refined based on direct, written input from over 850 community members (written feedback).

BEYOND 2020: A PATH TO A RENEWABLE CITY

Climate change remains the most pressing environmental issue of our time. Images from New York City in 2012 during Hurricane Sandy and from Calgary during the 2013 Alberta floods remind us that major city centres will experience severe climate change related weather conditions with increasing frequency. In Vancouver, we have seen this first-hand in 2007 when powerful winter storms caused severe damage to 40 hectares of forest in Stanley Park, in 2012 when a king tide breached the seawall to cover Kitsilano pool, and in 2014 when the City took proactive action to protect against king tide flooding near Jericho beach. These experiences are a window into what a changing climate will look like to us locally. Significant action is needed now. Significant action is needed *by us*.

The fact is cities are responsible for nearly three-quarters of global greenhouse gas emissions. Cities globally are acknowledging that averting the worst impacts of climate change will require cutting greenhouse gases by at least 80% by 2050. To help meet this challenge, Vancouver has joined 16 other cities around the world, through the Carbon Neutral Cities Alliance, to make a commitment to achieving aggressive long-term carbon reduction goals. To reach these significant GHG reductions, the City must take bold and pragmatic action.

To this end, on March 23, 2015, Vancouver City Council voted unanimously to support a shift toward the city deriving 100% of its energy from renewable sources, including energy for transportation and buildings.

The motion followed a call for a nation-wide shift to renewable energy by more than 70 leading Canadian academics, and similar action by at least 10 other world-class leading cities such as San Francisco, Sydney, Stockholm, and Copenhagen.

Bold new approaches will be applied to meet the needs of our growing population and economy in a sustainable way. The Greenest City 2020 Action Plan will continue to lay the foundation, with a new stronger emphasis on actions that reduce man-made carbon emissions. Throughout this strategy, the path to renewable energy will be highlighted as it relates to different goal areas.

> "Cities around the world must show continued leadership to meet the urgent challenge of climate change, and the most impactful change we can make is a shift toward 100% of our energy being derived from renewable sources. The future of Vancouver's economy and livability will depend on our ability to confront and adapt to climate change. Moving toward renewable energy is another way that Vancouver is working to become the greenest city in the world."
>
> — Mayor Gregor Robertson

In this document you may notice the goals are presented in a different order than they were in 2011. They are now grouped based on their correlation to supporting three, high-level, aspirational goals: zero carbon, zero waste, and healthy ecosystems. With such a complex plan, these simple aspirational goals are an easy way to remember what we're striving for.

One of the Greenest City 2020 Goals is to reduce Vancouver residents' ecological footprint by 33%. The Lighter Footprint chapter (pages 101-107) defines this target and outlines actions being taken. The reality is that many of the goals in the GCAP contribute in some way to this target. Throughout this document you will see this green symbol (✳) next to each action that contributes to this goal.

The following pages include: summaries of each plan; quantitative progress towards each 2020 target; the status of the initial actions; and the next round of high priority actions that need to be taken to achieve our 2020 targets.

GOAL 1 — CLIMATE AND RENEWABLES

GOAL: ELIMINATE DEPENDANCE ON FOSSIL FUELS.
2050 TARGETS:

- **TARGET 1: DERIVE 100% OF THE ENERGY USED IN VANCOUVER FROM RENEWABLE SOURCES.**
- **TARGET 2: REDUCE GREENHOUSE GAS EMISSIONS BY 80% BELOW 2007 LEVELS.**

2020 TARGET: REDUCE COMMUNITY-BASED GREENHOUSE GAS EMISSIONS BY 33% FROM 2007 LEVELS.

ACCOUNTABILITY: DIRECTOR, SUSTAINABILITY GROUP

Climate change is one of the greatest threats in history to human health, the economy, and the environment. Climate science shows the primary cause of this change is human activity, including things like burning fossil fuels to power vehicles and consuming energy in the heating and cooling of our homes, as well as the industrial processes that produce consumer goods, the methane released from garbage in our landfills, and much more.

Over the past century, our dependence on fossil fuels has released enough carbon dioxide and other GHGs to alter the natural balance of the earth's atmosphere, thereby changing the climate. If we fail to take action on climate change, scientists predict serious consequences such as decreased food production, water shortages, and increased infestations of temperature-sensitive pests like the pine beetle that has devastated forests in BC.

Climate change is a serious challenge, but we have real solutions. We have technology and resources to heat our homes efficiently. We have systems for making sure reusable, recyclable, and compostable items don't end up in the landfill. We are planning for neighbourhoods that

are quieter, greener, more walkable and social —where the grocery store is a few blocks from your house, you meet your neighbours more often, and sit in traffic jams less.

Our journey to a 100% renewable energy future is just starting, but we're not starting from scratch. We already have the knowledge, skills and technologies to meet our transportation and building energy needs in a renewable way. We can enjoy cleaner air, more vibrant communities, healthier lives, and create new job opportunities at the same time.

A NEW STAGE OF CLIMATE AND RENEWABLES: RENEWABLE 2050

2050 TARGETS:

- **TARGET 1: DERIVE 100% OF THE ENERGY USED IN VANCOUVER FROM RENEWABLE SOURCES BEFORE 2050.**
- **TARGET 2: REDUCE GREENHOUSE GAS EMISSIONS BY 80% BELOW 2007 LEVELS BEFORE 2050.**

The most ambitious long-term goal set out in the Greenest City 2020 Action Plan is to eliminate dependence on fossil fuels by 2050.

To meet this goal, the City is firmly committed to meeting two ambitious, complementary targets by 2050. These are complementary because the most cost effective way to approach our renewable energy goal is to continue with our strong focus on energy conservation, energy efficiency, and greenhouse gas reduction. This is because it typically costs less to conserve energy than it does to generate new renewable power.

Although all ten GCAP goal areas include actions that ultimately support these two goals specific actions relevant to our 2050 targets are included in the Climate and Renewables, Green Building, and Green Transportation chapters.

By leading the switch to renewable energy to power our businesses, heat our homes and fuel our transportation network, Vancouver will also be doing its part as a member of a global effort to mitigate the impacts of climate change. We will be setting the standard for what a successful, thriving, prosperous city looks like.

LOOKING BACK: SUCCESSES, CHALLENGES, AND THE EXTERNAL LANDSCAPE

We are pursuing our 2020 target in partnership with businesses, citizens, and other public institutions, while also preparing Vancouver for the impacts of climate change, both current and anticipated. Significant work has been done to reduce Vancouver's carbon emissions, which in 2014 were 7% lower than in 2007.

This reduction can be attributed to many recent successes. Those relating to GHG reductions in the built environment and from transportation infrastructure will be covered in the Green Building and Green Transportation chapters that follow. Those realized through advances in the city's energy and waste infrastructure are outlined here.

The City's flagship Neighbourhood Energy Utility uses waste heat from the sewer to heat homes in the Olympic Village and Southeast False Creek neighbourhood, reducing GHGs from building energy by approximately two-thirds. Building on this success, the City adopted a Neighbourhood Energy strategy in 2012 which maps out how other low carbon energy systems can be built across Vancouver.

The Corporate Climate Leaders Program (delivered in partnership with Climate Smart) and the Business Energy Advisor Program (delivered partnership with LiveSmart BC and CityGreen) have been successful in supporting small and medium enterprises to assess and act on GHG reduction opportunities. Hundreds of businesses have been engaged.

Carbon pollution has also been significantly reduced by emitting less methane, a potent GHG produced during, amongst other things, the decomposition of waste in the absence of oxygen. The gas emitted from Vancouver's landfill is about 50% methane. The City is currently investing $25 million dollars in technology designed to capture this harmful landfill gas and put it to beneficial use. In 2013, 60% of the methane was captured at the Vancouver landfill and used to heat commercial hot houses for local food production at an adjacent property. To meet the Provincial Government's 75% recovery requirement by 2016 the City continues to invest in the expansion of landfill gas collection infrastructure, improvements in predictive modeling of gas generation, and the maximization of gas capture.

Despite our successes, challenges remain. The City has limited to no jurisdiction over many emissions sources and will advocate greater actions from the federal and provincial governments in the areas of electricity generation, vehicle fuels and efficiency, and the taxing of carbon. The Province has backed away from its intent to have carbon neutral electricity generation in BC as outlined in the *BC Energy Plan*, leaving a significant shortfall in the anticipated GHG reductions. The City's 33% reduction target was already ambitious, although achievable, and weakening of provincial climate policy applies new pressures to the reductions the City must realize if we are to meet our target.

2020 TARGETS & HIGH PRIORITY ACTIONS

TARGET: REDUCE COMMUNITY-BASED GREENHOUSE GAS EMISSIONS BY 33% FROM 2007 LEVELS
Baseline: 2,805,000 tonnes of CO_2e
Actual (2014): 2,610, 000 tonnes of CO_2e (7% reduction)

PRIORITY ACTIONS FOR 2015 – 2020

Vancouver's community emissions totalled about 2,610,000 tonnes of carbon-dioxide equivalent (CO_2e) in 2014, with about 56% attributable to buildings and industry, 36% to transportation, and 8% waste disposal. The actions addressing these emission sources are contained in the Green Buildings, Green Transportation, and Zero Waste sections. The actions described in this section focus on the continued expansion of low carbon neighbourhood energy systems and the need for long-term carbon planning.

ACTION 1.1
Continue to work with partners to convert two existing steam heat networks to renewable energy. ✳

WHY IS THIS A PRIORITY?

Reducing the amount of fossil fuels used to heat major industrial and institutional sites is imperative if Vancouver is to reach its GHG reduction target. The City is currently working with Children's & Women's Hospital and Creative Energy (previously Central Heat) to bring new low-carbon steam heat networks online.

Increased residential development in the same neighbourhood as the Children's and Women's Hospital, which needs to replace its existing steam system, provides a clear opportunity for a new energy system to reduce the environmental impact of the hospital and the new development.

Existing steam heat networks, like that acquired by Creative Energy, provide a ready opportunity to reduce GHG emissions through conversion to renewable energy sources such as clean wood waste. Large scale conversion to renewable fuels can yield cost-effective carbon reductions that would otherwise be exceptionally difficult to achieve.

Low natural gas prices make the business case for alternative energy systems more difficult. However, the alignment of new developments with steam heat networks makes it is possible to strengthen the business case. Large residential and mixed use developments are currently being built in downtown and along the Cambie corridor. When connected to new and existing neighbourhood energy systems these developments will provide the required customer base to ensure that the low-carbon systems remain commercially viable.

Steam heat networks provide the most affordable low carbon option for large developments and also provide a low carbon energy alternative when retrofitting a building to significantly reduce energy use isn't viable. In this way district energy and the building energy improvements of the Green Building goal are complimentary.

ESTIMATED IMPACT

Existing steam heat networks contribute significantly to Vancouver's current emissions, and switching them to low carbon fuels will result in immediate emission reductions as soon as the new systems are commissioned. Current plans for Children's & Women's Hospital and Creative Energy expect to see new low-carbon district systems come into operation in 2020 and save 25,000 tCO_2e and 70,000 tCO_2e respectively (in 2020).

ACTION 1.2
Work with partners to develop four new neighbourhood energy systems. ✱

WHY IS THIS A PRIORITY?
The City has been working on a number of actions aimed at the continued development of neighbourhood energy systems, corresponding to the 2011-2014 Priority Actions 2.01, 2.04 & 2.07 contained in Appendix 2. It is important that this work continue. Systems that use hot water instead of steam to circulate heat to buildings are more efficient and are compatible with a wide range of low-carbon energy sources. With large, established fossil fuel infrastructure networks in place there is a need for alternative approaches that support the provision of clean energy for new developments and major building retrofits.

Taking a neighbourhood energy approach lays the foundation for future gains. In the event that economic conditions do not support the initial use of renewable energy and a natural gas system is installed, a district energy system permits a future switch to a renewable energy source in a way that on-site (single building) systems do not. Without enabling action now, future moves to renewable energy sources may be prohibitively expensive or too technically challenging. Pursuing neighbourhood energy systems prevents the city from being locked into a fossil fuel future.

Neighbourhood energy systems are easily scaled. This has been demonstrated by the continued growth of development in Southeast False Creek and its connection to the Neighbourhood Energy Utility (NEU). For the GHG benefits of neighbourhood energy systems to be fully realised their use must be expanded to support new large development areas.

ESTIMATED IMPACT
Beyond the continued benefits of the existing Southeast False Creek NEU, its expansion is expected to yield a further 6,000 tCO_2e over current reduction levels, and the four new neighbourhood energy systems are expected to bring a total of 120,000 tCO_2e in reductions annually by 2020.

ACTION 1.3
Develop and begin implementing a renewable energy strategy. ✱

WHY IS THIS A PRIORITY?
The world has a 'carbon budget', or cap, of about 565 gigatons of carbon that can be emitted from the combustion of fossil fuels if climate change is to be manageable.

With current global 'business as usual' projections that budget could be used up within a generation or two. Exceeding this cap would warm the planet and melt polar ice caps, resulting in unmanageable sea-level rise, dramatic changes to weather patterns, and innumerable other consequences. The developed world is tied to systems and

infrastructure that support fossil fuel use as the primary energy source. These systems and infrastructure are so heavily interwoven into society that they will be slow to change. Furthermore, large fossil fuel driven infrastructure is poorly adapted to meet the needs of a changing climate. There is a very real need to take action now to ensure that Vancouver will continue to be a liveable city well into the future, and do so without being dependent on fossil fuels.

Given how long it will take to fundamentally change our energy systems it is imperative that work start now to understand what future energy provision might look like, how it might be managed, and what changes our energy systems will have to accommodate.

The City needs to understand what actions must be taken to make the transition to clean energy. This means understanding what todays infrastructure investments mean for our future. The need for a plan is driven not only by environmental responsibility, but also by fiscal prudence. Reduced reliance on fossil fuels means more cost certainty for customers. Vancouver is already buffered from the impacts of oil price spikes. Eliminating fossil fuel will lead to greater economic stability.

Conservation is said to be the cheapest source of renewable energy. Developing a renewable city strategy will, first and foremost, strive to reduce overall energy use.

We have already taken action to lessen Vancouver's dependence on fossil fuels, but we need to plan for what an elimination of our dependence on fossil fuels will look like, how that transition will be made, and how it can be done before the human-induced changes we are already seeing are unmanageable.

ADVOCACY

- **Advocate the provincial government to continue with the carbon tax, and increase its rate by $5 per tonne per year.**
  Fossil fuels cause damage to the environment which is not reflected in their sale price. There is a need to put a price on that damaging element of fossil fuels – carbon. In 2008, BC introduced just such a price, the carbon tax, that is currently set at $30 per tonne of carbon dioxide emission (about seven cents per litre of gasoline). Having such a carbon tax in place is critical to positioning BC for a low carbon future. The tax is revenue-neutral and low income protections have ensured it does not overly affect those most in need. With continued protection for low income households, and a staged implementation, an increase in the provincial carbon tax would drive further reductions in energy use, provide potential funding for green initiatives, and continue to support green economic growth. The carbon tax is non-prescriptive and applicable to almost all fossil fuel GHG emission sources. Accordingly its ability to engender reduced fossil fuel use and technological change is unparalleled in scope and scale.

- **Advocate the provincial government to continue its commitment to the *Greenhouse Gas Reductions Target* Act.**
  The development of liquefied natural gas (LNG) in BC has significant consequences for provincial GHG emissions. The development of fossil fuel resources can only be justified if the provincial government maintains its commitment to the *Greenhouse Gas Reduction Targets Act*, and does so without alteration. The *Act* commits the Province to cutting GHG emissions by 80% below 2007 levels by 2050. This is in line with a clear need for the world as a whole to reduce its GHG emissions. Although natural gas may play a role in achieving those reductions, the climate effects from its exploitation must be mitigated on a scale aligned with the impacts of their exploitation. Such mitigation is already legislated through the *Greenhouse Gas Reduction Targets Act*, and as such the Act must be adhered to if BC is not to make a disproportionately large contribution to climate change. The number, technology type, and power source for the LNG liquefaction plants will determine, in large part, the amount of GHGs the LNG sector will produce, but it is expected to be anywhere from one tenth to half of current province-wide GHG emissions. Even at the lower end of that range, the scale of the increase dwarfs the progress the City of Vancouver has made since 2007 and can be expected to make by 2020. At the upper end of the range the GHG emissions would be catastrophic to any commitment by the BC Government to ensuring the abatement of GHG emissions.

- **Advocate the provincial government to continue and strengthen the Renewable & Low Carbon Fuel Standard**
  The transportation sector is responsible for about one-third of Vancouver's GHG emissions, yet is one of the most challenging sectors in which to reduce GHGs. The increased use of renewable and low carbon fuels is critical if transportation-related carbon emissions are to be reduced. The Renewable and Low Carbon Fuel Standard, which requires fuel suppliers and producers to reduce the amount of carbon released during the production of the fuel and during its use, has already saved over 900,000 tonnes of CO_2e provincially, equivalent to about 225,000 cars of the road.

  Renewable transport technologies such as electric and biofuel vehicles are market ready. The City will advocate the Province to not only continue with existing carbon reduction requirements, but make those requirements more stringent. The continued commitment of the provincial government to low carbon fuel standards will help build the market share for renewable fuels, reduce costs, and enable clean technologies access to a market that is otherwise overly dominated by large fossil fuel suppliers. Tough renewable fuel standards are essential to set a course for a widespread change in how clean our transportation system may become.

- **Advocate the provincial government to establish and implement a low-emission and zero-emission vehicle standard.**
  Personal vehicle travel accounts for 31% of Vancouver's GHG emissions. The choice of vehicle not only has an immediate effect on our emissions, but one that lasts for the

lifetime of the car. There are many available models that significantly reduce or eliminate vehicle tailpipe emissions, however they are not always readily available at Vancouver dealerships. That isn't because the dealerships don't want to sell them, it's because vehicle manufacturers choose where in the USA and Canada to ship low and zero emission cars.

The introduction of low and zero emissions mandates would make British Columbia a more appealing place for the vehicle manufacturers to send their low and zero-emission models, making it easier for the public to buy the cars they want. The City will advocate the development and introduction of a low- and zero-emissions vehicle mandate that will bring incremental increases in the number of clean vehicles available to consumers in BC.

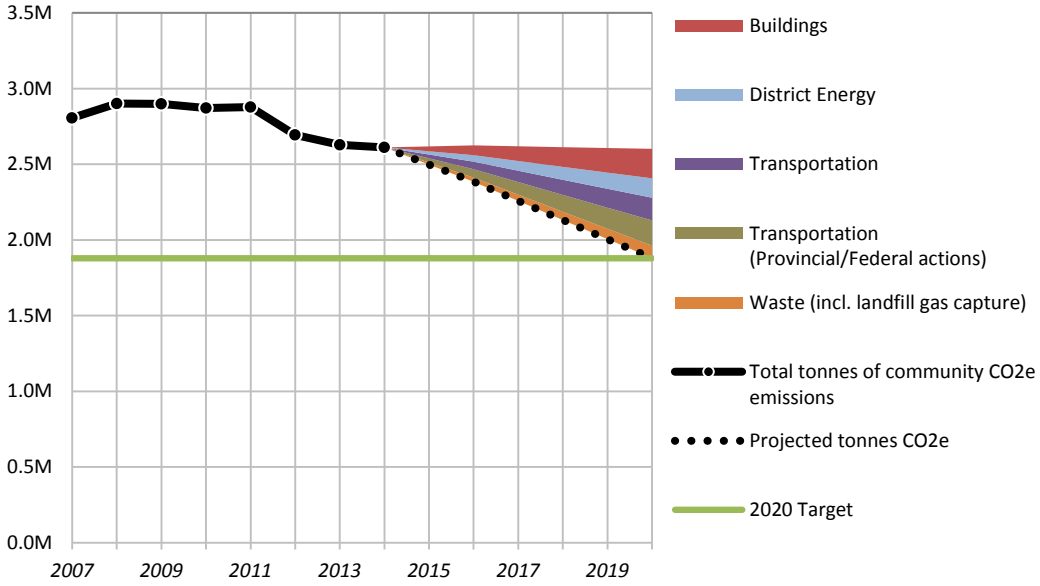
- **Advocate Metro Vancouver to establish a regional Climate Action Fund.**
  The City of Vancouver cannot act unilaterally on climate change. There is a need for the region to work together and with financial resources that match the scale of the challenge. Ensuring that, as a region, municipalities, and businesses have access to the funding they need to mitigate or adapt to climate change is imperative. Metro currently operates a Sustainability Innovation Fund to support projects and initiatives that promote Metro Vancouver's vision of a sustainable region. Metro Vancouver's Sustainability Innovation Fund already exists and may help facilitate some projects with a climate focus, but this is not the dedicated intent of the fund. Action on a larger scale than that funded by the Sustainability Innovation Fund can allow the lessons of the innovation fund to be scaled up so that they are more widely applicable, and can continue on an ongoing basis. The City of Vancouver encourages Metro Vancouver to establish a Regional Climate Action Fund to provide better financing options for local municipalities and business to take action on energy retrofits, electric vehicles, cycling infrastructure, and other similar projects. The scale, mechanism, and governance of the fund must all be established, with those details directly affecting the type of the projects undertaken. The fund must be structured to secure enduring GHG reductions that also help the region adapt to climate change.

PROJECTIONS TO 2020

In 2014 Vancouver GHG emissions were 7% below 2007 levels. The work we have undertaken to date sets us up for significant future emissions reductions.

Based upon the effectiveness of current policies and the anticipated impact of future actions it is expected that Vancouver will achieve its 2020 greenhouse gas emissions reduction target, while if all future efforts were suspended, anticipated business-as-usual growth would see community emissions go back up to 2012 levels by 2020.

PAST, PRESENT, AND PROJECTED COMMUNITY GREENHOUSE GAS EMISSIONS TO 2020
(total tonnes of community CO2e emissions)



GLOBAL WARMING POTENTIAL OF METHANE HAS CHANGED
The global warming potential (GWP) of a gas is a measure of how much heat a gas traps in the atmosphere in relation to carbon dioxide (CO_2). A gas with a GWP of 10 would trap ten times as much heat as carbon dioxide. To put it another way, one tonne of a gas with a GWP of 10 is equivalent to 10 tonnes of carbon dioxide. In 2014 the Province of BC updated its reporting procedures to reflect international changes to GWP of methane. The GWP for methane was updated from 21 to 25, an increase of about 19%. To be clear: the methane gas itself has not changed, the change reflects our better understanding of atmospheric science. Accordingly, the 2007 emissions baseline for the GCAP has been recalculated with the new GWP for methane, as have emissions in all subsequent years.

GREEN JOBS RELATED TO CLIMATE AND RENEWABLES

- Sustainability manager
- District energy system engineer and technician
- Geothermal energy technician
- Biomass energy technician
- Solar energy technician
- Power engineer
- Policy analyst and researcher
- Educator

A RENEWABLE CITY: 2050 PRIORITIES FOR CLIMATE AND RENEWABLES

2050 PRIORITY FOR POWER SUPPLY

- Ensure grid supplied electricity is 100% renewable.

WHY IS POWER SUPPLY A PRIORITY?

Vancouver uses power generated throughout the province, most of which is already very clean. The cheapest way to meet future power demand is to avoid the demand in the first place. Ensuring that our electrical grid maximizes its capabilities and minimizes the need for new transmission and power generation infrastructure is critical. We must work to ensure our electricity not only remains clean but becomes cleaner.

Refer to the Renewable City Strategy for more details on longer term plans.

CONCLUSION

We've made good progress towards our 33% GHG emissions reduction target, but there is still a lot to be done. Early action has seen our emissions drop while our population has increased. With the groundwork we have laid, we can expect more emissions reductions to come. However, each step further down the path to reduced emissions becomes harder, particularly

with cheap and abundant conventional fuels. This is why we must start to plan now for a 100% renewable energy future.

By leading the switch to renewable energy, Vancouver will also be doing its part as a member of a global effort to reduce and mitigate the impacts of climate change. We will be setting the standard for what a successful, thriving, prosperous city looks like – setting an example that other cities around the globe can follow.

WHAT DOES A 100% RENEWABLE VANCOUVER LOOK LIKE?
Imagine a 100% renewable Vancouver. People become more fit as they walk, cycle, and take electrically powered transit to most of their destinations. Gas stations are gone and instead vehicles charge while people work, rest, and play. Buildings, old and new, are less drafty, more comfortable, and the small amount of energy needed to heat them comes from renewable sources. Low carbon neighbourhood energy networks, like the sewer heat recovery system in Southeast False Creek are common and supply most buildings with renewable power. Organic waste is used to make compost or biogas for heat and power. This is the Vancouver we are building for 2050.

GOAL 2 — GREEN BUILDINGS

GOAL: LEAD THE WORLD IN GREEN BUILDING DESIGN AND CONSTRUCTION.
2020 TARGETS:

1. **REDUCE ENERGY USE AND GREENHOUSE GAS EMISSIONS IN EXISTING BUILDINGS BY 20% BELOW 2007 LEVELS.**
2. **REQUIRE ALL BUILDINGS CONSTRUCTED FROM 2020 ONWARD TO BE CARBON NEUTRAL IN OPERATIONS.**

ACCOUNTABILITY: CHIEF BUILDING OFFICIAL, PLANNING, AND DEVELOPMENT SERVICES AND DIRECTOR, SUSTAINABILITY GROUP

Canadians spend close to 90% of time indoors. The buildings we live and work in are a big part of our lives. They are also a big part of our GHG emissions. The electricity and natural gas used by buildings and industry make up over 55% of Vancouver's GHG emissions.

Vancouver is already a North American leader in green building and low-carbon energy system design, but it is essential that Vancouver continues to improve and innovate in order to meet its carbon neutral new buildings target. This will require continued improvement in new building policies and practices to minimize the energy demand of buildings, and enable us to meet all the remaining energy uses cost effectively with renewable energy.

At the same time, we must accelerate improvements to the environmental performance of existing building stock by replacing old inefficient equipment like boilers, ventilation systems and lighting with modern efficient systems while at the same time gradually improving the insulation, windows, and air tightness of buildings in conjunction with planned renovations.

Two main challenges get in our way. First, in British Columbia, we have access to relatively inexpensive energy sources. Second, the landlords and developers who make decisions about new designs or retrofits don't often pay the utility bills and don't immediately benefit from efficiency savings that can take time to show return on initial investments. These factors reduce the incentive for energy conservation. There is a growing need for more education, training, and capacity building in the design, construction, and operations of energy-efficient green buildings.

LOOKING BACK: SUCCESSES, CHALLENGES, AND THE EXTERNAL LANDSCAPE

The green building landscape has evolved considerably since our 2007 baseline year and the development of the original Greenest City 2020 Action Plan. The price of natural gas has dropped significantly while the price of electricity has begun to rapidly climb. The result of this shift has been an increased market focus on electricity conservation (which results in very limited GHG emission reductions) and a more challenging business case for natural gas efficiency measures and retrofits to existing buildings. Reduced natural gas prices have been somewhat offset by the BC Carbon Tax, increasing the importance of this tax significantly.

Energy models, required for all new single family homes in Vancouver, reveal that prescribed improvements for energy efficiency in single family homes such as increased insulation, better air sealing, improved windows, and more efficient heating systems have reduced greenhouse gas emissions from new houses by over 50% as compared to those built to the 2007 requirements. In addition, comprehensive incentives for home energy retrofits coupled with active City promotion of opportunities resulted in significant improvements to efficiency of over 10% of existing owner-occupied houses in Vancouver.

The most significant change to building energy and GHG emissions in Vancouver has been our focus on establishing and expanding low-carbon neighbourhood energy systems like City's award winning NEU, as discussed in the Climate and Renewables chapter. In order to facilitate the establishment of these low-carbon neighbourhood energy systems, City policy has shifted the design of new condominium and apartment towers away from the use of electric baseboard heating to the use of water based heating systems that are required to enable buildings to connect to and benefit from these neighbourhood systems. While this has resulted in a significant decrease in the use of electricity in these buildings, it has only led to modest reductions to overall building GHG emissions – in the short term. Once low-carbon neighbourhood energy systems are established and provide heat to these buildings, significant GHG emission reductions will follow as the use of natural gas for heating is replaced with the use of renewable energy.

2020 TARGETS & HIGH-PRIORITY ACTIONS

TARGET 1: REDUCE ENERGY USE AND GHG EMISSIONS IN EXISTING BUILDINGS BY 20% OVER 2007 LEVELS.

TARGET 2: REQUIRE ALL BUILDINGS CONSTRUCTED FROM 2020 ONWARD TO BE CARBON NEUTRAL IN OPERATIONS.

- Baseline Residential, Commercial, and Industrial Buildings (2007)*: 1,570,000 tCO_2e
- Actual Residential, Commercial, and Industrial Buildings (2014): 1,463,000 tCO_2e

** Baseline now includes data for industrial emissions (i.e. from large production facilities like breweries, and sugar processing plant, as well as emissions from very large commercial or institutional buildings and large scale centralized heat plants such as Creative Energy).*

PRIORITY ACTIONS FOR 2015-2020

ACTIONS TO REDUCE GHG EMISSIONS FROM EXISTING BUILDINGS

ACTION 2.1
Update the retrofit requirement options in Vancouver's Building By-Law to further reduce energy use and greenhouse gas emissions. ❋

WHY IS THIS A PRIORITY?
The City now requires energy retrofits to be completed on buildings that are undergoing a renovation. The requirements are scaled based on the size of the renovation being

completed. To ensure that these new requirements result in the intended GHG emission reductions, efforts to educate building renovators and City inspectors need to be expanded to ensure compliance with the new measures. In addition, the results should be measured so as to enable further refinements of the requirements to ensure equity, maximize simplicity, and increase effectiveness.

Research must be undertaken on the cost effectiveness of new approaches that might be introduced at the time of renovation such as the installation of smart energy management and water heat recovery technologies.

Modern buildings incorporate numerous complicated systems that impact energy use. Similar to a car, ensuring that these systems continue to function as efficiently as possible is important. Building operations must be monitored and/or receive periodic "tune-ups" referred to as re-commissioning. Options to encourage or require re-commissioning through the Building By-law must be developed.

Not only will these improvements help owners and occupants minimize energy utility bills, they will in many cases also improve comfort and productivity. Updates will also result in enhancements to existing buildings that more effectively reduce GHG emissions.

ESTIMATED IMPACT

Requirements to improve energy efficiency with other planned renovations have widely varying impacts depending on building type and the nature of the planned improvement. While the total estimated reduction in emissions from retrofit regulations is 34,500t/year by 2020 the most significant reductions will come from commercial buildings. This is because commercial buildings, or a portion thereof, are frequently undergoing a renovation and also because re-commissioning these complicated buildings can result in large energy use reductions.

ACTION 2.2

Launch a Green Condominium Program and expand the Green Landlord Program. ✱

WHY IS THIS A PRIORITY?

Apartment and condominium buildings account for nearly 30% of building related GHG emissions yet historically there has been very limited investment in improving the efficiency of these buildings as compared to other sectors. These buildings also see much less renovation activity than other building types so retrofit requirements at time of permit will have only limited impact on reducing these emissions.

The Green Landlord Pilot Program demonstrated numerous opportunities to reduce the energy use and costs of most apartment buildings. It also showed that providing support to these building owners is effective in catalyzing their action to reduce emissions.

Landlord BC and FortisBC have expressed interest in working with the City to enhance and expand this Program.

In addition to working with apartment buildings, the City piloted a program working with condo buildings. Recognizing that cities around the world have struggled to achieve condo retrofits, the City partnered with a local non-profit to engage strata associations, undertake an energy assessment of their building, identify cost effective energy savings opportunities and to facilitate access to financing and incentives. While many opportunities were identified that could have reduced energy use and strata fees immediately it was difficult to mobilize a large and diverse group of strata-unit owners to decide upon, finance, and execute a significant investment in their building. Working with these groups to reduce energy use when they are already mobilized to undertake a significant building upgrade or to support them to voluntarily undertake more modest energy improvement may be a more effective approach for a new program. While only 2-4% of buildings undergo a significant renovation in any given year, these building projects present opportunities to significantly reduce energy use, costs, and related GHG emissions by over 40% and therefore make a program to leverage the building renewal cycle potentially very significant to Vancouver's success.

The City recently partnered with C40, a global network of cities collaborating with each other and global funders to reduce GHG emissions, for this work. This partnership has provided additional capacity in Vancouver to develop new and enhanced programs to catalyse apartment and condominium retrofits in Vancouver by integrating best practices from around the world.

The program will support voluntary energy efficiency improvements of existing strata buildings while also expanding the Green Landlord Program to increase the GHG savings that are achieved.

ESTIMATED IMPACT

If Vancouver can succeed in integrating deep energy retrofits into planned building renewals as well as expand its already successful Green Landlord Program it is anticipated that these could reduce emissions by 23,000 tonnes/year by 2020.

ACTION 2.3

Launch a Home Energy Efficiency Empowerment Program and a Home Energy Technology Program. ✱

WHY IS THIS A PRIORITY?

Detached houses are the single largest source of building related GHG emissions in Vancouver.

City promotions of federal and provincial incentives for home energy renovations have been very successful while these government programs were available. These incentives

were recently replaced by FortisBC and BC Hydro's Home Energy Rebate Offer (HERO) program which provides incentives for efficiency improvements but there is significantly less market awareness of these new incentives. Additionally, the rebates available are lower than what was previously provided by the provincial and federal governments.

In order to continue to reduce emissions from this key building sector, the City may need to develop new tools to help local homeowners understand and take advantage of the available utility and government energy retrofit incentives. One tool the program would include is home thermal imaging; special cameras can take pictures that show if and where a home is losing heat. By making thermal images available to homeowners along with information on relevant energy efficiency incentives would make it easier for them to take action. The program would also aim to identify opportunities to enhance and expand the available incentives. Similar to apartment and condominium buildings, mobilizing home owners to undertake a renovation is one of the biggest challenges. Initial City efforts will focus on engaging owners that are already planning a renovation, and encouraging and supporting them to integrate energy efficiency improvements into their plans. If support itself is not effective, the City may need to consider offering additional incentives to supplement those currently available.

In addition, new technologies like smart thermostats are emerging that are low cost, easy to install, and promise to reduce home energy cost, use, and GHG emissions. The City will pilot new technologies to determine if they are effective and appealing to residents. If the pilots prove successful, the City will work with utility partners to expand programs and make these new tools widely available.

ESTIMATED IMPACT

City efforts to engage the owners of the least efficient homes or those already planning renovations to leverage energy retrofit incentives are targeted to reduce emissions by 5,000 tonnes per year. Low cost technologies like smart thermostats will be attractive to a much broader sector of the market, including home owners as well as renters, and rapid uptake of these new technologies are targeted to reduce emissions by an additional 8,000 tonnes per year for a total reduction of 13,000 tonnes per year by 2020.

ACTION 2.4

Require annual energy benchmarking and reporting for large residential and commercial buildings.

WHY IS THIS A PRIORITY?

Energy Benchmarking is a standardized way of collecting key building information and energy use data that enables building owners to compare their energy efficiency against similar buildings and track improvements in performance.

Benchmarking will catalyze voluntary energy efficiency improvements and help target support in reducing energy use on the biggest opportunities. There are over a dozen US cities that require annual energy benchmarking using ENERGY STAR Portfolio Manager, a free, online benchmarking tool. The US Environmental Protection Agency study revealed that large buildings that participated in energy benchmarking using this tool reduced energy use by over 7% over three years.

In addition to these benefits, benchmarking and reporting would provide feedback on the effectiveness of energy efficiency programs and policies. The City currently has very limited data on actual building scale energy use; programs and policies are established based on energy models and very limited real energy use data. Reporting of energy benchmarking data would enable the City to identify efficiency requirements that are not effective and improve them; making them easier to satisfy and increasing their impact.

The City is working with the Province and other local governments in BC to develop a consistent approach to mandatory building energy benchmarking and annual reporting for large commercial and residential buildings. The goal for 2016 is to introduce requirements already in place in over a dozen US cities such as Boston, Chicago, New York, San Francisco, Seattle, and others. In order to be successful, it will be critical to shape these requirements to match the real constraints of building owners and operators and to provide tools to support them in better understanding their own energy use

ESTIMATED IMPACT

Large commercial buildings account for just over 100,000 tonnes of GHG emissions per year. If energy benchmarking catalyzes these buildings to reduce emissions by 7% it would result in an annual emission reduction 7,000 tonnes by 2020.

ACTION 2.5

Launch a program for green industry partners. ✳

WHY IS THIS A PRIORITY?

Industrial emissions from 250 facilities account for nearly a third of all building related GHG emissions in Vancouver. Given the diverse nature of the operations of these industries and the relatively small size of most of them, it is important to focus City efforts on a limited number of larger industries to be effective.

A green industry partners program would support voluntary energy efficiency improvements of large Vancouver based industries that leverage existing incentives while considering the need for and potential effectiveness of new incentives.

The eight largest industrial emitters account for an estimated 85,000 tonnes of GHG emissions per year (excluding building heat utilities and very large commercial and

institutional buildings which are classified as "industrial" gas users by FortisBC given their scale). Historically, gas conservation incentives from FortisBC have focussed on specific equipment upgrades and did not support system and process improvements that could offer significant emission reduction opportunities. FortisBC's new, more flexible industrial gas conservation incentive creates an opportunity for the City to re-engage large industries and support them in assessing energy efficiency opportunities that leverage this new incentive structure. If in working with the large industries it becomes evident that additional incentives are required to catalyze meaningful GHG reduction action, the City may need to consider offering additional incentives directly.

ESTIMATED IMPACT

8,500 tonnes CO2e per year by 2020, assuming a 10% reduction in emissions per large industrial facility.

ACTIONS TO ACHIEVE CARBON NEUTRAL NEW BUILDINGS

ACTION 2.6

Develop a Zero Emission New Building Strategy. ✳

WHY IS THIS A PRIORITY?

As buildings (including industry) account for over 55% of Vancouver's GHG emissions, achieving carbon neutral new buildings is key to local efforts in mitigating climate change.

A carbon neutral building is one that has zero net GHG emissions from the use of fossil fuel based energy for the building's operation. Carbon neutrality is achieved through significant reductions in building energy use, the displacement of fossil fuel based energy sources with renewables, and the offsetting of any remaining operational emissions through GHG reductions outside of the building boundaries – such as reductions in another building.

In order to achieve our target of carbon neutral new buildings, a fundamental transformation in policy, building design, and the supply of energy will be needed. Such a transformation will require a clear strategy, tailored to each of the major forms of new development in Vancouver. The strategy must identify new design and policy tools that focus on carbon emissions, establish targets and timelines for both energy use reductions and the transition to renewable energy, and clarify the role and allowable mechanisms for emissions offsets.

A clear roadmap that looks beyond the next policy update will be essential to enable a rapid transition in an industry that involves long lead times. New policy tools will need to be identified, new design and buildings skills will be required, local supply chains will need to evolve in order to remain competitive, and developers will need a clear understanding of future expectation in order to inform their plans and decisions today.

The strategy will create a roadmap for action up to and beyond 2020 while at the same time identifying renewable energy sources and emission offset mechanisms that could be developed and implemented by 2020 to achieve carbon neutrality.

ESTIMATED IMPACT

The Zero Emission New Building Strategy will chart the course to significantly reduce the carbon intensity of new construction over the next ten to fifteen years. The actions in sections 3.7 and 3.8 below in combination with the expansion of low-carbon district energy aim to reduce the average carbon intensity of new buildings by from current levels of 13.2 kg/m2 down to 6.5 kg/m2 by 2020. Achieving carbon neutrality for new buildings by 2020 will require the introduction of an offsetting mechanism to address the remaining carbon emissions from buildings.

ACTION 2.7

Restructure the City's green building rezoning policies to specifically target GHG emission reductions and introduce GHG emission targets for new buildings. ✱

WHY IS THIS A PRIORITY?

When the City permits a change in property use or increase in permitted building area (most typically in dealing with high-rise and large commercial developments), it requires developers to achieve much better energy efficiency than is required under the building code. Vancouver has been a global leader in using this approach to drive innovation in energy efficient building design and construction practices.

Currently the efficiency measures in Vancouver's rezoning policies focus on energy reduction, not GHG reduction. To achieve carbon neutral new buildings, a restructuring and realignment of these policies to target stepped reductions in GHG emissions will be required.

In this process, an emphasis will be placed on building envelopes (insulation, windows, weather sealing, etc.) as these are the most reliable way of limiting energy use depending upon unrealistically vigilant building practices. In addition, it is important to build these elements as efficiently as possible as they are most difficult to improve after construction is completed.

ESTIMATED IMPACT

Restructured and updated rezoning policies are essential to supporting the continued development of low-carbon district scale energy supply systems and catalyzing innovations in building design and construction. Rezoning policies impact approximately two thirds of all new large developments in a given year and if policy improvements are successful in reducing the average carbon intensity of impacted buildings by 40%, this

would reduce the average carbon intensity of new buildings by 2.1 kg/m2 per year by 2020.

ACTION 2.8
Update minimum energy efficiency requirements for new buildings in the Vancouver Building By-Law. ❋

WHY IS THIS A PRIORITY?
One and two family homes represent over 40% of new building development (by area) per year. Energy models indicate that the carbon emissions from new one and two family homes have been reduced by over 50% since 2007 by improved energy efficiency requirements in Vancouver's Building By-law. Requirements include improved insulation and windows, better air sealing and the use of heat recovery ventilators, as well as more efficient heating and hot water systems. Introducing modest additional improvements to these building elements while adding requirements for water heat recovery systems will further reduce energy use from these buildings. The Zero Emission New Building Strategy will lay out actions beyond the time-horizon of this Greenest City Plan Refresh and will identify actions to reduce energy to near net-zero and to introduce on-site renewable energy.

Expanding the proven approach of prescriptive energy efficiency requirements in the Building By-Law to townhouses and low-rise multi-unit residential and mixed use buildings will build upon existing success and move Vancouver closer to carbon neutral new construction by 2020.

For high-rises and large commercial buildings, we cannot depend upon improved rezoning policies (as per Action 3.7 above) alone. An estimated one-third of these large developments do not require rezoning and are not impacted by the City's rezoning policies for green building. In order to ensure improved performance of these buildings, the structural and performance improvements to the rezoning policies for green buildings will need to be incorporated into the Building By-law to ensure all large new developments improve by 2020. Most of these changes to the Building By-law will lag those in the rezoning policy by a number of years to enable industry to gain experience and success with these new approaches.

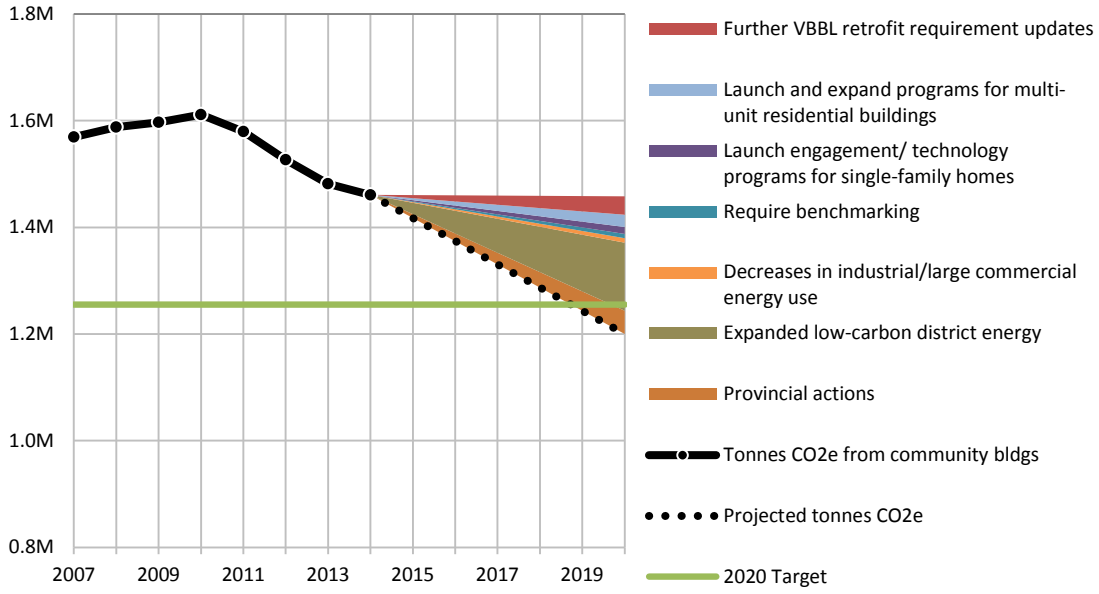
ESTIMATED IMPACT
Updates to the Building By-law will have widely varying impacts depending on the building type but collectively are projected to reduce carbon emissions from new buildings by 2.7 kg/m2 per year by 2020.

PROJECTIONS TO 2020

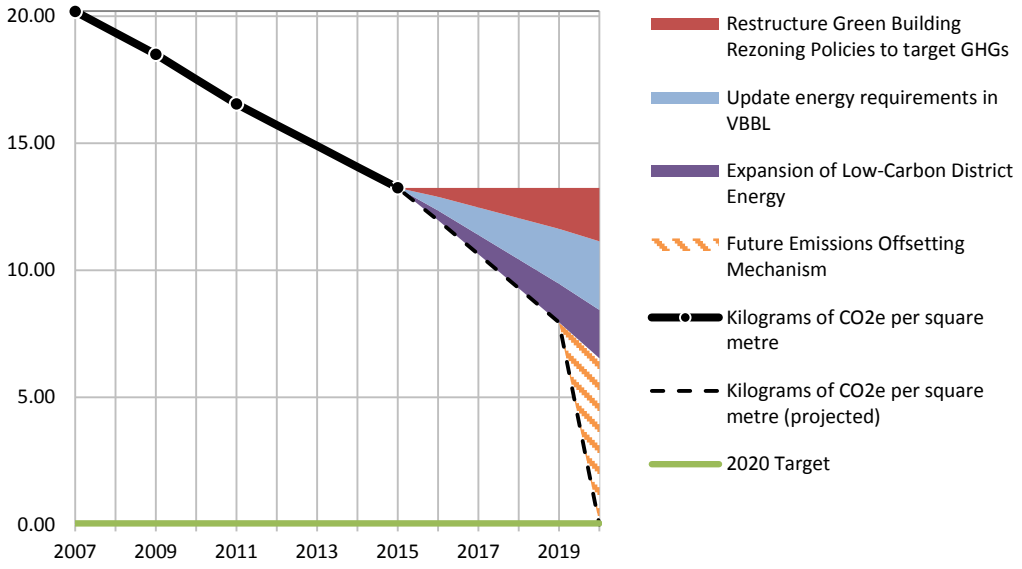
In addition to the eight actions planned for Green Buildings from 2015 to 2020, Actions 1.1 and 1.2 for new and expanded low carbon neighbourhood energy systems will reduce the overall carbon intensity of new development by 1.9 kg/m2 per year.

Beyond the impacts of these reductions, achieving carbon neutral new construction by 2020 will require the development of an emissions offsetting mechanism between 2018 and 2020. It is important to note that continued reduction in new building energy use and the increased use of renewable energy will need to continue for the next ten to fifteen years.

PAST, PRESENT, AND PROJECTED GREENHOUSE GAS EMISSIONS FROM RESIDENTAL AND COMMERCIAL BUILDINGS TO 2020 (tonnes of CO2e)



PAST, PRESENT, AND PROJECTED GREENHOUSE GAS EMISSIONS FROM NEWLY CONSTRUCTED BUILDINGS TO 2020 (kilograms of CO_2e per square meter)



A RENEWABLE CITY: 2050 PRIORITIES FOR GREEN BUILDINGS

Buildings use 64% of all energy in Vancouver and natural gas is the predominant source of space heat and GHG emissions.

By 2050 we will transition all new and existing buildings to 100% renewable energy.

2050 PRIORITIES

2050 PRIORITY FOR LOW CARBON ENERGY SYSTEMS

- Expand existing and develop new Neighbourhood Renewable Energy Systems.

WHY ARE LOW CARBON ENERGY SYSTEMS A PRIORITY?

New high density neighbourhoods provide the opportunity to maximize clean energy systems, while also reducing overall demand on other parts of our energy system. On-site renewable energy ensures that growth in energy demand is manageable and does not require excessive changes to our current energy systems.

2050 PRIORITY FOR NEW CONSTRUCTION

- New buildings to be zero emission by 2030.

WHY IS NEW CONSTRUCTION A PRIORITY?

This will help ensure that new demand can be better managed and that there are still renewable energy resources such as clean electricity, waste wood, and biomethane available to support other future needs such as space heating and clean transportation.

2050 PRIORITY FOR EXISTING BUILDINGS

- Retrofit existing buildings to perform like new construction.

WHY ARE EXISTING BUILDINGS A PRIOIRTY?

This will keep improvements to building energy efficiency from being limited to the timeframes on which buildings are replaced. This approach allows for a gradual improvement of individual buildings, while taken together all existing buildings will improve faster than were they to simply wait for replacement.

Refer to the Renewable City Strategy for more details on longer term plans.

CONCLUSION

Vancouver has made significant strides towards improving the energy performance of new and existing buildings since the Greenest City 2020 Action Plan was adopted. Models indicate that new one and two family homes produce half of the greenhouse gas emissions than they did in 2007. The majority of large new office and condominium towers are being built to achieve LEED Gold certification and many are starting to connect to low carbon neighbourhood energy systems.

At the same time, the City has developed very collaborative relationships with BC Hydro, Fortis BC, Landlord BC, the Building Owners and Managers Association, and many others to successfully encourage and support owners of existing buildings and homes to make improvements to reduce their energy costs and GHG emissions.

Despite many global award winning successes, considerable additional effort will be required to achieve our GCAP Green Building targets and position Vancouver for a successful transition to 100% renewable energy. The actions described for Green Buildings here are the next steps we must focus on to be successful.

PASSIVE HOUSE

Passive House is an energy efficient building design approach and a globally recognized certification system for near-net zero energy buildings. It applies not only to houses but all forms of buildings and requires an 80-90% reduction in energy use for heating as compared to typical North American practices. Passive "house" buildings focus on great insulation, high performing windows, good ventilation, and harness natural heating from sunlight to minimize the need for purchased energy. Passive "houses" require quality craftsmanship and provide excellent comfort and indoor air quality for occupants while minimizing energy costs. In a passive house, 10 tea lights would provide enough heat for a 200 square foot living room in the middle of winter!

When the City allows for increased development, like the three to six story apartment buildings on Hastings Street or townhomes along Cambie Street, it requires developers to build to a green building standard of excellence. In addition to LEED Gold certified buildings, the City also

recognizes Passive House certified buildings as a demonstration of real leadership in environmentally responsible design. Because of this requirement, increases in density in turn, help to improve building practice, make transit service and local shopping more viable for a community, and help to fund amenities like parks and community centers.

GREEN JOBS RELATED TO GREEN BUILDINGS

- Building commissioning agent
- Building operator
- Energy modeller
- Energy manager
- Green roof technician
- Green renovator and constructor
- Insulation specialist
- Energy-efficient lighting specialist
- Drafter and architect
- Weatherization specialist
- Policy analyst and researcher
- Educator

GOAL 3 — GREEN TRANSPORTATION

GOAL: MAKE WALKING, CYCLING, AND PUBLIC TRANSIT PREFERRED TRANSPORTATION OPTIONS.

2040 TARGET: MAKE AT LEAST TWO THIRDS OF ALL TRIPS BY FOOT, BIKE, AND/OR PUBLIC TRANSIT.

2020 TARGETS:

1. **MAKE THE MAJORITY OF TRIPS (OVER 50%) BY FOOT, BIKE, AND PUBLIC TRANSIT. (ACHIVEVED)**
2. **REDUCE AVERAGE DISTANCE DRIVEN PER RESIDENT BY 20% FROM 2007 LEVELS.**

ACCOUNTABILITY: DIRECTOR OF TRANSPORTATION, ENGINEERING SERVICES AND DIRECTOR OF PLANNING, PLANNING AND DEVELOPMENT SERVICES

How we move around a city makes a big difference to our quality of life. The air we breathe, the amount of land we need, our physical health, and the cost of travel are all impacted by our transportation choices. Green transportation includes transit, as well as active transportation like walking and cycling. It is also about the places we see and experiences we have on the way to our destinations.

To achieve the Green Transportation goal, we need to make Vancouver a city where moving on foot or by bike is safe, convenient, and enjoyable. Transit should be fast, frequent, reliable, accessible, and comfortable — getting you where you need to go when you need to get there. Streets, public spaces, and neighbourhoods should be vibrant places that are alive with people, plants, and activities.

LOOKING BACK: SUCCESSES, CHALLENGES, AND THE EXTERNAL LANDSCAPE

In the first two years of implementing GCAP transportation actions the priority was to update the citywide transportation plan to provide a detailed framework for the next decade of action. The new plan, Transportation 2040, was endorsed unanimously by Council in late 2012. It builds upon the approved high level direction and detailed ideas generated through the Greenest City planning process, affirms the Greenest City 2020 mode share and distance driven targets (see below), and sets a new 2040 target. Transportation 2040 also includes a zero traffic fatality target.

The City continues to be a leader in North America for sustainable transportation. We have built on past successes and pioneered emerging concepts to enhance green mobility and accessibility. Based on the City's panel survey, we have already reached our 2020 mode share target that at least 50% of all trips originating in the city are made on foot, bike, and/or transit. Between 2008 and 2014, the number of daily bike trips doubled from 50,000 to 100,000 per day.

Numerous projects have contributed to this success. In particular, the opening of the rapid transit Canada Line in 2009 increased transit use significantly. Land use and urban design play an important part in these mode-share changes. We build walkable communities that are well served by transit and have taken a new approach to cycling with an increased focus on building low-stress bike routes that feel comfortable for people of all ages and abilities.

Car sharing continues to rapidly expand, now including one-way services like Car2Go and Evo. Car sharing makes it easier for people to embrace a multi-modal "car-light" lifestyle that doesn't require owning a car.

To continue to make progress on these achievements the City needs support from outside agencies. One million people will move to our region in the next 30 years, or about 35,000 people per year. Without a significant increase in transit capacity, taking transit may not be viable and our mode share percentage could drop. Support and funding from higher levels of government are required to continue this trend towards our targets. The regional Mayors' Council Transportation and Transit Plan details the projects necessary to meet demand and reach our mode share targets, but stable, long-term transit funding sources are required to deliver them.

Many key actions—to improve the pedestrian realm, build a complete and attractive cycling network, improve transit capacity and reliability, and create vibrant public spaces—will require further road space reallocation from the private automobile.

Limited data availability and reliability can make it difficult to set the right targets and track progress. Current modelling tools leave much to be desired, especially for measuring and forecasting active transportation trips and GHG emissions. The City is continually refining its monitoring program, and is working with partners to improve data collection and forecasting tools in these areas.

2020 TARGETS & HIGH-PRIORITY ACTIONS

2020 Target 1: Make the majority of trips (over 50%) by foot, bike, and/or public transit. (ACHIEVED)

- Baseline (2008): 40%
- Actual (2011): 44%
- Baseline (2013): 48%*
- Actual (2014): 50%

**Note: Methodology updated in 2013. Target was updated in 2015.*

2020 Target 2: Reduce distance driven per resident by 20% from 2007 levels.

- Baseline (2007): 5,950 km/person/year
- Actual (2014): 4,680 km/person/year (-21%)

PRIORITY ACTIONS FOR 2015 – 2020

ACTION 3.1

Improve walking and cycling infrastructure on the False Creek bridges and implement spot improvements throughout the existing walking and cycling networks. ✱

WHY IS THIS A PRIORITY?

To achieve our vision of a transportation network that makes walking and cycling comfortable for people of all ages and abilities, it is important to have complete and intuitive networks that provide easy and safe door-to-door access.

Accordingly, the City will continue to upgrade and expand the walking and cycling network. Key projects in the next few years include upgrades to the False Creek Bridges, potential changes to the Dunsmuir and Georgia viaducts to enhance walking and cycling, and spot improvements throughout the existing walking and biking networks (prioritized in part by the City's walking and cycling safety studies).

These significant infrastructure improvements are complemented by implementation of the City's first-ever Active Transportation Promotion and Enabling Plan. This plan uses a variety of tactics to encourage walking and cycling as normal, everyday forms of transportation, and to foster safe and respectful behaviour regardless of mode.

ESTIMATED IMPACT

It can be difficult to attribute changes in travel behaviour to single projects, since travel occurs across networked paths, with trips 'chaining together' (i.e. a larger trip is often comprised of many trips with stops along the way, often with multiple purposes, and sometimes using multiple modes) and often crossing neighbourhood, municipal, and even regional boundaries. Individual projects contribute to a larger network, impacting travel time, cost, convenience, and comfort.

Recent investments in our walking and cycling infrastructure have paid dividends. Between 2008 and 2011, when we first introduced the concept of 'All Ages and Abilities' bike lanes, the number of cycling trips in the city grew by 41%, while collision rates dropped 17%. Over the same time period, walking trips grew 19% and collision rates fell 20%.

Recent trip counter data from individual routes suggests record levels of cycling across the entire city in 2015. Bike trips across the Burrard Bridge, for instance, have grown from about 1 million to about 1.4 million trips per year since the Burrard-Cornwall intersection was improved and the Seaside Greenway was extended westward in 2013-14.

As we continue to upgrade and expand our infrastructure to a higher standard, and as we continue to foster a culture where walking and biking are seen as normal ways of moving around the city, it is reasonable to expect this growth to continue.

ACTION 3.2
Implement a Bike Sharing Program. ✳

WHY IS THIS A PRIORITY?
Bike share programs extend the reach of transit and walking trips while also providing people with a healthy transportation option. More than 600 cities worldwide currently have bike share programs, and ridership in those cities continues to increase. In addition to Greenest City goals, bike share aligns with other goals including supporting active and healthy living (Healthy City Strategy), reducing vehicle trips and greenhouse gas emissions (Transportation 2040), and supporting economic development by making getting around easier (Economic Action Strategy).

ESTIMATED IMPACT
Studies out of Paris and Barcelona have shown bike mode share increased from 1.0-1.5% after implementation of public bike share systems and other cycling upgrades. There is also evidence that bike share systems take some pressure off local buses that feed into rapid transit stations. When surveyed, over 50% of bike share members in Washington, DC reduced the number of trips by taxi, automobile, bus, or train, to ride a bicycle instead.

ACTION 3.3
Extend Millennium Line SkyTrain under Broadway to Arbutus. ✳

WHY IS THIS A PRIORITY?
Central Broadway is the largest employment centre in the entire province after downtown Vancouver, and home to the busiest bus route in North America. Overcrowded buses pass thousands of waiting passengers each day, despite buses running every two minutes during peak periods. Many more people choose not to take transit because it is overcrowded or not convenient enough.

By providing faster, more reliable, higher capacity service, the Broadway SkyTrain extension is expected to attract three times the riders of the 99 B-Line bus service today.

The City will continue to work with the Regional Mayors' Council, TransLink, and the Province to deliver an underground Millennium Line extension serving the Broadway Corridor. Phase 1 will connect with the Canada Line and travel as far west as Arbutus Street to cover the busiest part of the corridor. The line will be designed so that it can be extended all the way to UBC. While this project will not be completed prior to 2020,

it continues to be the top transportation priority for the City, and work is ongoing to ensure successful delivery.

ESTIMATED IMPACT

An underground Millennium Line extension to Arbutus Street is anticipated to carry over 160,000 passengers on opening day, roughly three times as many passengers as the 99 B-Line today, and equivalent to about 24 lanes of single occupancy vehicle motor traffic. Travel times between Commercial Drive and Arbutus Street would be reduced by more than 50%, providing significantly improved access to Broadway's jobs and services for residents throughout the region.

The new service will be fast, frequent, and reliable, offering a level of service that is more attractive than driving. As a result, it is projected to reduce the number of daily car trips by 54,000, resulting in a 335 kilotonnes reduction in greenhouse gas emissions (source: UBC Line Rapid Transit Study, Phase 2 Evaluation Report).

ACTION 3.4

Implement transit improvements including new B-Line routes, more bus service, and station upgrades. ❋

WHY IS THIS A PRIORITY?

The city is growing. More people and jobs mean significantly more trips made each year but transit is at capacity in many areas of the city throughout much of the day. To maintain a functioning arterial road network and prevent a gridlocked future, more transit service is essential. Walking, cycling, transit, and other options like car sharing complement each other, providing multiple options for people and reducing the need to drive.

Simply maintaining existing transit mode share will require more transit service, since the number of trips increase with population and job growth. Moving beyond the status quo to achieve regional transit mode share will require transit ridership to double. This is only possible with significant investment to increase transit capacity. Improvements will bring faster, more frequent, higher capacity, and more reliable service to many more people living and working in the city.

The City continues to work with the Regional Mayors' Council, TransLink, and the Province to deliver transit investments throughout the city and region. The regional Mayors' Council Transportation and Transit Plan includes significant upgrades to transit in the region. For the City of Vancouver, these improvements include: more capacity for the Expo, Millennium, and Canada Lines, a tunnelled Millennium Line extension serving the Broadway Corridor, new B-Line routes, more bus service, and station upgrades.

In addition to improvements outlined in the regional Mayors' Plan, the City has also committed to improving waiting areas at 100 bus stops by 2019 (i.e. within the next capital plan) through our street furniture contract.

ESTIMATED IMPACT

Delivering the Mayor's Council Plan would result in steady progress towards our walk, bike, and transit mode share targets. However many of the projects identified in the plan require additional funding that has not yet been identified.

ADVOCACY

- **Advocate the provincial and federal government for funding to improve transit.**
  In 2014, the region's mayors worked together with TransLink and municipal staff from throughout the region to develop the Mayors' Council Transportation and Transit Plan. The plan was approved almost unanimously and outlines benefits for all modes of transportation in every part of the region.

  Timely implementation of this plan requires additional funding from all levels of government.

  In early 2015, a regional plebiscite took place in which residents of Metro Vancouver were asked to vote for a 0.5% regional sales tax to help deliver the plan. Despite support from a broad coalition of organizations—representing local businesses, goods movement, emergency services, environmental stewardship, students, seniors, affordable housing, and others—the plebiscite did not pass. However, dialogue around the decision indicates that most residents are strongly in favour of transit improvements in the city and region.

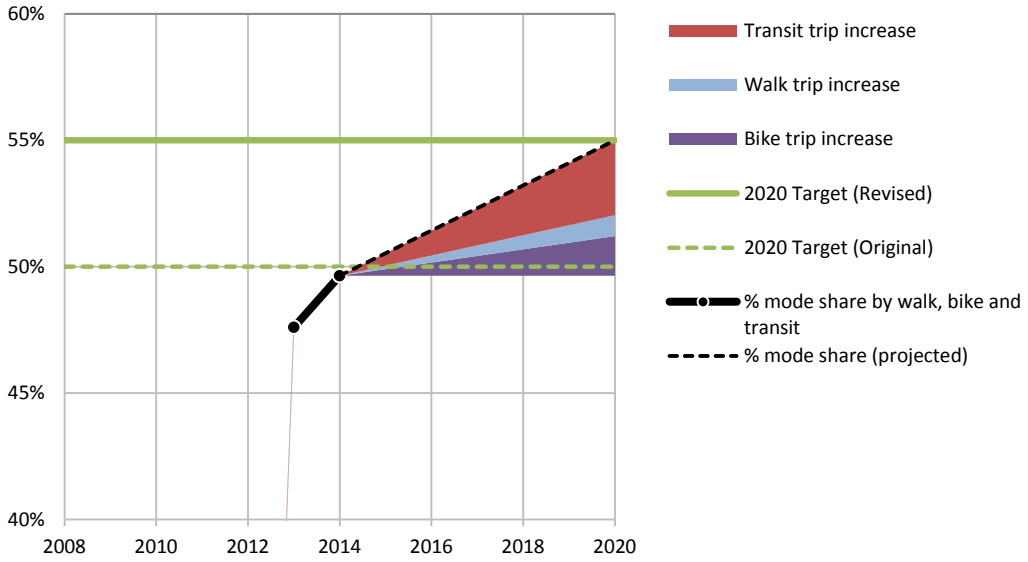
  The City will continue to advocate stable, long-term funding sources from all levels of government. Staff are also actively pursuing other strategies to help fund the Millennium Line extension under Broadway, the City's top transportation priority.

PROJECTIONS TO 2020

MODE SHARE

The City is on track to surpass its original 2020 mode share target that at least half of all trips in the city are made on foot, bike, and/or transit. This target was established using data from TransLink's regional trip diary to establish a baseline. According to this data source, overall sustainable mode share climbed from 40% in 2008 to 44% in 2011.

PAST, PRESENT, AND PROJECTED MODE SHARE BY FOOT, BIKE OR TRANSIT TO 2020
(% mode share by walk, bike, and public transit)



Until recently, TransLink's regional trip diary has been the only real source to track mode share for all trips in the city. The survey is a snapshot in time, representing 24 hours of a typical (usually fall) weekday travel rather than all trips over the course of a year. This survey is only conducted every three to five years and is generally not available to the City until two years after it is collected. This makes it difficult to track trends and measure progress towards our goals. Moreover the methodology uses a household survey that tends to undercount short trips, particularly those by walking.

In 2013, the City began a longitudinal panel survey that tracks the same residents over an extended period of time. The survey captures mode share and other information related to health, physical activity, and shift in travel behaviour, and has been designed so that additional information can be collected in the future as needs arise.

Results of this panel survey are highlighted below. While the numbers tell a similar story to that of the trip diary, a notable exception is that walking trips are several percentage points higher. This is likely due to differences in survey methodology; the panel survey is better at capturing walking trips and due to the higher total number of trips, the other modes decrease slightly.

This new method indicates that about 50% of all trips in the city are currently made on foot, bike or transit. It's expected that with focused effort, this percentage can increase to 55% by 2020.

MODE	Source: TransLink Trip Diary		Source: City of Vancouver Panel Survey	
	2008	2011	2013	2014
TRANSIT	22%	23%	18%	18%
WALK	15%	17%	26%	26%
BIKE	3%	5%	4%	5%
TOTAL	40%	44%	48%	50%

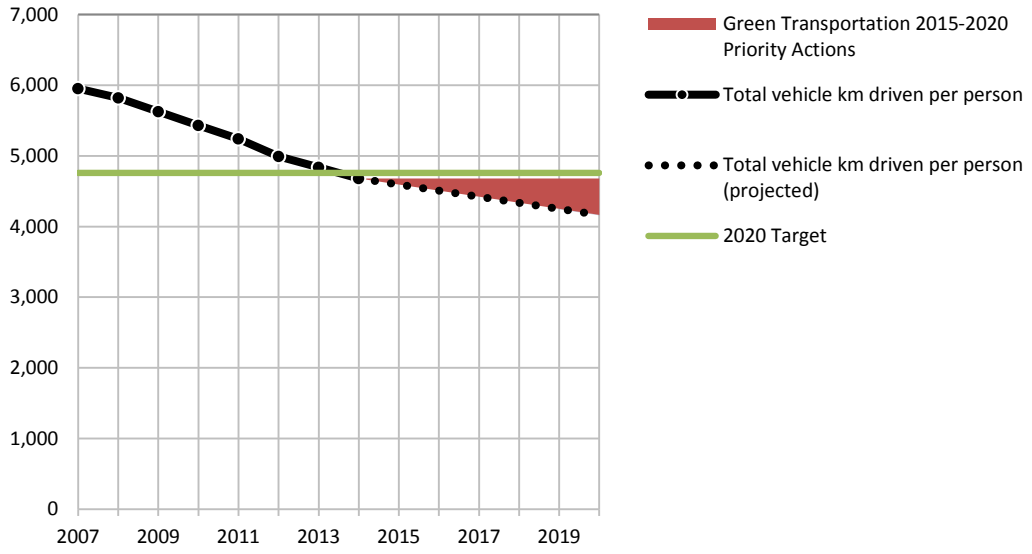
**Totals may not match data above due to rounding errors.*

DISTANCE DRIVEN PER RESIDENT

We have already met our 2020 target to reduce distance driven per resident 20% from 2007 levels —from 5,950 km per year per resident in 2007 to 4,680 km per year per resident in 2014.

PAST, PRESENT, AND PROJECTED ANNUAL VEHICLE KILOMETERS DRIVEN PER PERSON TO 2020

(total vehicle km driven per person per year)



A RENEWABLE CITY: 2050 PRIORITIES FOR GREEN TRANSPORTATION

Good transportation systems are fundamental to the fabric of a vibrant city. Green transportation systems are fundamental to the fabric of a sustainable city. Light duty vehicles in Vancouver currently use over 347 million litres of gasoline each year, producing over 800,000 tonnes of carbon dioxide —that's 36% of the city's total GHG emissions. Reducing such a significant source of emissions requires both reducing demand, and making the remaining motorized journeys less polluting.

By 2050, the vast majority of trips in the city will be made by foot, bike, or transit, and many of the remaining trips will be made using low or zero emissions vehicles.

2050 PRIORITIES

2050 PRIORITY FOR LAND USE AND TO SUPPORT GREEN TRANSPORTATION

- Use land-use and zoning policies to develop complete compact communities and complete streets that encourage active transportation and transit.

WHY IS LAND USE AND GREEN TRANSPORTATION A PRIORITY?

Ensuring that land use and transportation work together is critical to achieving success since one drives the need for the other and vice versa.

Whether one walks, cycles, takes transit or drives — almost everyone is a pedestrian for at least part of each journey. Safe, comfortable sidewalks contribute to vibrant public spaces and are also key to achieving our renewable energy goal.

Cycling is a healthy, inexpensive, and low-impact way to travel, and is often the fastest way of getting around for trips under five kilometers. Making cycling a practical, convenient, everyday way of getting around for more people requires direct, low-stress routes that link destinations, and safe places to park at the beginning and end of each journey.

2050 PRIORITY FOR TRANSIT

- Improve transit services as set out in Transportation 2040.

WHY IS TRANSIT A PRIORITY?

Transit is vital to our success as a multi-model city, complementing walking and cycling by extending travel range, linking neighbourhoods, and providing enhanced mobility for those who need it. High capacity rapid transit is particularly important to achieve our mode share targets, since it can effectively replace longer trips that would otherwise be made by driving.

2050 PRIORITY FOR PERSONAL MOTOR VEHICLES

- Transition light-duty vehicles (cars and light trucks) to predominately electric, plug-in electric, or sustainable biofuel powered.

WHY IS THIS A PRIORITY?

Cars will continue to be an important part of our city for a long time to come, but as our population and job base continue to grow there simply isn't road capacity for more vehicles. As we transition to a future less reliant on personal motor vehicles, it is important to use the road network as efficiently as possible and make use of clean renewable energy for vehicle trips that do take place.

2050 PRIORITY FOR COMMERCIAL TRANSPORT

- Better manage commercial vehicle journeys and transition heavy-duty (commercial) vehicles to sustainable biofuels, biomethane, hydrogen, and electricity.

WHY IS THIS A PRIORITY?

The efficient movement and delivery of goods and services is important at a variety of scales. At the local level, it is key to a thriving economy and high quality of life. At larger scales, it supports Vancouver's role as a major port and Asia-Pacific gateway.

Refer to the Renewable City Strategy for more details on longer term plans.

CONCLUSION

As of 2014, both the original GCAP transportation targets have been achieved. Half of all trips in Vancouver are taken on foot, by bike, or on public transit, and the average distance driven per resident declined 20% from 2007 levels. The Transportation 2040 Plan outlines a detailed path forward to achieve even more ambitious goals to reach our vision of a green, renewable transportation system. Moving forward, both major investments and small improvements are planned throughout the network to increase the capacity, safety, and flexibility of Vancouver's walking and cycling network.

The future of transit is less certain. Vancouver's system is well-used and largely at —and in some cases beyond — capacity, with significant latent demand. To reach our longer-term targets, secure long-term funding, and support is required from other levels of government.

GREEN TRANSPORTATION CALLOUT BOX: OUR TRANSPORTATION VISION

Great transportation cities are places where walking and cycling are the safest and most convenient ways of getting around, and transit is fast, frequent, reliable, and accessible to everyone. Goods and services can be delivered efficiently, and infrastructure is in place to support low carbon vehicles.

As our city continues to grow, our transportation decisions are critical to ensure our city is thriving, healthy, and sustainable. Our transportation vision supports:

- **A strong economy** by enabling the exchange of goods, services, and ideas throughout the city, providing a quality of life that retains and attracts businesses and employees, and supports our role as a Pacific Gateway.
- **Healthy citizens** by facilitating and encouraging active lifestyles and improving air quality.
- **A safe city** by reducing both the number and severity of injuries for all modes, and by addressing concerns of personal security. People of all ages and abilities should feel safe as they move within and through the city.
- **An accessible city** that enables people of all ages and abilities to get to where they need to go, comfortably and safely.
- **An environmentally sustainable city** by reducing greenhouse gases and other emissions, supporting compact communities, and considering lifecycle costs;
- **An affordable city** by making it easier for households to go car-light or car-free, and by providing inexpensive transportation options.
- **A lively city** with vibrant public spaces that encourage a culture of walking and cycling, and provide opportunities for social interaction.
- **A resilient city** that is prepared to deal with increasing fuel prices and climate change, and that has the capacity and flexibility to host big events, and the ability to respond to the unexpected.

GREEN JOBS RELATED TO GREEN TRANSPORTATION

- Public bicycle operator and technician
- Car-share manager and scheduler
- Transit operator
- Transportation engineer
- Road and public realm maintenance crew
- Policy analyst and researcher
- Educator

GOAL 4 — ZERO WASTE

GOAL: CREATE ZERO WASTE
2020 TARGET: REDUCE SOLID WASTE GOING TO LANDFILL AND INCINERATOR BY 50% FROM 2008 LEVELS

ACCOUNTABILITY: DIRECTOR, WASTE MANAGEMENT AND RESOURCE RECOVERY, ENGINEERING SERVICES

Managing waste has become part of our daily routines. From plastic packaging, to out-dated televisions, and bins of debris outside construction sites, waste can seem like an inevitable result of how we live our lives. It doesn't have to be.

We need to think about our waste differently. Our waste contains valuable, recoverable, and recyclable materials. If we think of our waste as a potential resource — recovery, reuse, and recycling can provide long-term benefits. We can recover materials from our waste stream to reduce the need to mine more metals from the earth or harvest more trees from the forest. As resources become scarce and ecosystems become more fragile, conserving and recovering what we already have becomes more important.

A zero waste future is not only possible, it's a critical part of solving today's climate crisis and addressing other environmental challenges. Methane is a powerful climate-altering greenhouse gas released when things like food scraps and grass clippings are buried in landfills and decompose anaerobically (without oxygen) instead of in their natural state through composting. Just as the transportation of goods produces GHG emissions, so does the transportation of waste as more and more trucks are needed to pick up and haul our garbage to landfills or incinerators.

LOOKING BACK: SUCCESSES, CHALLENGES, AND THE EXTERNAL LANDSCAPE

In 2008, residents and businesses in Vancouver sent approximately 480,000 tonnes of waste to landfill and incinerator. By 2013[1], the total amount decreased to approximately 395,000 tonnes of waste, a reduction of 85,000 tonnes of waste (-18%). The City has made good progress, but continued work is needed to influence behaviors, effect change in the design of products and processes, and develop systems and infrastructure so that citizens are able to make the least wasteful choices that are also convenient and cost effective.

Over the past four years there have been significant changes in how we handle waste in Vancouver as we move toward a zero waste future. The most significant was a new Green Bin program to collect and divert compostable food scraps. Starting in 2010, residents receiving City Green Bin service were invited to add uncooked fruit and vegetable scraps to their Green

[1] Solid waste data is compiled first at a regional level and then at the city level. As a result, Vancouver's data is always at least one year behind the reporting period

Bin for biweekly collection with yard trimmings. In fall of 2012 all types of food scraps and food soiled paper products were added to the Green Bin collection program. Then, in 2013 the City switched Green Bin and garbage collection frequencies. Green Bins are now collected every week and garbage is collected biweekly. In 2014, the City initiated programs to address recovery of food scraps from multi-family buildings and businesses. On January 1, 2015 a Metro Vancouver region-wide ban on the disposal of organic waste with garbage came into effect. The City supported the ban with a bylaw requiring all properties in Vancouver to have an organic waste diversion plan, and the disposal ban is enforced at the City's disposal facilities.

The issue of reduction and producer responsibility is challenging. Provincial regulations have been developed that place the responsibility for recovery of end-of-life materials on the producers. These programs are termed Extended Producer Responsibility (EPR). An EPR program for packaging and printed paper (PPP EPR) from residential properties was launched in 2014. This resulted in an increase in the types of materials that can be recycled by residents and received at our recycling depots.

Over the next several years, the PPP EPR program will expand to include recovery of recyclable materials from public spaces such as streets. A benefit of EPR programs is they shift the burden of dealing with materials from taxpayers to producers and users of products. The producer becomes responsible for managing the environmental impact of their products across its whole life cycle, from the selection of materials and design to its end-of-life. EPR continues to be a key tool to help close the loop between product production and disposal.

The main challenge the City faces with advancing our zero waste goal is that we are reaching the limit of what we can recover from the residential portions of the waste stream with which we have direct control. As we move forward, we will need to focus efforts on areas outside of our direct control such as regulatory processes and how to stimulate increased waste diversion within industrial, commercial, institutional, construction, and demolition waste streams. Other areas of focus will include: ensuring compliance in all sectors; minimizing commercial waste leaving the regional waste management system to avoid disposal ban requirements; and the ability to accurately track solid waste flows and tonnages from all sectors.

2020 TARGETS & HIGH-PRIORITY ACTIONS

2020 TARGET: REDUCE SOLID WASTE GOING TO LANDFILL AND INCINERATOR BY 50% FROM 2008 LEVELS

- Baseline (2008): 480,000 tonnes disposed to landfill or incinerator
- Estimate (2013): 395,000 tonnes disposed to landfill or incinerator (18% reduction)

PRIORITY ACTIONS FOR 2015 - 2020

ACTION 4.1
Increase overall diversion of organics by continuing to support the expansion of food scraps recycling to all sectors and support Metro Vancouver's 2015 disposal ban on organic materials to landfill and incinerator through education and enforcement. ❋

WHY IS THIS A PRIORITY?

Compostable organic waste like food scraps, food-soiled paper, and yard trimmings make up about 33% of garbage disposed from all sectors. When organic waste is buried in a landfill it decomposes anaerobically (without oxygen) and methane is generated. Methane is a powerful climate-altering greenhouse gas that is approximately 25 times more harmful than carbon dioxide. If not actively collected from landfills, methane can release into the atmosphere. Preventing the disposal of compostable organic materials to landfill is critical to achieving our waste diversion and greenhouse gas reduction goals. Increased organic material diversion can also create low-barrier and green-tech jobs in many areas, including program planning and set-up, material collection and processing, energy recovery and distribution and utilization of finished compost.

This action involves providing outreach and support to multi-unit residential, commercial, and institutional properties serviced by private waste haulers as they implement food scraps diversion programs. This action also requires continuous improvement to existing organics diversion programs for single family and duplex homes and other properties receiving City collection service. It supports the highest and best use of compost from organics originating from all sectors.

ESTIMATED IMPACT

Through this action, it is estimated that by 2020 approximately 60,000 tonnes per year of organic waste can be diverted from landfill or incineration, or approximately 66% of compostable organics currently disposed with garbage. Capture rates are based on estimates of the current program as well as expected capture rates for the additional sectors that are presently coming online. The amount of compostable organic waste disposed by sector (single-family, multi-family, residential drop-off, and industrial and commercial) and originating from Vancouver is determined from Metro Vancouver sources. Forecasts to 2020 are based on 2013 data scaled to estimated population growth.

ACTION 4.2
Increase the diversion of wood waste from landfill and incineration by expanding the Construction and Demolition (C&D) Waste Diversion Strategy to increase reuse and recycling of C&D waste. ✳

WHY IS THIS A PRIORITY?
About 34% of total waste disposed in Vancouver is comprised of construction and demolition materials. Clean wood, a component of the C&D stream includes lumber that is not treated, stained or laminated with glues and similar products. Clean wood can be beneficially used and makes up about 11% of total waste disposed from all sectors. Key challenges will be to balance incentives for reuse, recycling, and energy recovery to ensure wood is put to its highest and best use and to determine management options for other C&D materials including painted or treated wood in the long term. This action can also result more low-barrier and green tech-jobs in many areas including deconstruction trades, green design, material recovery, reuse and recycling, processing, and resale.

This action includes fully implementing green demolition policies aimed at achieving at minimum 75% recycling of demolition waste from pre-1940 homes, expanding the regulation to include demolition waste recycling requirements for all home demolitions regardless of age, and supporting Metro Vancouver's disposal ban on clean wood waste.

ESTIMATED IMPACT
It is estimated that by 2020 approximately 37,000 tonnes of wood can be diverted per year through this action. This estimate is based on regional data scaled to Vancouver. A capture rate of 80% for clean wood waste is assumed.

ACTION 4.3
Reduce street litter and abandoned garbage in public spaces, including illegal dumping, and increase the diversion of these materials by implementing a comprehensive litter management strategy including an expanded Keep Vancouver Spectacular program.

WHY IS THIS A PRIORITY?
While the relative impact of this action is fairly small from a tonnage point of view, it is a mechanism to publicly showcase diversion behaviours outside of the private realm. This more visible activity is important for reinforcing and supporting the zero waste goals. Implementing this action will require stakeholder engagement, community support, and program partnerships. In addition, it will involve the exploration of new requirements targeting commonly disposed and difficult to recycle materials such as coffee cups and fast food packaging.

ESTIMATED IMPACT

With increased segregation of waste materials collected through the City's street cleaning operations it is estimated that about 2,000 tonnes of litter and abandoned materials could be diverted from disposal by 2020 compared to the current estimated 366 tonnes. This will require growing the Keep Vancouver Spectacular program, increasing on-street recycling opportunities to capture 40% of materials, and diverting over 30% of items found abandoned in streets and lanes.

ACTION 4.4

Support Metro Vancouver's Zero Waste Challenge through the development of education and enforcement strategies for all sectors, with a focus on waste prevention and material reuse initiatives. ❋

WHY IS THIS A PRIORITY?

Diverting waste going to landfill or incinerator is only part of the picture. Reducing the amount of waste generated, creating material reuse initiatives, and fostering the closed-loop economy for waste is also very important to overall waste management. Waste minimization and reuse can prevent the generation of greenhouse gases, create green jobs, and support the shift required to change behaviors.

This action builds on existing zero waste work including food scraps diversion promotions and outreach. For example, Metro Vancouver has launched education and awareness materials as part of their work to adopt the UK's Love Food Hate Waste campaign. Capitalizing on the energy around food scraps recycling as a starting point can help to create awareness and action around reducing waste and consumption in general.

ESTIMATED IMPACT

It is not possible to estimate the impact of this action, however it is important to create the awareness to support the behavior change required for achieving a zero waste system.

ADVOCACY

- Advocate the provincial government to continue implementing extended producer responsibility (EPR) recycling programs, in accordance with the Canada-wide action plan for EPR, with specific focus on carpet, textiles, and furniture.

  EPR, also known as industry product stewardship or take-back programs, shifts the responsibility for managing end of life products from local governments to the companies that produce them. As a policy approach EPR provides incentives to producers to incorporate environmental considerations in the design of their products such as increasing the usability and recyclability of products and their packaging. Under a Canada-wide action plan for EPR developed by the Canadian Council of Ministers of the Environment (CCME), the Province is committed to EPR programs for: electronics;

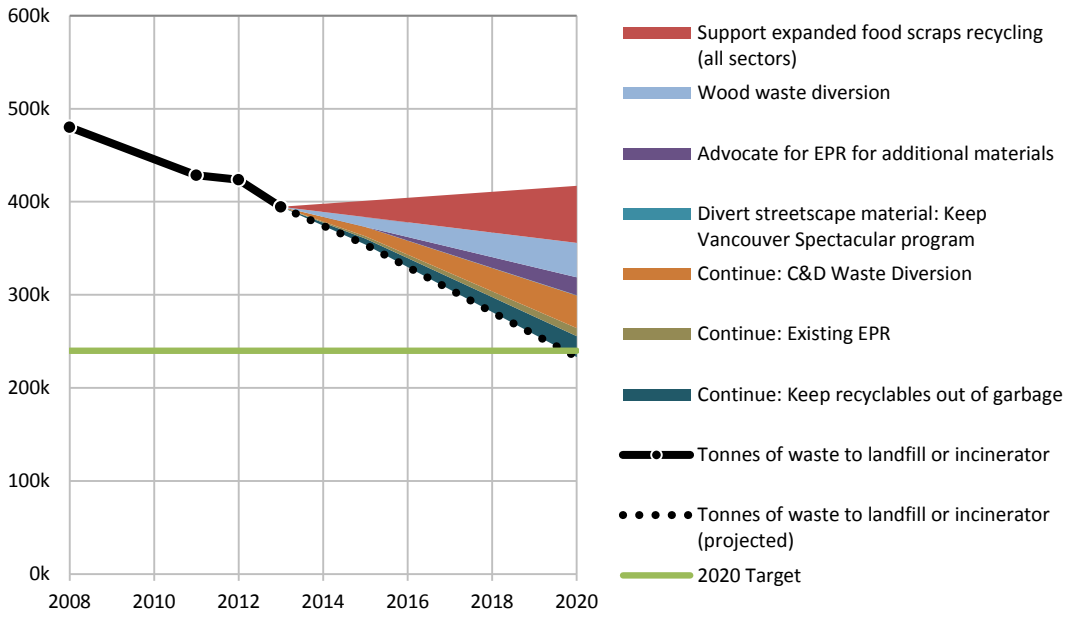
hazardous wastes; mercury-containing products; automotive products; packaging; and printed paper (including materials recycled in existing curbside programs). Advocacy is needed to encourage the Province to move forward with program details for other items.

This action involves specific focus on new EPR programs covering carpet, textiles, and furniture. With the development of EPR programs for these materials, we can expect to divert an additional 19,000 tonnes of material from disposal by 2020 based on regional waste data scaled to Vancouver and assuming a 75% capture rate.

PROJECTIONS TO 2020

The following projections reflect the updated priority actions described above, as well as the initial actions described in the Greenest City 2020 Action Plan. Capture rates are uncertain and affect results of projections estimated.

PAST, PRESENT, AND PROJECTED WASTE TO LANDFILL OR INCINERATOR TO 2020
(tonnes of waste to landfill or incinerator)



CONCLUSION

The priority actions identified in this chapter represent important systemic and behavioural changes that are required to reach our Zero Waste targets. With full engagement by all partners the actions are achievable and support the City's goal in moving toward a closed-loop, cradle-to-cradle economy where resources are put to the highest best use.

The City is reaching the limits of what can be recovered from the residential portions of the waste stream through its own programs. Moving forward, we will need to focus on areas outside of our direct control such as regulatory processes and increased waste diversion within industrial, commercial, institutional, construction, and demolition waste streams. Other areas of focus will include: ensuring compliance in all sectors; minimizing commercial waste leaving the regional waste management system to avoid disposal ban requirements; and the ability to accurately track solid waste flows and tonnages from all sectors.

WHAT IS EXTENDED PRODUCER RESPONSIBILITLY?

Extended producer responsibility (EPR) requires companies to set up and pay for recycling programs for the products and packaging they make and sell. It's called *extended* producer responsibility because the responsibility of these companies, or producers, is stretched beyond the cash register to the waste phase of the product life cycle. As a policy approach, EPR provides incentives to producers to incorporate environmental considerations in the design of their products and packaging.

EPR has many goals. Ideally, shifting the cost and responsibility of waste management from cities to companies will create feedback loops that lead to greener design. Consumers pay up front, establishing a pool of funds that EPR programs use to pay for collection infrastructure and invest in the recycling industry. They also create greater transparency and accountability to ensure materials are managed safely and reduce the burden on taxpayers.

EPR is common in Europe, particularly for packaging and e-waste. Fortunately, the Province of BC is also a world leader in EPR, with progressive laws and policies that require EPR programs for a growing list that includes: packaging; beverage containers; electronics; batteries; light bulbs; thermostats; smoke alarms; tires; used motor oil; oil filters; gasoline; antifreeze; paint; pesticides; solvents; and medications. BC is also committed to developing EPR programs for textiles, carpet, furniture, and construction and demolition waste starting in 2017. These EPR programs are accountable to the BC Ministry of Environment and must publish annual financial and environmental reports that are vetted by third party auditors.

Every year, BC's EPR programs keep over 150,000 tonnes of resources out of landfills and incinerators, prevent GHG emissions equivalent to taking 38,500 cars off the road for a year, and save the energy equivalent of 440,000 barrels of oil. Some 2,400 jobs have been created province-wide to handle the $40 million worth of materials collected through these programs. These benefits are expected to more than double by 2022 as EPR expands to new types of products and packaging.

GREEN JOBS RELATED TO ZERO WASTE

- Waste reduction consultant
- E-waste specialist
- Building deconstruction labourer
- Recycling facility operator
- Lending library staff
- Reuse centre staff
- Waste technician
- Waste collector
- Organic diversion specialist
- Recycling materials handler
- Supply chain manager
- Building manager
- Policy analyst and researcher
- Educator

GOAL 5 — ACCESS TO NATURE

GOAL: VANCOUVER RESIDENTS ENJOY INCOMPARABLE ACCESS TO GREEN SPACES, INCLUDING THE WORLD'S MOST SPECTACULAR URBAN FOREST.

2020 TARGETS:

1. **ALL VANCOUVER RESIDENTS LIVE WITHIN A FIVE-MINUTE WALK OF A PARK, GREENWAY OR OTHER GREEN SPACE.**
2. **PLANT 150,000 NEW TREES.**

2050 TARGET: INCREASE CANOPY COVER TO 22%.

Note: Development of a biodiversity target is currently underway.

ACCOUNTABILITY: DEPUTY GENERAL MANAGER – PARKS AND RECREATION AND DIRECTOR OF STREETS – ENGINEERING SERVICES

Just over a hundred years ago, Vancouver had western redcedar and Douglas-fir forests growing hundreds of feet tall. Today, the beauty of the natural world continues to influence Vancouver's identity and contribute to our reputation as one of the world's most livable cities.

Anyone who has walked through a park on the first sunny day of spring has experienced the importance of green spaces to the health of individuals and communities. Whether they take the form of a community garden, a city park, a greenway along your block, or the seawall, green spaces have been shown to benefit our physical and emotional health by reducing blood pressure, cholesterol, and stress.

These spaces also contribute to our sense of community by creating places for recreational activities, for children to play and for neighbours to meet and socialize.

LOOKING BACK: SUCCESSES, CHALLENGES, AND THE EXTERNAL LANDSCAPE

Initial exploration of additional green space opportunities looked at creating four to six new mini-parks by converting street right of ways to park locations. Despite a great deal of planning and consultation and a strong majority of support in some of the locations tested, the projects did not proceed due to strong opposition from some nearby residents or businesses. Yukon Street at 17th Avenue is being tested as an alternative model for creating additional green space. At this location, a corner lot is being purchased where a full/partial street closure will be piloted in conjunction with a new park. This piloted approach has had a successful start and may be replicated in areas of the city where people do not have access to a park within a five-minute walk of their home.

To date, 37,000 of the targeted 150,000 trees have been planted on streets, in parks, and on private property. Since 2013, the TreeKeepers Program has supported private property planting

through a Citizen Forester training program, a junior Citizen Forester program delivered in several Vancouver schools, a robust volunteer training and management program, and the production of educational materials. They also deliver workshops on aspects of tree care.

In early 2014, an Urban Forest Strategy Framework was adopted that introduced the measure of canopy cover, the area of the city covered by trees as seen from the air. This measurement is commonly used by cities to measure the health of the urban forest and the benefits it provides (such as air quality and rainwater absorption). Over the last two decades, Vancouver's canopy has been in steep decline and currently sits at 18%. The Urban Forest Strategy Framework set a goal of growing Vancouver's canopy back to 22% by 2050, consistent with goals established in many other North American cities. Planning for a healthy, city-wide canopy cover involves an emphasis on tree retention, species selection, climate adaptation, and long-term planning and maintenance, which are stronger management practices than focusing solely on increased planting numbers. Long term plans for street tree succession, forest naturalization in parks, and planting more trees on private property are currently being developed.

The original Greenest City targets focused on the quantity of green space. The Park Board has made additional plans and goals to further enhance the quality of Vancouver's natural spaces. Plans include: Rewilding Vancouver: An Environmental Education and Stewardship Action Plan (2014); The Vancouver Bird Strategy (2015); and a Biodiversity Strategy (under development) that establish targets, principles, practices and actions in support of habitat protection, restoration and enhancement.

The Park Board works to ensure the Access to Nature goals are met. Vancouver is the only municipality in Canada with an elected park board, the Vancouver Board of Parks and Recreation that operates independent of City Council. It has exclusive possession, jurisdiction, and control over more than 230 public parks in Vancouver and a large public recreation system.

2020 TARGETS & HIGH-PRIORITY ACTIONS

TARGET 1: ENSURE THAT EVERY PERSON LIVES WITHIN A FIVE MINUTE WALK OF A PARK, BEACH, GREENWAY OR OTHER NATURAL SPACE BY 2020.

- Baseline (2010): 92.6% of city's land base within a 5-minute walk to a green space
- Actual (2014): 92.7% (0.1% increase)

TARGET 2: PLANT 150,000 NEW TREES BY 2020.

- Baseline (2010): 0
- Actual (2014): 37,000 trees

2050 TARGET: INCREASE CANOPY COVER TO 22%.

- Baseline (2013): 18%

PRIORITY ACTIONS FOR 2015-2020

ACCESS TO NATURE: 5 MINUTE WALK

ACTION 5.1
Complete the new park at Yukon Street and 17th Avenue.

WHY IS THIS A PRIORITY?
This location is in a nature deficient area partially located in Mount Pleasant. Recent completion of their community plan made the installation of new greenspace a high priority. The project has a side benefit of traffic calming on the Yukon bike route.

ESTIMATED IMPACT
This new park and street closure will eliminate the 5 minute walk deficiency in this neighbourhood, a 6.88 hectare area.

ACTION 5.2
Acquire four hectares of park land at Cambie Street and the Fraser River.

WHY IS THIS A PRIORITY?
Acquiring new park land was identified as a priority in the Marpole Community Plan. In addition to addressing the lack of access to nature in this neighbourhood and will increase access to the Fraser River, which has been identified as a long-term City priority.

ESTIMATED IMPACT
This new park will reduce the 5 minute walk deficiency in this neighbourhood by almost 25 hectares.

ACTION 5.3
Realize a new ~10 hectare park system in East Fraserlands.

WHY IS THIS A PRIORITY?
The park system achieved through this redevelopment has been underway for many years. It will improve accessibility to nature within a five minute walk of many residents, provide greatly improved access to the Fraser River, and include a focus on providing habitat for birds.

ESTIMATED IMPACT
This new park will reduce the 5 minute walk deficiency in this neighbourhood by 0.2 hectares.

ACCESS TO NATURE: 150,000 TREES

ACTION 5.4
Strategically expand private property, street, and park tree planting. ✳

WHY IS THIS A PRIORITY?
Strategic planning for potential planting locations and best practices must be developed in order to increase the urban tree canopy. Priority planting locations will consider existing gaps in city-wide canopy, potential benefits for vulnerable populations, areas of high urban heat, walkability/liveability of commercial and neighbourhood streets, food security, biodiversity, park naturalization and many other considerations.

ESTIMATED IMPACT
59,250 trees are planned for planting from 2014 to 2018.

ACTION 5.5
Create a new inventory system for trees on City land.

WHY IS THIS A PRIORITY?
The current system, VanTree, is nearing the end of its useful life, and is only capable of holding an inventory of street trees. As there are increasing pressures to protect and grow the urban forest, there are also increasing requirements for a data management system that can support proactive management of this vital green infrastructure. To better quantify of the urban canopy, we will need a system that inventories all publicly managed trees.

ESTIMATED IMPACT
This won't have a direct impact on the target, but will ensure proper tree risk management into the future and improve urban forest data tracking and sharing.

ACTION 5.6
Update tree management plans, planting standards, and best practices.

WHY IS THIS A PRIORITY?
Tree management plans are key documents in the management of the urban forest. They must be updated to reflect the Urban Forest Strategy Framework and current urban forest best practices. These documents will also assist in ensuring coordination across city departments involved in urban forest related activities.

ESTIMATED IMPACT
As new trees are planted in public spaces, clear guidelines are needed to manage tree health and other infrastructure, safety and maintenance issues. This will ensure Vancouver's management practices result in long term urban forest health and decreased conflicts with other priorities.

ACTION 5.7
Develop additional policies and decision-making criteria to retain healthy, mature trees.

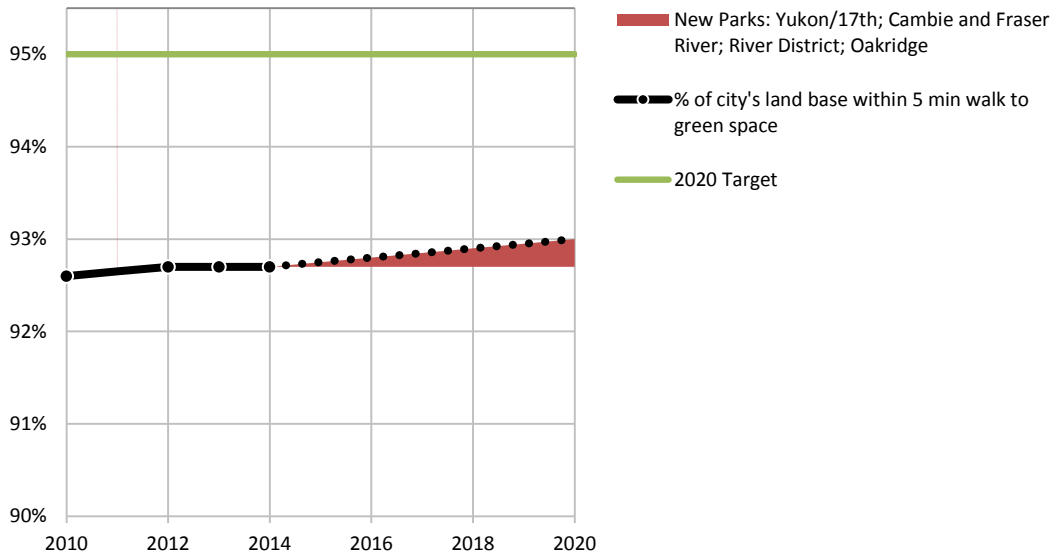
WHY IS THIS A PRIORITY?
One of the key findings of the Urban Forest Strategy Framework was that the city's canopy has been declining. This has largely been due to the loss of large stature trees on private property. Policies must be developed to ensure retention of large, healthy trees on private land, as a decline in canopy is associated with a decline in benefits such as the filtering of air pollutants.

ESTIMATED IMPACT
Better urban forest policies will assist in stabilizing the city's current tree canopy cover at 18% and growing our canopy into the future.

PROJECTIONS TO 2020

ACCESS TO NATURE: FIVE MINUTE WALK

PAST, PRESENT, AND PROJECTED AMOUNT OF CITY'S LAND BASE WITHIN A FIVE MINUTE WALK TO GREEN SPACE TO 2020
(% of city's land base within five minute walk to green space)

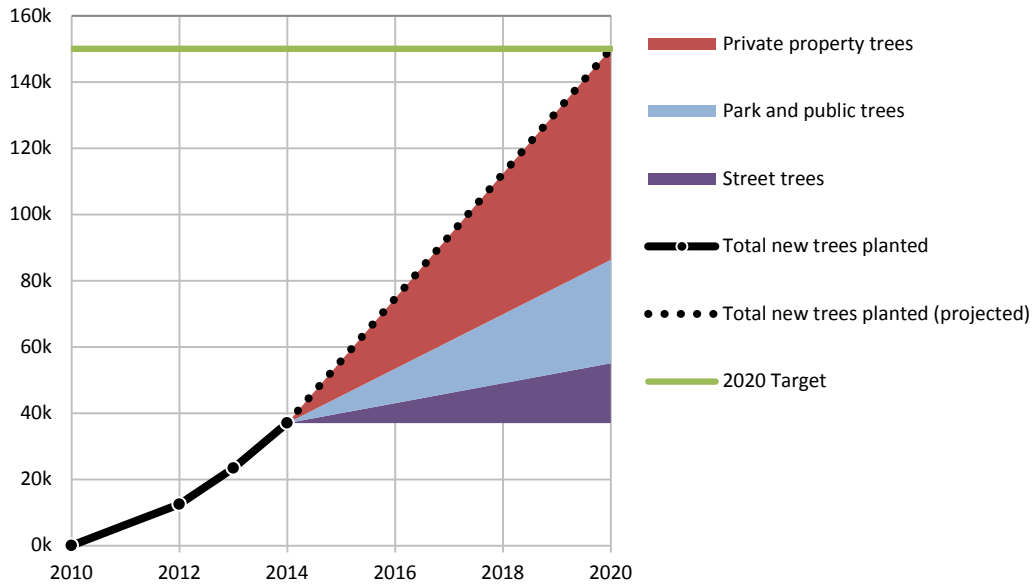


ACCESS TO NATURE: 150,000 TREES

The following projections reflect the updated priority actions described previously, as well as the initial actions described in the GCAP. It includes private property tree planting, park and public trees, and street trees.

PAST, PRESENT, AND PROJECTED NUMBER OF NEW TREES PLANTED TO 2020

(total new trees planted)



CONCLUSION

While there has been considerable success in the number of trees planted to date, additional effort is needed to meet our 2020 target, particularly on private land. Complementing the 2015-2020 priority actions, the Urban Forest Strategy Framework provides tools for growing and maintaining a healthy, resilient urban forest for future generations. Both canopy cover and the number of trees should be considered, along with the number of trees, as measures of the health of the urban forest and provides other benefits like air quality and rainwater absorption.

New park space continues to be acquired and alternative models are being applied to shrink the distance between residents and green space. Increasing Vancouver's natural spaces also provides important added ecosystem services, such as stormwater drainage and shoreline protection, on which the city depends. These are increasingly important as we deal with more intense weather events due to climate change.

THE VALUE OF TREES AND OTHER NATURAL INFRASTRUCTURE

Ecosystems like forests and wetlands provide many essential services — including flood control, water purification, and temperature control. To ensure these ecosystem functions and associated benefits continue, cities can integrate networks of natural lands, working landscapes, and other open spaces as "natural infrastructure."

Here are just a few examples of the role natural infrastructure plays:

- **Clean air and water**. Plants, trees, and soil filter out many pollutants that would otherwise go into our air and water.
- **More natural space means less stormwater runoff**. A single mature tree can intercept more than 15,000 litres of water a year, lowering city infrastructure costs.
- **Enhanced quality of urban life.** Studies show areas with trees have lower crime rates than barren places.
- **More habitat space.** Natural spaces provide homes and food for millions of organisms above and below the ground.
- **New food opportunities**. People have been known to forage in our urban forests and fish in our local waters. Fruit trees have a role to play in food secure communities.
  Lifted spirits. Nature can help us relax and feel calm.

GREEN JOBS RELATED TO ACCESS TO NATURE

- Habitat restoration specialist
- Tree planter/landscaper
- Arborist
- Integrated pest management
- Landscape architect
- Contractor/labourer
- Policy analyst and researcher
- Educator

GOAL 6 — CLEAN WATER

GOAL: VANCOUVER WILL HAVE THE BEST DRINKING WATER OF ANY CITY IN THE WORLD.
2020 TARGETS:

1. **MEET OR BEAT THE STRONGEST OF BRITISH COLUMBIAN, CANADIAN OR APPROPRIATE INTERNATIONAL DRINKING WATER QUALITY STANDARDS AND GUIDELINES.**
2. **REDUCE PER CAPITA WATER CONSUMPTION BY 33% FROM 2006 LEVELS.**

ACCOUNTABILITY: DIRECTOR - WATER AND SEWERS, ENGINEERING SERVICES

In Vancouver, it can be easy to take our high-quality and abundant drinking water for granted. Not only are we next to the sea, the Pacific Ocean, but also fresh water is all around us: the Fraser River; many mountain lakes; and significant seasonal annual rain fall.

However, factors such as a growing population and economy and climate change will place a greater demand on our drinking water in the future. The drinking water for our region's 2.4 million residents comes from reservoirs that are fed by a watershed drainage area spanning 524 square kilometers. Rainwater and snow pack melt funnel through streams in the catchment area and flow into the reservoirs. Expected impacts of climate change, such as reduced snow pack and drier summers, will reduce this supply.

Together, the City of Vancouver and Metro Vancouver are responsible for ensuring that current residents and future generations continue to have access to clean drinking water.

LOOKING BACK: SUCCESSES, CHALLENGES, AND THE EXTERNAL LANDSCAPE

Vancouver continues to meet or beat drinking water quality standards and guidelines. The City has worked to ensure public access to drinking water, focusing on areas of greatest need, leading and advocating through partner agencies for proactive water system renewal and monitoring, and creating environmentally friendly drainage systems.

As of 2014 Vancouver has reduced its total water consumption by 16% from 2006 levels. These reductions were accomplished through fixture retrofits (as part of incentive programs and as required through Vancouver Building By-Law), seasonal water pricing policies, lawn sprinkling regulation enforcement, educational programs and pilot programs for multi-family buildings, irrigation businesses, and the industrial, commercial and institutional (ICI) sector.

The per capita annual savings across all sectors have averaged approximately 2% per year since 2006. This observed trend is consistent with what has occurred in many Canadian communities with similar conservation programs. Water consumption in 2014 was atypical of the last decade, with an increase of 4% over 2013 levels. Analysis revealed that the increase is primarily due to increase in water use of ICI customers. Challenges the City faces are: low cost of water, the lack of conservation-oriented pricing in the metered sectors and a misperception of

abundant water supply. The lack of conservation-oriented pricing can be mitigated in the short term by expanded retrofit programs while the development of a comprehensive communications strategy will help educate and inspire efficient use of water.

CITY WORKS TO PROTECT LOCAL WATERS
While outside of the scope of the work needed to meet the Clean Water targets, we are also protecting receiving waters as part of our obligation through the Metro Vancouver Integrated Liquid Waste and Resource Management Plan. These receiving waters support sensitive aquatic habitats and are a recreation outlet for many residents. We are replacing existing combined sewer systems with a separated sewer system to eliminate combined sewer overflows, administering and enforcing municipal and regional liquid waste source control by-laws and programs to restrict contaminants from entering receiving water bodies, and working with industry sectors (e.g. restaurants, and the fermentation industry) to manage contaminant discharge. The City also continues to work on a Citywide Integrated Rainwater Management Plan and in partnership with the Musqueam First Nation's Musqueam Creek Integrated Rainwater Management Plan. These plans will identify opportunities and tools to respond to contaminant concerns from road and urban surface runoff, resulting in a reduction of pollutants like oil, grease, and sediment from reaching receiving waters.

2020 TARGETS & HIGH-PRIORITY ACTIONS

TARGET 1: MEET OR BEAT THE STRONGEST OF BRITISH COLUMBIAN, CANADIAN, AND APPROPRIATE INTERNATIONAL DRINKING WATER QUALITY STANDARDS AND GUIDELINES

- Baseline (2006): 0 instances of not meeting drinking water quality standards
- Actual (2014): 0 instances

TARGET 2: REDUCE PER CAPITA WATER CONSUMPTION BY 33% FROM 2006 LEVELS

- Baseline (2006): 583 L/person/day
- Actual (2014): 490 L/person/day (-16%)

PRIORITY ACTIONS FOR 2015-2020

TARGET 1 – WATER QUALITY

The City must continue rigorous testing of the drinking water in distribution systems to ensure we keep our high standard and maintain public confidence in our drinking water. It is also important to ensure public access to drinking water throughout the City through thoughtful installations of drinking water fountains that are well maintained.

ACTION 6.1
Include testing from drinking water fountains in the City's routine water quality monitoring program. ✱

WHY IS THIS A PRIORITY?

The City owns a vast network of water mains and over 250 public drinking water fountains. Pro-active monitoring helps ensure high quality drinking water throughout this system and provides an additional safeguard for public health.

Water quality is monitored through routine testing at dedicated sampling stations and two online continuous water quality stations. In 2014, monitoring was expanded to include drinking water fountain sampling and a comprehensive predictive study was conducted that compares the relationship between chemical and physical parameters on the corrosion rate of water mains. The results from these enhanced water quality monitoring studies will inform potential improvement practices for design and maintenance scheduling.

ESTIMATED IMPACT

As these are exploratory studies, the estimated impact is difficult to predict. The intent is to expand the scope of water quality monitoring to reveal where preventative measures should be applied. Reports of good water quality at public drinking water fountains will increase consumer awareness and confidence.

TARGET 2 – WATER CONSERVATION

An external professional review projects a reduction of 11% by 2020 from current consumption. When added to the reductions already achieved, this will result in a cumulative reduction of 27% total per capita consumption from 2006 levels, which leaves a shortfall of 6% to the Greenest City Clean Water goal.

To address the 6% gap, considerable resources will be required to increase water efficiency across all sectors through delivery of City-led programs. In the past four years, the City has launched a variety of programs for the residential sector with a focus on outdoor water use, delivered pilot scale fixture retrofit and audit programs, and leveraged partnerships with utility companies. Building on the lessons learned from the pilots, the City will lead the implementation of various sector specific programs.

The City will also evaluate funding options including conservation oriented pricing models for our fully metered sectors to offset program costs. Further, a revisit of current water metering policy may be required.

ACTION 6.2

Reduce institutional, commercial and industrial (ICI) water consumption through policy and compliance measures. ✳

WHY IS THIS A PRIORITY?

The recent trend of increased water consumption within ICI is partly a result of economic growth. Within this reality, the priority is to increase water efficiency retrofits,

change behaviour and prevent water waste through leaks. This is a mutually agreeable strategy which will help ICI customers control their water costs while reducing total per capita use and prolonging the life span of the source waters.

This action contains the most extensive suite of tactics and is driven by recent water use trends and the opportunity for the City to demonstrate leadership by reviewing and modifying some of its own water use practices.

The actions in ranked order of importance include:

1. Conduct water audits of ICI customers to identify water efficiency opportunities including retrofits with high-efficiency water using fixtures.
2. Assign an account manager to support water conservation measures for high use ICI accounts.
3. Develop policy requirements for the phasing out of once through cooling for the ICI sector.
4. Implement measures to reduce civic water consumption.
5. Improve water consumption knowledge within the ICI sector by providing more frequent water consumption data and encouraging benchmarking activities.
6. Work with BC Craft Brewers Guild to develop Best Management Practices for water use and sewer discharge.

Water audits will help businesses understand their water usage and water loss through leakage. They will also provide recommendations for increased water efficiency with financial payback. An account manager will oversee large accounts to provide guidance on efficiency measures, and where appropriate connect account holders to program offers such as audits and retrofit incentives.

A study on the prevalence of once through cooling systems and options for phasing out their use is currently underway. The results of this study will inform whether a bridging rebate program is appropriate before developing policy to phase out these inefficient water using systems.

These programs will be further supported with improved customer understanding of their water consumption. First, increased billing frequency (from 3 to 6 times per year) will enable ICI customers to more closely track their water use and take more immediate corrective action. Second, the City will encourage benchmarking activities.

Civic water use, including City-owned buildings and parks, is also a place for increased water conservation measures. Proactively retrofitting to high efficiency fixtures, replacing once-through cooling systems to recirculating or air cooled systems, installing timers on ornamental fountains to reduce water loss to evaporation, ensuring efficient irrigation practices and reducing the use of potable water in naturalized systems (e.g. ponds, lakes, and streams) are important first steps.

The surge of breweries opening in Vancouver and the impending regional fermentation bylaw has inspired a mutual desire for the BC Craft Brewers Guild to work with the City and Metro Vancouver in developing Best Management Practices for water use and sewer discharge. Although breweries make up a small portion of water use within this sector, it presents a positive example of working with industry towards a mutual goal of water efficiency.

ESTIMATED IMPACT

Undertaking this group of actions is expected to yield a 5% reduction in total water consumption.

ACTION 6.3

Reduce residential water consumption through incentives, education, and compliance measures. ✱

WHY IS THIS A PRIORITY?

Unmetered one and two family properties are charged a flat rate for water. While multifamily properties are metered, their consumption is not broken down by living unit unless the building owner installed submeters, which is rare. For these reasons, user knowledge of actual water consumption is low, limiting the individual's motivation to implement water efficiency measures.

Despite warmer and drier than usual summers when discretionary water use is typically high, consumption trends have remained relatively flat over the last couple years. This success is attributed to the heavy focus of past program efforts in this sector. Continuing to educate on the need for water conservation and enforcing lawn sprinkling regulations will help achieve further water savings.

Water conservation programming within this sector is focused on the following actions in ranked order:

1. Expedite retrofits with high efficiency water fixtures for residential customers.
2. Develop a comprehensive education strategy that incorporates branded, targeted campaigns for residential customers.
3. Continue to enforce lawn sprinkling regulations for residential customers.
4. Explore options to accelerate the metering of unmetered homes.

High efficiency retrofits will be actualized through a combination of incentive programs and Vancouver Building Code requirements for major renovations and new construction. Where there is cross over in respective mandates (e.g. water and energy savings), partnerships with other utilities will be brokered to leverage retrofit potential. A targeted approach will be taken to ensure the greatest impact.

Meters will continue to be installed on all new or significantly renovated one and two family homes. Options to accelerate the metering of unmetered homes will be explored.

ESTIMATED IMPACT

These actions are expected to yield a 10% reduction in total water consumption.

ACTION 6.4

Reduce water system loss and civic use. ✳

WHY IS THIS A PRIORITY?

Unmetered water use makes up 15% of total city-wide water consumption and includes distribution system leakage, civic uses (i.e. hydrants and water main maintenance), and water used in unmetered civic buildings and parks. Although this is comparable to other well-run utilities there is room for improvement.

The priority actions for this group are:

1. Adopt a reduction target for all civic uses other than distribution system leakage (align the target with GCAP citywide targets).
2. Scale-up the proactive leak detection and enforcement program looking at hydrant and private property service connections and expedite City response to reported leaks.
3. Optimize water main flushing protocol.
4. Develop a strategy to install meters on remaining civic buildings and parks.

Adopting a reduction target for all civic uses other than distribution system leakage demonstrates leadership and a commitment towards water efficiency.

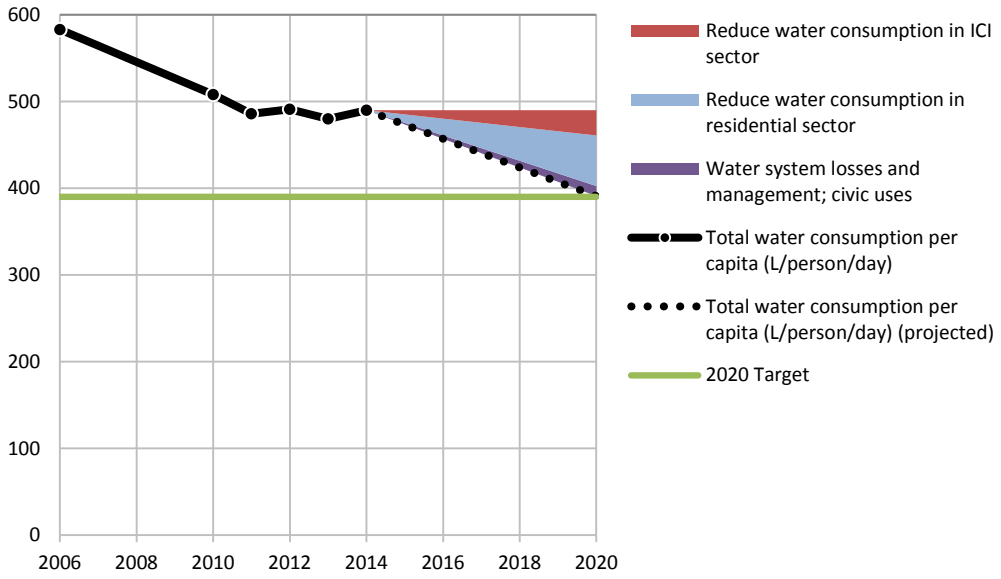
Metering the City's own properties will allow consumption to be tracked and benchmarked for performance. Metering will help to detect small leaks, which over time can add up to significant water loss.

ESTIMATED IMPACT

Undertaking this group of actions is expected to yield a 2% reduction in total water consumption.

PROJECTIONS TO 2020

PAST, PRESENT, AND PROJECTED WATER CONSUMPTION PER CAPITA (total water consumption per captia in litres per day)



To reach the GCAP target of 390 liters of water per person per day, an additional 17% reduction is required. The projected water consumption chart indicates that required reduction is achievable through the suite of programs and policies identified in the outlined actions. The reduction projection is based on results from detailed quantitative modelling of similar water conservation programs conducted for other Canadian municipalities in recent years, plus an extrapolation forward of average demand savings that have been attained in Vancouver since 2010 under the City's current Greenest City water conservation program. This figure is also bolstered by a quantitative analysis of water saving opportunities unique to Vancouver, such as those identified within civic water use.

CONCLUSION

To maintain our high standard of water quality and public confidence in our drinking water, the City must continue rigorous testing of the drinking water in distribution systems. The public must also have access to drinking water throughout the city through thoughtful installations of well-maintained drinking water fountains.

To reduce water consumption, in the past four years, the City has launched programs for the residential sector (with a focus on outdoor water use), delivered pilot scale fixture retrofit and audit programs, and leveraged partnerships with utility companies. Building on the lessons

learned from the pilots, the City will lead the implementation of additional sector-specific programs. Future programming will have a greater focus on ICI water use, including water efficiencies in parks and civic properties.

The City will also evaluate funding options including conservation pricing models for our fully metered sectors. The proposed programs were reviewed by external professionals to ensure the programs are robust and mature compared to other cities leading in conservation policy.

Vancouver has excellent water quality, but we will need to be vigilant if we want to ensure our current water supply meets the increasing pressures of climate change, population growth and a growing economy.

CLIMATE CHANGE AND WATER SUPPLY
Drinking water is provided to the region by two protected freshwater lakes in the North Shore mountains and one in Coquitlam. Despite projections of over a million additional people in the region and more than 600,000 new jobs by 2050, these sources are expected to provide adequate water. However, climate change may threaten the rainfall and snowfall patterns that supply these watersheds. Expanding the water supply or finding a new one is financially and ecologically expensive. That's why conservation is the best way to live within our means and avoid the need for source expansion.

GREEN JOBS RELATED TO CLEAN WATER

- Programs manager
- Municipal water utility operator
- Policy analyst and researcher
- Educator
- Engineering assistant
- Water sampler
- Water quality program coordinator

GOAL 7 —LOCAL FOOD

GOAL: VANCOUVER WILL BECOME A GLOBAL LEADER IN URBAN FOOD SYSTEMS.
2020 TARGET: INCREASE CITY-WIDE AND NEIGHBOURHOOD FOOD ASSETS BY A MINIMUM OF 50% OVER 2010 LEVELS.

ACCOUNTABILITY: DIRECTOR OF SOCIAL POLICY, COMMUNITY SERVICES GROUP

Food matters. Like water and air, we can't live without it. What and how we eat can be a daily reminder of our interconnection with the earth's natural systems and with each other.

Food systems—the way we grow, process, transport, and consume food—have been central to the sustainability of communities for millennia. The fossil fuels used to transport mangos from Mexico, the energy used in cooling systems for food storage, and the amount of land used to feed animals and produce meat and dairy products, all consume resources and produce waste. In fact, food represents one of the largest sources of GHG emissions. It also accounts for almost half of our ecological footprint if emission calculations are extended to include factors related to consumption.

For more than a decade, the City of Vancouver has been working in partnership with the Vancouver Food Policy Council (a resident's advisory council) and countless community organizations to support a just and sustainable food system. Food is an issue that galvanizes communities and catalyzes action like few other topics can. In fact, citizen interest in community gardens, farmers markets, urban farming, beekeeping, and other community food projects has never been greater.

In 2013, City Council adopted the Vancouver Food Strategy which is now the official plan that guides our action. The goals outlined in the Vancouver Food Strategy express how we want our food systems to take shape in the future, including supporting food friendly neighbourhoods, empowering residents to take action, improving access to healthy food, and making food a centrepiece of the green economy.

All of these factors make food a powerful part of a just and sustainable city.

LOOKING BACK: SUCCESSES, CHALLENGES, AND THE EXTERNAL LANDSCAPE

There has been considerable growth in interest in the local food movement in recent years; citizens are eager to buy, grow and be involved with sustainable and local food. Vancouver has demonstrated a willingness to develop policy and initiatives that foster and promote sustainable food systems. In 2013, the Vancouver Food Strategy was adopted, providing the City with a comprehensive road-map for action to create more sustainable food systems. The Park Board passed their Local Food Action Plan (LFAP) in July 2013 to further support local food efforts in parks and community centres. Staff are focused on implementing the 71 actions across the food system described in the Food Strategy and the 55 actions in the LFAP.

Community and collaborative garden plots and other urban agriculture projects continue to increase on park, City and non-city land. We have streamlined the application process and license agreements across departments and increased outreach to solicit ideas for urban agriculture locations and projects. Over the summer of 2014, we provided funds to over 35 gardens to improve and upgrade infrastructure and material at their gardens. These small funds went a long way to improve functionality and aesthetics of many gardens. We are increasing our efforts to engage with diverse ethno-cultural groups, continuing to explore diverse garden types, and creating engaging, welcoming and beautiful spaces. At the same time, citizens are taking initiative and developing urban agriculture projects on sites such as schools, churches, co-ops, and non-profit spaces.

Farmers markets are expanding, increasing their reach, and growing their impact on families and farmers thanks to updated and streamlined Farmers Market policy and guidelines. Community food markets, which provide access to fresh, healthy and affordable foods to individuals and families who may not be able to afford to shop at a farmers market, have doubled in number and contribute positively through access to healthy and affordable foods in neighbourhoods.

The Vancouver Food Policy Council continues to be an important ally and stakeholder in implementing many of the actions outlined in the Food Strategy. They play a seminal role in acting as convenor and connector and providing a forum for sustainable food related conversations for members and the public alike. Likewise, the Sustenance Festival in October of each year provides an opportunity to raise awareness and to celebrate the sustainable food movement in Vancouver.

2020 TARGET AND HIGH-PRIORITY ACTIONS

TARGET: INCREASE CITY-WIDE AND NEIGHBOURHOOD FOOD ASSETS BY A MINIMUM OF 50% OVER 2010 LEVELS

- Baseline (2010): 3,340 food assets
- Actual (2014): 4,556 food assets (+36%)

PRIORITY ACTIONS FOR 2015-2020

ACTION 7.1
Adopt and implement urban farming policy to further enable commercial food production in the city and increase the number of urban farming businesses from 18 to 35. ✱

WHY IS THIS A PRIORITY?
Urban farming contributes to a number of Greenest City, Healthy City, and Food Strategy goals including supporting the local green economy, creating green jobs, increasing food access, and shortening food supply chains. There are approximately 18 urban farm businesses operating in Vancouver, along with an active Urban Farming Society. However, there are no policies or regulations to govern emerging urban farming activity. Creating an urban farming policy and guidelines will create a consistent

approach to urban farming inquiries, a clear regulatory process, and guidance on best practices.

ESTIMATED IMPACT

Vancouver's urban farms grew and sold an estimated $420,000 worth of local food for residents and businesses in Vancouver in 2013, an increase of 226% since 2010. Adopting an urban farming policy would allow farms to grow even more in size and impact. It is estimated that the number of urban farming businesses will increase from 18 to 35 across different neighbourhoods. This would allow more farms to prosper and growers to increase access to additional healthy, fresh, and local food for residents and families in their local neighbourhoods.

ACTION 7.2

Increase the number of farmers markets from 11 to 22 and community food markets from 14 to 20. ✳

WHY IS THIS A PRIORITY?

Farmers markets in Vancouver have grown in number and popularity over the past several years. In the summer of 2014 there were 11 farmers markets contributing approximately $13 million dollars to the local economy. Despite their growth and reach, farmers markets still have opportunity to expand into different neighbourhoods and venues and increase their success and impacts.

Community food markets are venues or sites that enable farmers or third party operators to sell healthy, fresh foods directly to the public. The emphasis for community food markets is on providing access to fresh, healthy, and affordable foods to individuals and families who may not be able to afford to shop at a farmers market or have the means to travel to one. In some cases, community food markets provide opportunities to promote healthy eating for employees in large organizations or offices. Combined with unique public realm elements, they can contribute to vibrant public space while offering a focal point for residents and/or employees to gather.

ESTIMATED IMPACT

Increasing the number of farmers markets from 11 to 22 and community food markets from 14 to 20 provides a wide range of inter-connected benefits. They benefit producers by providing reliable market outlets, supporting local green jobs, providing opportunities for farmers to connect directly with consumers, and reducing transportation and packaging requirements. Consumers benefit by getting to know their food producers and processors, and enjoying an improved diet and nutrition via access to fresh food.

ACTION 7.3
Increase the number of community garden plots from 4,423 to 5,500 and community kitchens from 69 to 80 with particular emphasis on encouraging broader participation by ethno-cultural groups. ✳

WHY IS THIS A PRIORITY?
Urban agriculture contributes to achieving a number of Greenest City, Healthy City and Food Strategy goals including increasing food access and shortening food supply chains. Community garden plots continue to increase on parks, City and non-city land and it is expected that the goal of 5,000 plots for community gardens will be surpassed by 2020. As of November 2014, there were over 4,423 plots in 114 gardens. Approximately 30% are located on City land, 21% on Park land, 43% on institutional land (churches, schools, etc.), and 6% on vacant private land. Gardens are located in all neighbourhoods of the city, with more in neighbourhoods with greater population density. Despite the growth of community gardens, the participation in the gardens is not wholly reflective of the broader population. As such, we're increasing efforts to reach out to and engage diverse ethno-cultural groups.

Community kitchens are sites and programs where people have the opportunity to come together to share the cost, planning, and preparation of healthy meals. They function as community gathering places where space, skills, and resources are shared. There are currently well over 60 community-driven community kitchens in Vancouver in churches, community centres, or neighbourhood houses.

ESTIMATED IMPACT
Increasing the number of community garden plots from 4,423 to 5,500 and community kitchens from 69 to 80 will contribute to neighbourhood vitality, act as community gathering places, and promote inter-cultural and inter-generational learning, along with other social inclusion and community development goals. Continuing to provide resources and funds to the development of urban agriculture and community kitchens will allow us to reach the target while contributing to food access and community connections. A large number of kitchen programs have been developed, independently of the City's involvement, with positive impacts for individuals, families, and communities. Moving forward, additional resources may be allocated to gardens on non-city land to capture the enthusiasm of non-profit organizations.

ACTION 7.4
Support the Food Bank in their relocation to a new facility and incorporate components of a food hub as envisioned in the Vancouver Food Strategy. ✳

WHY IS THIS A PRIORITY?
The Greater Vancouver Food Bank has adopted a new vision and mission that reflects elements of sustainable food systems focused on food access and dignity. They are evolving beyond the traditional food 'hand out' into a model that helps foster a path

back to self-sufficiency and have a vision to provide accessible, healthy, and sustainable food for all. Council has directed staff to work with the Food Bank to relocate to a new facility and to incorporate components of a food hub as envisioned in the Vancouver Food Strategy. The Food Bank has the resources, knowledge, and capacity to make a significant impact in the sustainable food systems and equitable access to food in Vancouver.

ESTIMATED IMPACT

The number of food insecure people is on the rise. Approximately 26% of Vancouver Food Bank users are children. There are many neighbourhoods where families spend the majority of their income on housing. Many seniors with mobility barriers have difficulty grocery shopping and welcome the chance to buy fresh produce at an affordable price while catching up with neighbours. We know that food education and reskilling is a faster path to food security than 'hand outs' and there is a community need for new approaches. The Food Bank programs a selection of food assets, and by locating a secure and permanent building and location will allow the Food Bank to scale up operations and focus on priority initiatives and services for individuals and their families while increasing the number of food assets in Vancouver.

ADVOCACY

- **Advocate the provincial government for the preservation and enhancement of the Agricultural Land Reserve (ALR) to protect sustainable food production and to support local economic development**. Ensure that Metro Vancouver, and other municipalities in the region are preserving and enhancing the ALR through the Regional Growth Strategy and other planning policies that protects agricultural lands as well as industrial land that is important for food processing, storage, and distribution facilities.

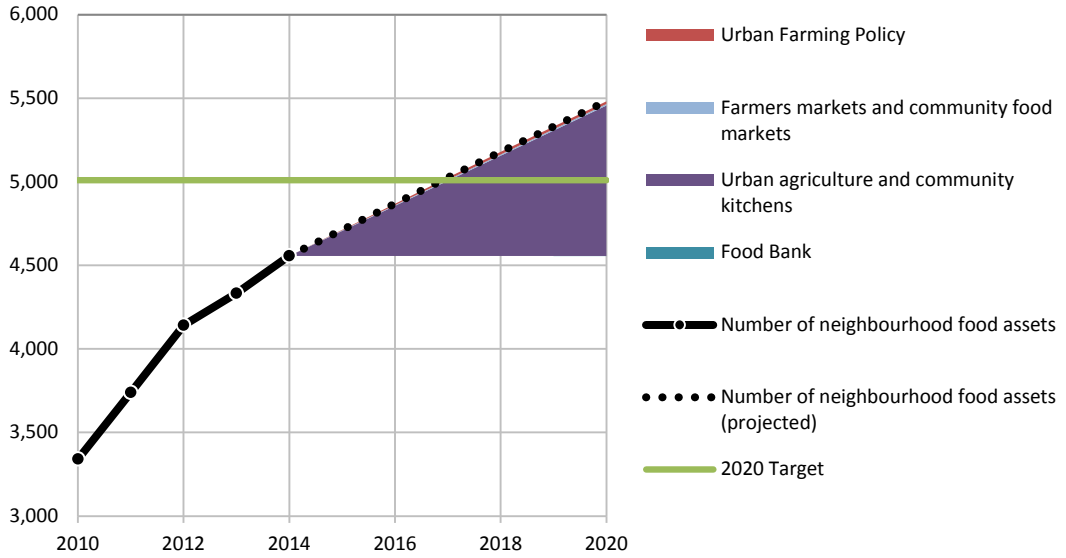
- **Support the provincial government in creating a comprehensive anti-poverty program that brings attention to the links between food, health, and income.** Shelter and food costs have risen significantly over the past decade. However, income assistance rates have remained virtually unchanged. Even when earning more than minimum wage, families have limited resources for other necessities after paying for both shelter and healthy food. It is well documented that income is closely tied to health. Low-income residents spend less on food, eat fewer servings of vegetables, fruit, and milk, and are less likely to get the nutrients they need for good health.

- **Advocate a National Food Strategy based on the goals of a just and sustainable food system.** This includes reducing hunger, increasing healthy and safe food, shifting to ecological production, and promoting food issues as a key component to health, nutrition, education, and housing policies and plans.

PROJECTIONS TO 2020

The Local Food goal to increase city-wide and neighbourhood food assets by a minimum of 50% over 2010 levels will most certainly be met and exceeded well in advance of the 2020 target. The largest contributor to the goal is urban agriculture and community garden plots, which continue to increase with the streamlined application process and license agreements across departments. Food assets such as farmers markets and community food markets are also increasing.

PAST, PRESENT, AND PROJECTED NEIGHBOURHOOD FOOD ASSETS TO 2020
(number of food assets)



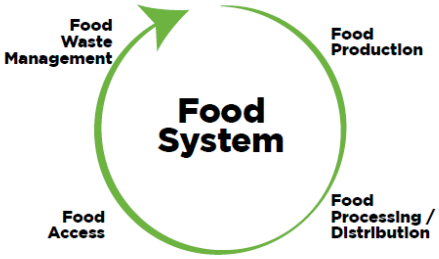
CONCLUSION

There has been considerable growth in interest in the local food movement in recent years. Citizens are eager to grow, buy, and consume sustainable and local food. Vancouver has demonstrated a willingness to develop policy and initiatives that foster and promote sustainable food systems. The Vancouver Food Strategy and the Parks Board Local Food Action Plan provide the framework and guidance to implement achievable actions. With support across the organization and successful partnerships with non-profit, business, and other levels of government, together we are building a healthy, just, and sustainable food system.

FOOD ASSETS

Food assets are community infrastructure that improve people's access to healthy, local food. This includes community garden plots, farmers markets, community orchards, community composting facilities, community kitchens, community food markets, and urban farms.

Vancouver continues to grow our food assets (resources, facilities, services, or spaces) that strengthen the city's food system. There is considerable overlap between various parts of the food system and productive links between them.



GREEN JOBS RELATED TO LOCAL FOOD

- Urban farmer
- Urban beekeeper
- Farmers market coordinator
- Commercial food recovery coordinator
- Community kitchen operator
- Restaurant manager with a focus on local and sustainable food
- Local food processer
- Horticulturalist
- Local food retailer
- Policy analyst and researcher

GOAL 8 — CLEAN AIR

GOAL: BREATHE THE CLEANEST AIR OF ANY MAJOR CITY IN THE WORLD.
2020 TARGET: ALWAYS MEET OR BEAT THE MOST STRINGENT AIR QUALITY GUIDELINES FROM METRO VANCOUVER, BRITISH COLUMBIA, CANADA, AND THE WORLD HEALTH ORGANIZATION.

ACCOUNTABILITY: DIRECTOR, SUSTAINABILITY GROUP

Breathing might be one of the most natural things we do. We move air in and out of our lungs anywhere from 720 to 1,200 times an hour. Clean air can be easy to take for granted, even though it has a huge impact on our health and well-being.

The quality of our air affects the health of everyone in our community, particularly young children, pregnant women, seniors, and other vulnerable populations. Although Vancouver enjoys relatively clean air compared to other major North American cities, even low levels of particulate matter, sulphur dioxide, nitrogen dioxide, and carbon monoxide can negatively impact our health.

A growing Vancouver could lead to more air pollution through exhaust from trucks, buses, ships, trains, planes, and industrial operations. It will take work to accommodate a growing population and economy while improving our air quality.

In addition, warmer, drier summers are expected in Vancouver due to our changing climate. These conditions will likely lead to an increase in forest fires in the region, the smoke from which will have impacts to Vancouver's air quality.

LOOKING BACK: SUCCESSES, CHALLENGES, AND THE EXTERNAL LANDSCAPE

Vancouver's air quality is good compared to that of other major North American cities and better than it was 25 years ago. However, health impacts still occur at current pollutant levels.

Pollutant sources in Vancouver are part of a complex picture that includes many stakeholders. The most significant sources are: vehicles (both on-road such as trucks and cars as well as off-road vehicles, such as construction equipment); industrial operations such as manufacturing and product processing; agricultural operations; homes (through the use of paints, cleaning products, and wood burning appliances); and marine vessels (most significantly, large tankers and container ships). Significant pressures on air quality within Vancouver include: a growing population; large planned industrial projects in the region; increased coal handling; the expansion of port facilities; and increased tanker traffic to support oil pipelines.

Metro Vancouver has statutory authority for air quality management within the region. In October 2011, it launched the Integrated Air Quality and Greenhouse Gas Management Plan (IAQGGMP). Metro Vancouver maintains a network of 28 permanent air quality monitoring

stations to monitor particulate matter, carbon monoxide, ozone, nitrogen dioxide, and sulphur dioxide levels. Two such stations are within City of Vancouver limits: one downtown and one in Kitsilano. Through the actions taken as part of the IAQGGMP and the Greenest City 2020 Action Plan, good progress has been made on reducing the number of air quality exceedances seen within the city limits; however, it is important to consider long term trends in pollutant levels as well as isolated events. This is due, in part, to the importance of weather patterns in pollutant dispersion.

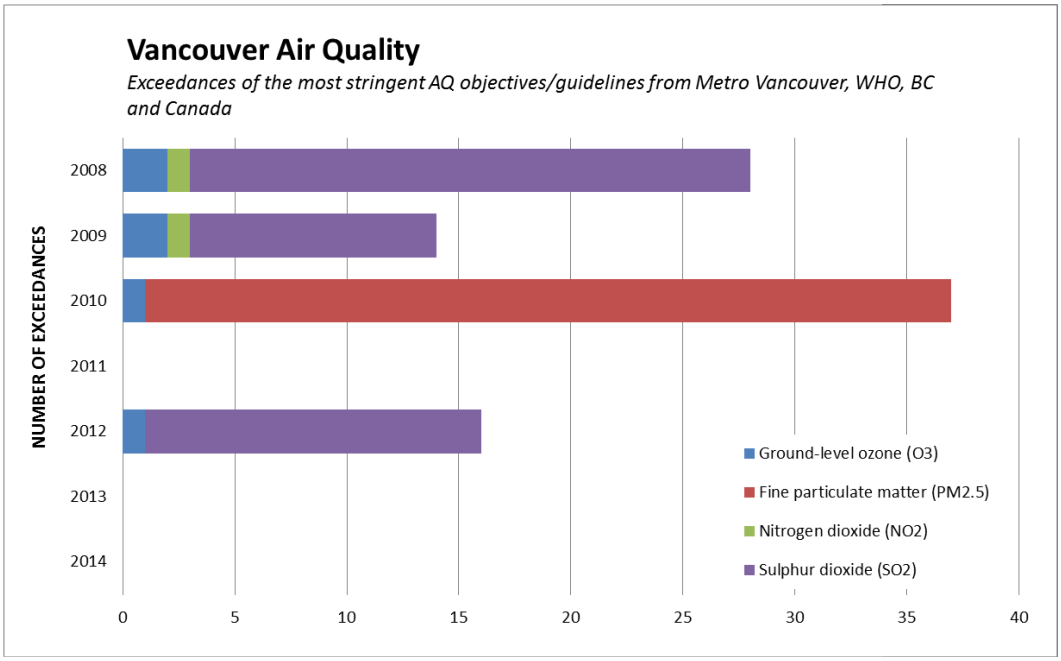
The City's action to establish a framework for the integration of air quality considerations into the city planning has been expanded upon by Metro Vancouver. It now includes health considerations that go beyond air quality. Two documents will aid this planning effort: the Health Impact Assessment Guidebook for BC's Lower Mainland and the City of Vancouver's Healthy Cities Strategy. These documents now supersede the original high-priority action to develop an air quality protection plan that supports Metro Vancouver planning.

Significant improvements can be made to air quality by reducing car trips and increasing how much we walk, bike, and use public transit (as discussed in the Green Transportation section). Where personal vehicles are used, shifting to low or zero emission vehicles, such as electric vehicles (EVs) can provide significant air quality benefits. Wood burning appliances are also a particular concern, and we support Metro's ongoing Woodstove Exchange Program.

New regulations from the International Maritime Organization limit the sulphur content of ships' fuel to 0.1%, one-tenth the previous limit. Sulphur dioxide (SO2) emissions are controlled entirely by fuel quality, and the change in IMO standards will support the ongoing downward trend in SO2 concentrations. Metro Vancouver is also developing new SO2 objectives to replace those that were based on old health science from the 1970s. In fact, Metro Vancouver's board adopted a more stringent SO2 objective in May 2015, in advance of a more stringent set of federal objectives. These more protective objectives may increase the number of exceedances reported in future years, but that does not necessarily mean air quality has become worse.

The City of Vancouver does not have jurisdictional control over port operations, where much of the industrial development is expected to take place, and as such, the City works with the Port Authority and Port Metro Vancouver to influence its actions.

VANCOUVER AIR QUALITY EXCEEDANCES



2020 TARGETS & HIGH-PRIORITY ACTIONS

TARGET: ALWAYS MEET OR BEAT THE MOST STRINGENT AIR QUALITY GUIDELINES FROM METRO VANCOUVER, BRITISH COLUMBIA, CANADA, AND THE WORLD HEALTH ORGANISATION

- Baseline (2008): 27 instances of not meeting air quality standards for ozone, particulate matter (PM 2.5), nitrogen dioxide, and sulphur dioxide from both the Kitsilano and Downtown air quality monitoring stations.
- Actual (2014): 0 instances

PRIORITY ACTIONS FOR 2015 - 2020

ACTION 8.1

Work with Metro Vancouver to ensure there are at least two permanent air quality stations within city limits.

WHY IS THIS A PRIORITY?

Metro Vancouver has a network of 28 air quality monitoring stations throughout the region. While it is not possible to directly assess the impact that increasing or decreasing the number of stations would have on the number of exceedances, without a complete network of air quality stations it will be impossible to inform the public about air quality and issue appropriate advisories. It would also not be possible to track how our air quality varies over time and the effect of air quality improvement measures, nor would future polices have the data needed for them to be well-planned and executed.

ACTION 8.2
Develop an electric vehicle (EV) infrastructure strategy to support EV uptake.

WHY IS THIS A PRIORITY?
The emergence of electric vehicles as a viable personal transport alternative to gasoline and diesel vehicles provides an opportunity to realise significant improvements in air quality through zero tailpipe emissions.

There are, however, changes in the way people fuel their cars if they are electric. It takes longer to charge an EV than it does to fill a gas vehicle. People want to charge their EVs in a range of different places. EV charging typically happens at home, work, and when people are 'out and about' at entertainment, retail, and parking facilities. The use of electricity as a transportation fuel also represents a change in how use our electricity – although plugging in your car to charge is just like plugging in your phone to charge, it can place much bigger demands on our electrical system. These differences need to be anticipated and accommodated to ensure that electric vehicles become the default choice when making a personal vehicle journey. Because BC Hydro is a clean source of power, EVs could bring significant improvements in urban air quality. They produce about 98% fewer GHGs than a comparable gasoline car, and zero tailpipe pollutant emissions such as NO_x, particulate matter, and ozone-forming volatile organic compounds (VOCs).

Without the ability to charge electric vehicles at home, work, and 'on the go,' this transformative technology will not be used on a wide enough scale to maintain our air quality and realize large reductions in GHG emissions. Metrics to measure the efficacy of the EV infrastructure strategy will be developed as part of that strategy. These metrics will be related to the provision and use of infrastructure, rather than electric vehicle uptake directly. There are a wide range of variables that go into a personal vehicle purchase decision, and the role of electric vehicle infrastructure is only one of those. The importance of the availability of EV charging varies by each individual's preferences, and as such it is impossible to directly link the availability of EV charging infrastructure to changes in air quality exceedances.

ACTION 8.3
Investigate labeling gas pumps for their GHG and air quality impacts.

WHY IS THIS A PRIORITY?
Air quality in Vancouver is directly related to the emission of volatile organic compounds (VOCs). VOCs come from a range of sources including vehicle tailpipe emissions, paints, solvents, industrial sources and the evaporation of petroleum-based fuels. Making sure that the public understands the impact that gasoline and diesel fumes have on the environment is the first step toward having people better manage fuel handling.

Providing this information at the source of the emission, such as fuel vapours at the fuel pump, is the quickest way to have an immediate effect on VOC emissions. There is no easy or meaningful way to measure the effect of reduced fuel spills on VOC levels and hence the role this policy is expected to play in reducing exceedances, yet it is one that clearly has immediate benefit to human health.

ACTION 8.4

Work with Metro Vancouver to ensure air quality data and information is available for sources and locations across the city.

WHY IS THIS A PRIORITY?

The Provincial AirCare program, which ensured passenger vehicles and light trucks were within pollutant emission limits (and required repairs if not), has been discontinued. Paired with expected increases in industrial activity, this discontinuation will put pressure on our air quality. It is therefore imperative that the City support Metro Vancouver in its efforts to maintain our currently good air quality. This can be done through the collection and analysis of local data and data which replaces that lost through the discontinuation of AirCare.

A complex set of inputs and processes go into determining air quality. It is therefore impossible to directly link the value of data with reported exceedances. However, without such data, it will be impossible to record progress or develop new policies for air quality improvement.

ADVOCACY

- **Advocate the provincial government to introduce Right-To-Charge provisions under the Strata Property Act, the Residential Tenancy Act and other housing-related legislation as necessary to guarantee residents access to home EV charging.** Current legislation allows strata councils and landlords to block the installation and/or use of EV charging equipment in multi-family buildings. This creates significant barriers to EV uptake, as home charging is the primary mode by which electric vehicles are charged. Other jurisdictions, such as the states of California and Hawaii, have already enacted 'Right to Charge' legislation. This does not require other homeowners or landlords to undertake costs associate with EV charging, but prevents them from blocking EV charging in residential parking areas. Since over 60% of Vancouver's residents live in multi-family buildings, Right-to-Charge rules will open up significant opportunities for EV uptake.

- **Advocate the provincial government to make changes to the Utilities Commission Act to enable the resale of electricity for electric vehicle use.** Current restrictions on the resale of electricity limit business opportunities that arise through the installation of electric vehicle charging stations. Making changes to the *Utilities Commission Act* to allow public EV station owners to charge a fee for the electricity is likely to be the single biggest move to speed the installation of public charging in BC. However, the complexity

and interactions of pollutants and their sources in determining air quality prohibit a direct relationship being drawn between the role of electricity resale in supporting broader EV charger installations, their subsequent effect on EV sales, and ultimately tailpipe emissions and air quality exceedances.

- **Advocate the provincial government to make tougher in-use diesel engine standards.** Diesel engines are a significant source of particulate matter (PM). To reduce the health impacts caused by the inhalation of PM it is imperative that efforts are increased to accelerate the replacement, retirement, or retrofit of older diesel engines and address vehicles of any age that are emitting excessively due to poor maintenance or tampering of emission control systems.

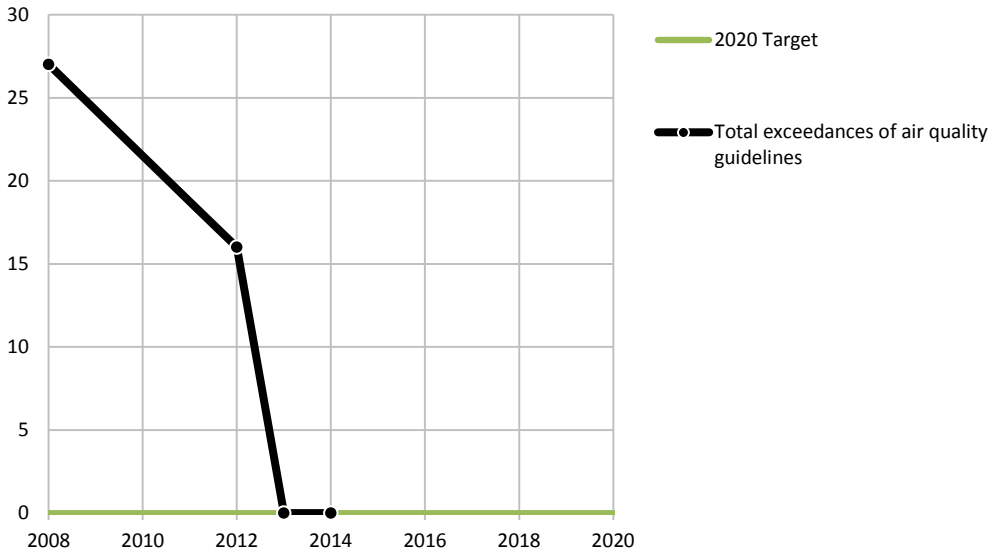
- **Advocate Metro Vancouver and the federal government to set tougher sulphur dioxide (SO_2) and PM 2.5 objectives**. New international regulations on the sulphur content of fuels for large marine vessels are expected to yield significant improvements, however, these improvements will be countered by an increase in the volume of marine traffic and continued emission from other sources. As such, tougher SO_2 objectives for the region must be set if air quality is to be maintained. The City will advocate Metro Vancouver and the federal government to adopt more stringent SO_2 objectives that will better protect the health of Vancouver residents.

  Particulate matter measuring less than 2.5 microns ("PM2.5") has significant impacts on human health, including heart disease. PM2.5 levels are impacted by diesel fuel combustion from both road transportation and marine transportation. While newer engines have significantly improved PM2.5 emissions, increases in marine traffic and/or vehicle traffic could negate these improvements. The City will advocate Metro Vancouver and the federal government to tighten PM2.5 objectives.

POLLUTANT SOURCE AND CORRESPONDING ACTIONS FOR 2015-2020

	Carbon Monoxide (CO)	Particulate Matter (PM)	Nitrogen Dioxide (NO_2)	Sulphur Dioxide (SO_2)	VOCs / Ground Level Ozone
Priority Actions 2015-2020					
Work with Metro Vancouver to ensure there are at least two permanent air quality stations within city limits.	✓	✓	✓	✓	✓
Develop an electric vehicle (EV) infrastructure strategy to support EV uptake.	✓	✓	✓		✓
Investigate labeling gas pumps for their GHG and air quality impacts.					✓
Work with Metro Vancouver to ensure air quality data and information is available for sources and locations across the city.	✓	✓	✓	✓	✓
Advocacy Actions					
Advocate the provincial government to introduce Right-To-Charge provisions under the Strata Property Act, the Residential Tenancy Act and other housing-related legislation as necessary to guarantee residents access to home EV charging.	✓	✓	✓		✓
Advocate the provincial government to make changes to the Utilities Commission Act to enable the resale of electricity for electric vehicle use.	✓	✓	✓		✓
Advocate the provincial government to make tougher in-use diesel engine standards.		✓	✓		
Advocate Metro Vancouver and the federal government to set tougher sulphur dioxide (SO2) and PM 2.5 objectives.		✓		✓	

PAST AND PRESENT AIR QUALITY GUIDELINE EXCEEDANCES*
(total exceedances of air quality guidelines)



* Projections for air quality exceedances are not provided because of the important role weather plays in air quality.

CONCLUSION

Vancouver has excellent air quality, but human health impacts can still occur at current pollutant levels. There is no reason for complacency given the pressures that increased population and further industrialisation will create. Now is the time to focus on the pollutants of most concern. The City of Vancouver must pursue the identified strategies and actions in partnership with Metro Vancouver, other levels of government, business, NGOs, and citizens to maintain and, ideally, improve our air quality.

In working with Metro Vancouver, the City has developed a number of actions that will ensure that data is available to monitor air quality and develop new policies, while tackling VOC emissions directly. The reduction of VOC emissions will play a fundamental role in keeping our air clean. The City will also continue to advocate, and support, tougher diesel engine regulations to control particulate matter emissions, as well as fuel standard regulations for marine vessels aimed at reducing SO_2 concentrations.

CLEAN AIR, LET'S KEEP IT
Vancouverites breathe has some of the cleanest air of most of our urban counterparts. This is something that's easy to take for granted. Many major world cities like London and Paris have recently had very serious air quality issues. In 2015, London issued an advisory for the public to reduce physical activity and Paris implemented limited vehicle traffic to the city centre. As our population and economy grow, we need to work to protect our air quality. While the City continues to work with other levels of government on areas like emission standards and enabling the shift to electric vehicles, you can avoid wood burning appliances, use VOC-free paints and cleaning products, and increase the number of trips you take on foot or by bike instead of by car. We have a lot to lose.

GREEN JOBS RELATED TO CLEAN AIR

- GHG emissions auditor
- Air quality modeller
- Marine charging station manufacturer and installer
- Vehicle charging station manufacturer and installer
- Electric vehicle mechanic
- Environmental service provider
- Air quality tester
- Policy analyst and researcher
- Educator

GOAL 9 — GREEN ECONOMY

GOAL: SECURE VANCOUVER'S INTERNATIONAL REPUTATION AS A MECCA OF GREEN ENTERPRISE.
2020 TARGET 1: DOUBLE THE NUMBER OF GREEN JOBS OVER 2010 LEVELS.
2020 TARGET 2: DOUBLE THE NUMBER OF COMPANIES THAT ARE ACTIVELY ENGAGED IN GREENING THEIR OPERATIONS OVER 2011 LEVELS.

ACCOUNTABILITY: CHIEF EXECUTIVE OFFICER, VANCOUVER ECONOMIC COMMISSION

Transitioning to a green economy is an enormous economic and business opportunity. By 2030, 73 percent of all global energy investment will be in clean energy[2] - that's $630 billion per year. In fact, there are already more clean energy jobs in Canada than in oil and gas[3].

Vancouver is among the leading cities around the world looking to capitalize on these trends. We've quietly enjoyed more than three percent annual economic growth over the past five years – a rate envious anywhere in the western world – and our economy will be the fastest growing in Canada over the next five years. Vancouver's green economy includes sectors such as green buildings, clean tech, recycling, and local food. It generated $1.9 billion of economic activity in 2014, contributing to Vancouver's global reputation for green and sustainable leadership. This green perception is a key driver of Vancouver's global brand, valued at $31.5 billion in 2015[4].

Green is embedded in what we do. Vancouver has always been a place for sustainability and innovation, with world-changing organizations and businesses such as Greenpeace, TED Talks, and D-Wave (designers of the world's first quantum computer). Green jobs can be found across traditional and new industry sectors, and business has proven to be our most powerful driver for change. Businesses in Vancouver's green economy are delivering solutions to sustainability challenges, testing alternatives to traditional ways of operating, and sharing these innovations around the world.

The extent to which Vancouver remains competitive, resilient, and generates opportunities for residents will be defined by our efforts to mitigate and adapt to climate change and by our efforts to future-proof our economy.

Further developing Vancouver's green economy is not only necessary for creating a healthy and sustainable city, it is also an incredible opportunity for generating wealth, improving social equity, and building resiliency in the face of uncertain futures.

[2] Bloomberg New Energy Finance
[3] Clean Energy Canada
[4] Brand Finance

LOOKING BACK: SUCCESSES, CHALLENGES, AND THE EXTERNAL LANDSCAPE

Vancouver's effort to double the number of green jobs in the city by 2020 is led by the Vancouver Economic Commission (VEC), an independent economic development agency.

We define green jobs according to the United Nation's definition adding jobs in local food. Local food was added as these jobs contribute to a smaller carbon footprint for food, as well as include. jobs at all ends of the spectrum, from high-skilled jobs in Vancouver's clean tech sector, to more accessible jobs such as growing, processing, and distributing local food.

The VEC evaluates opportunities in the green economy and the potential to leverage this sector for further economic development. Innovation, technology, and demand are all helping to grow Vancouver's green economy. For example, Vancouver Farmers' Market sales have increased fourfold since 2004 while carsharing membership in the city is amongst the highest in the world.

The number of green jobs in Vancouver increased by 19% — from 16,706 in 2010 to 19,929 in 2013. Today 4.9%, or one in twenty, of Vancouver residents has a green job.

Green businesses have identified many challenges, including lack of access to capital and specialized talent, and as well as challenges with zoning and building codes that make it difficult to accommodate the unique need for labs, inventory, and commercial space.

Business leaders and government officials visiting our city are impressed by our growing green economy. They return to their cities with proof that transitioning to a green economy isn't necessarily expensive, and that greening the economy can be good for business as well as our social and physical well-being.

2020 TARGETS & HIGH-PRIORITY ACTIONS

TARGET 1: DOUBLE THE NUMBER OF GREEN JOBS BY 2020.

- Baseline (2010): 16,700 jobs
- Actual (2013): 19,900 jobs (+19%)

TARGET 2: DOUBLE THE NUMBER OF BUSINESSES ENGAGED IN GREENING THEIR OPERATIONS BY 2020.

- Baseline (2011): 5%
- Actual: TBD (next survey to be conducted in 2016)

PRIORITY ACTIONS FOR 2015 – 2020

GREEN ECONOMY: GREEN JOBS
ACTION 9.1
Launch a clean tech accelerator.

WHY IS THIS A PRIORITY?
While research and development activities associated with clean technology development can often be funded through research grants and ties with post-secondary institutions, the commercialization stage presents challenges for companies that need not only business strategy and marketing support but also the physical lab and meeting spaces.

Launching a clean tech accelerator is of high priority because it will support innovators and entrepreneurs developing new technologies to develop their business plans, source capital, and attract talent. Up to 10,000 square feet of research, incubation and business accelerator space will be available to clean tech entrepreneurs and start-ups. The space will be designed with labs, offices, and open areas for collaboration, research, and learning.

ESTIMATED IMPACT:
Based on primary and secondary research on similar business accelerator/ incubator programs in North America, it is assumed (conservatively) that:

- 90 companies will be engaged per year (six program delivery partners, each engaged with 15 companies)
- The average engaged company will create approximately 2 incremental jobs per year, 35% of which are in the green and local food sectors.

Anticipated outcomes include increased support for innovation in clean tech, clean energy, and other sustainability-related sectors and technologies, a mechanism to attract additional capital for investment for these innovators and support the creation of additional green jobs.

The VEC conservatively estimates a minimum of 239 green jobs will be created. Furthermore, dozens of new green companies will be formed, generating countless new green jobs well into the future.

ACTION 9.2
Grow the Green & Digital Demonstration Program (GDDP).

Operate the newly launched GDDP to support innovation in the green economy. This program helps young companies accelerate the commercialization of their innovation and get to markets faster by providing access to municipal assets or infrastructure for the purposes of test pilots, proof-of-concept, or demonstrations.

WHY IS THIS A PRIORITY?

One of the biggest challenges facing emerging clean tech companies is bridging the commercialization gap before running out of funding. This program helps bridge that gap by exploring new technologies, applying them in the City context, and promoting positive outcomes.

ESTIMATED IMPACT:

Based on primary and secondary research to examine the impact of similar demonstration programs in North America and Europe, it is assumed that due to the GDDP:

- Eight new companies per year will demonstrate their technology from2015 through to 2020
- Approximately 3 full time equivalent jobs are created per company with a demonstration project

Anticipated outcomes include: an increase support for innovation in clean tech, clean energy, and other sustainability-related sectors and technologies; additional capital investments; support for the creation of additional local green jobs; acceleration of the entrepreneur's commercialization stage.

The VEC conservatively estimates a minimum of 144 green jobs will be created by this program. These jobs will result from companies securing the initial clients and investment capital needed to enter new markets and develop commercial manufacturing facilities.

ACTION 9.3

Help transform the False Creek Flats into the greenest place to work in the world.*

Help transform the False Creek Flats into the greenest place to work in the world—a place that showcases green innovation, features green buildings and green infrastructure, supports sustainability-related industries and new investment in innovative green business—through regenerative economic development activities.

WHY IS THIS A PRIORITY?

Central industrial areas provide the back-of-house services to many of the city's commercial activities. They are a nucleus for goods and people movement and are often home to the majority of a city's design, manufacturing, production, distribution, collection, and processing activities. As such, the operations of these areas contribute significantly to the overall carbon footprint of our cities. We estimate that the False Creek Flats industrial area is responsible for over 60,000 tons of GHG emissions annually, where the wholesale trade sector accounts for about 45% of transportation emissions and the manufacturing sector accounts for almost 40% of waste. This is a priority initiative because the potential impacts on city-wide GHG emissions are immense.

ESTIMATED IMPACT:

Numerous industrial and business hubs are either in operation (like greenHUB and Scene Shop) or proposed (like Food Hub, Deconstruction Hub, and Clean Energy Centre of Excellence) for the False Creek Flats light industrial area. Based on discussions with various hub operators / business owners, it is assumed that:

- Employment within existing 5 hubs will grow by 100% (i.e., double) by 2020 through policy-regulatory drivers, grant funding, and new business ventures.
- 5 additional hubs will exist in Vancouver by 2020 with an average of 40 FTE jobs each.

Anticipated outcomes include:

- Increased capacity and activity in the circular economy
- A focused economic action strategy for the False Creek Flats
- A local brand identity is established for the area
- More green economic activity established through targeted business attraction
- More efficient land-use intensification and densification
- Higher amounts of investment landed in the area
- More business-led initiatives and community projects (e.g. development of hubs, co-location models, and eco-industrial networks)
- Additional space created for green jobs and other jobs
- Shift toward more 'smart logistics' solutions (i.e. more efficient transportation & storage) for moving goods and people throughout the city
- Improved resilience and climate preparedness

The VEC estimates a minimum of 231 green jobs will be created by this initiative. It also has the potential to attract a number of green enterprises to the area. The number of green jobs and green enterprises are highly dependent on the number of projects that can be landed effectively within the False Creek Flats area.

ACTION 9.4

Develop a strategy and action plan to attract green investment capital.

WHY IS THIS A PRIORITY?

Vancouver's is world renowned for its engineering talent and culture of entrepreneurial spirit. However, Vancouver start-ups don't have the same access to investment capital as their American peers. This access is essential to support sustainable businesses in their first ten years, as many of them require large capital investments to build materials management facilities, establish manufacturing facilities, or convert fleets or infrastructure to more sustainable systems.

The VEC will focus on providing access to angel investors, venture capital, private equity, and large institutional funds to clean tech, clean energy, green buildings, and other sustainability-related enterprises.

ESTIMATED IMPACT:

Investment capital has a strong link to jobs growth. In June of 2013, Industry Canada, in partnership with Canada's Venture Capital and Private Equity Association and Statistics Canada, released a report that determined that firms backed by venture capital were able to maintain steady and consistent cumulative growth in employment over one, three and five year intervals – with a cumulative increase by the fifth year of 51%.

For Vancouver, it is anticipated that this will also result in broader and faster access to capital markets resulting in increased investments in Vancouver's clean tech and clean energy sectors; revenue growth and wealth creation, green jobs growth and higher average wages, additional research, development and innovation in green sectors, and increased global awareness of the innovation in Vancouver.

ACTION 9.5

Organize and host targeted business trade missions (inbound and outbound) and leverage large conferences and events (local and global) to grow the green economy.

WHY IS THIS A PRIORITY?

Business trade missions and events are a core mandate of economic development agencies. They are important in promoting the city's economy and business opportunities, including those related to the green economy.

ESTIMATED IMPACT:

International trade is anticipated to generate $5 million per outbound mission. An average of 5-10 Memorandum of Understanding are signed per outbound mission, equal to $5M / year in future revenues, of which 50% can be attributed to green / local food sector.

Foreign direct investment from inbound business missions are expected to result in $3.92 million per year based on the results of the 2010 Olympic Business Program economic impact assessment and assuming that average leverage ratio is 25% as effective; 50% can be attributed to green and local food sectors.

These activities are anticipated to generate an additional 234 green jobs.

Secondary outcomes include increased awareness of Vancouver as a "mecca of green enterprise", enhanced opportunities for business-to-business meetings to stimulate trade and investment and opportunities to develop leads in business attraction and foreign direct investment.

The estimated impacts are based on the VEC's experience, validated analysis from previous business programs, and data from the Sydney Olympic program.

GREEN ECONOMY: GREEN BUSINESSES

ACTION 9.6
Develop, launch, and maintain a greening businesses platform. ✳

WHY IS THIS A PRIORITY?
An online digital platform that engages, educates, and recognizes Vancouver businesses that reduce the environmental footprint of their operations will be an effective and meaningful way to reach the 95% of businesses that may not have a green product or service, but can still be involved in the green economy by reducing their footprint. Other means of outreach to the business community will be too labour intensive and not as efficient in measuring progress.

ESTIMATED IMPACT:
If outreach attracts 1,000 businesses annually, 6,000 businesses will be using the platform by 2020. Over this period 900 additional Vancouver businesses will be actively engaged in greening their business, 15% of the businesses using the platform.

This will provide Vancouver businesses with an online resource for localized information and advice to lighten their footprint. It will also allow VEC to recognise and reward businesses that are greening their operations.

ADVOCACY
The VEC has identified four areas for advocacy to other levels of government or other external organizations.

- Advocate Metro Vancouver to support land use planning and solutions-based, outcome-oriented, codes at the regional level.
- Advocate national and North American carbon pricing.
- Advocate the federal government for flexible immigration policies that attract well-educated green talent and entrepreneurs from around the world, and for programs that continue to make Vancouver one of the most immigrant-friendly cities in the world.
- Advocate the federal government for federal climate change policy.

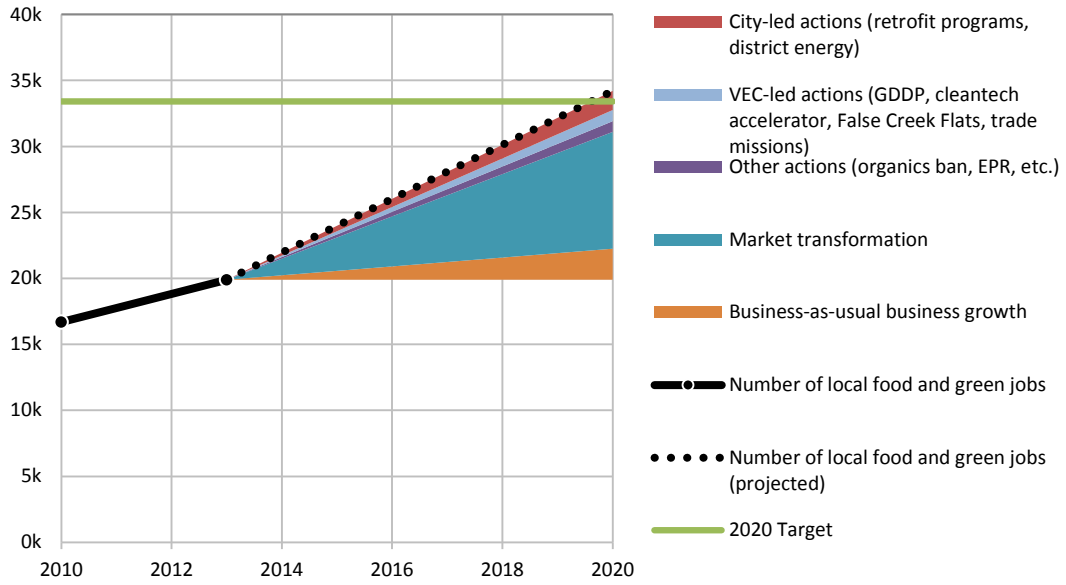
PROJECTIONS TO 2020

TARGET 1: GREEN JOBS
The VEC has developed a Green Jobs Roadmap that identifies initiatives that generate new investment and increase the proportion of green activity leading to new jobs in Vancouver's green economy (a mix of new jobs as well as market transformation of existing sectors).

By focusing on improving productivity, strategic investments in R&D and infrastructure, and providing supportive policy and programs, Vancouver can increase demand for local green

products, technologies, and services and, in turn, increase the number of green jobs at a rate that is much higher than under "business as usual" conditions.

PAST, PRESENT, AND PROJECTED GREEN AND LOCAL FOOD JOBS TO 2020
(number of local food and green jobs)



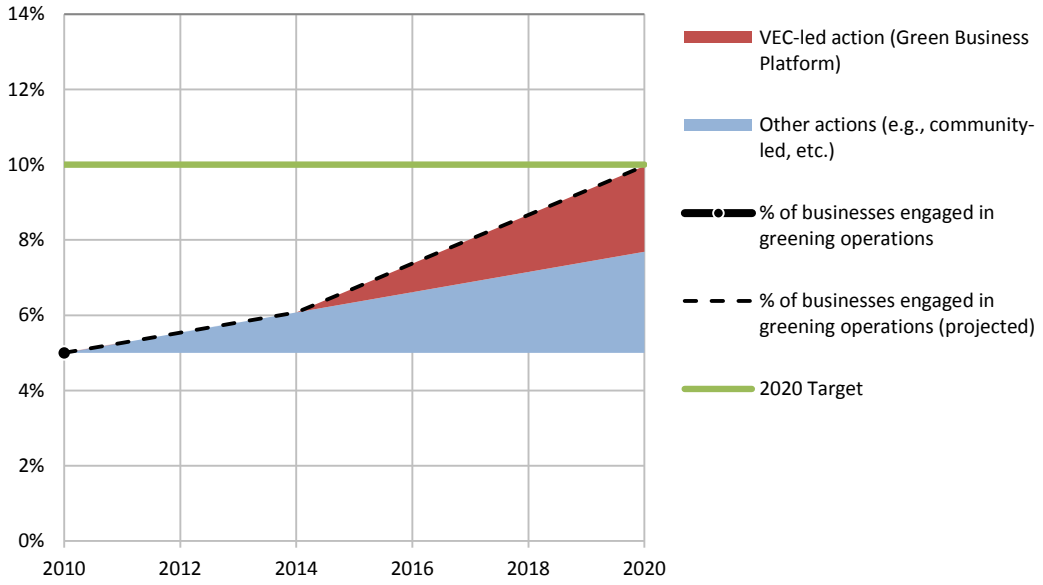
Significant progress in increasing the number of green jobs has been made since 2010 with 6.3% average annual growth from 2010 to 2013. The expected growth scenario models business growth and market transformation, which together contribute to approximately 85% growth by 2020 (over 2010). Business "as usual" growth accounts for approximately 23% of the increase, and market transformation of sectors is responsible for an estimated 77%. Market transformation jobs (i.e. those jobs supporting energy efficiency technologies, sustainable transformation, and local food) are largely from the Green Building sector (due largely to the impacts of the Vancouver Building Bylaw), as well as the development of the UBC-Broadway Corridor Rapid Transit Line and local food procurement initiatives.

TARGET 2: GREEN BUSINESSES

The baseline for this target is based on a benchmark telephone survey in 2011, conducted with a random sample of 500 private sector businesses. The study provided insights into business behaviour with respect to multiple sustainability indicators including energy, materials, water, fleets, sustainable purchasing, and innovation. The survey identifies a minimum threshold beyond which point businesses can be assumed to be actively engaged in greening their operations. In 2011, 5% of businesses that responded to the survey passed this threshold. The next survey will be conducted in 2016.

The projections below show the percentage of businesses engaged in greening their operations through 2020. It assumes a 3% annual growth in the number of businesses and the expected uptake in the Green Business Platform.

PAST, PRESENT, AND PROJECTED BUSINESSES ENGAGED IN GREENING OPERATIONS TO 2020
(% of businesses engaged in greening operations)



CONCLUSION

While we are on track to double the number of green jobs by 2020, success is dependent on a reasonably strong local and global economy, a supportive policy environment, and full implementation of the initiatives in the VEC's Green Jobs Roadmap.

We envision a clean tech accelerator that supports innovation and grows green jobs in technology and clean energy, the development of an innovative zone that is the "greenest place to work in the world", and a green business community that has the financing needed to expand market share and increase employment.

We will continue to foster a local business community that is engaged with the GCAP and is doing their part to reduce environmental footprints through a dynamic digital platform, as well as growing the number of green businesses that trade with key markets in Asia, the US, and the EU thanks to a robust business mission program.

Funding these programs will be critical in achieving the green economy goals. We will continue to look at alternative funding models to augment the support that will be in place. Strong partnerships are a necessary part of the success story, so we will continue to expand our partner network to build capacity in areas that directly address the targets.

Before 2020, the VEC will conduct two comprehensive surveys to measure and report on the number of green jobs in Vancouver and the number of businesses that are greening their operations.

WHAT IS A GREEN JOB, HUB, ECO-INDUSTRIAL NETWORK, AND CIRCULAR ECONOMY?

Green Jobs — The United Nations Environment Programme (UNEP) describes green jobs as those that "contribute substantially to preserving or restoring environmental quality... reduce energy, materials, and water consumption... decarbonize the economy and minimize or altogether avoid generation of all forms of waste and pollution." Job sectors range from clean technology and green buildings to education and materials recovery. Green jobs also include jobs in traditional sectors with businesses that have significantly greener processes or operations than industry standards.

Vancouver has added jobs in the local food industry to this definition, as growing an urban food system is central to the Greenest City vision for a sustainable economy. Local food is defined here as all food and beverage (including wine and beer) produced within British Columbia.
A full definition can be found in the VEC Green and Local Food Jobs 2014 Update at vancouverconomic.com.

Hubs — Hubs, also referred to as co-location models, exist where multiple related businesses work under one roof to reduce operating costs and allow for better resource sharing. In recent years, hubs have sprung up in the False Creek Flats in large floor-plate warehouses originally built for big rail-based manufacturing and distribution industries. Now, many of these warehouses are homes for collectives of smaller businesses such as studios or distribution agencies.

Eco-Industrial Networks — This term refers to business partnerships where the wastes or by-products from one industry are used as the input to another.

Circular Economy — A circular economy is economic activity geared toward keeping materials in circulation and out of the landfill. You may be familiar with it through the related concept of 'cradle-to-cradle' design.

GREEN JOBS RELATED TO GREEN ECONOMY

- Green business development officer
- Business energy advisor
- Green funds manager
- Carbon offsets aggregator
- Carbon trader
- ICT networking specialist
- Smart grid engineer and technician
- Smart meter manufacturer
- Green purchasing manager
- Demonstration zone coordinator
- Industry association director
- Policy analyst and researcher
- Sustainability educator

GOAL 10 — LIGHTER FOOTPRINT

GOAL: ACHIEVE A ONE-PLANET ECOLOGICAL FOOTPRINT.
2020 TARGET: REDUCE VANCOUVER'S ECOLOGICAL FOOTPRINT BY 33% OVER 2006 LEVELS.

ACCOUNTABILITY: CITY OF VANCOUVER LEADS FOR OTHER GREENEST CITY TARGETS (~12% OF TARGET) AND COMMUNITY PARTNERS (~21% OF TARGET)

Everything we need comes from our one planet—what we eat, the things we buy, the way we transport ourselves, the electricity that powers our homes, the metals and plastics in our computers, the air we breathe...it's a long list. The amount of productive land and sea resources we use to meet these needs is called our "ecological footprint." It measures the impact of our actions against the reality of our planet's finite ability to provide for us.

Imagine if you had just less than two hectares of land and sea, an area smaller than the size of two football fields, to provide you with all of the goods and services you consume and to absorb all of the waste you produce in the course of your life this year. If you divide up the earth's biologically productive capacity by the number of people on our planet, this is the amount available for each of us. It's equivalent to an area the size of Stanley Park supporting about 200 people. Yet on average, Vancouver residents use about three times more land and sea resources than the earth could sustain if everyone lived like us. In other words, our current ecological footprint is unsustainable.

Reducing our ecological footprint is about living within ecological limits, and it is also about using a "fair Earth share" of resources. It is about striving for a one-planet footprint and a city that is vibrant, healthy, and just.

LOOKING BACK: SUCCESSES, CHALLENGES, AND THE EXTERNAL LANDSCAPE

Ecological footprint reduction takes place primarily through the work of GCAP goal areas that address GHG reductions, such as: Climate and Renewables; Green Transportation; Green Buildings; and Zero Waste (marked with a ❋ throughout this document). The actions included in the Lighter Footprint goal specifically target areas not otherwise addressed and seek to build the culture change required.

One of the areas where the City sees potential is the sharing economy; to reduce consumption and waste while creating social connections. The City continues its work in understanding our role in the sharing economy and how to enable the sharing economy to achieve City priorities.

Measuring ecological footprint is challenging. For example, an estimated 40% of Vancouver's ecological footprint is driven by food choices, but a lack of food consumption data makes it difficult to measure annual change. We work with partners to bridge this data gap.

In the meantime, we've chosen to measure a supporting indicator: the number of people empowered through City programs to take action to reduce their ecological footprint. This allows us to see incremental change, since part of the intent of this goal is to see people, businesses, and institutions take action toward more sustainable lifestyles.

We have promoted solutions for lighter footprint through multiple programs. The Greenest City Fund, a $2M granting program developed in partnership with The Vancouver Foundation, supports community-led projects to green the city. The Award of Excellence for Greenest City Leadership now recognizes outstanding achievements made by individuals and organizations that advance the City's GCAP goals. The Greenest City Curriculum is a suite of courses at community centres and libraries that support people in sustainable living actions. The City's Green Events Program helps reduce the environmental impact of city-permitted events.

Two student-oriented programs, Greenest City Scholars (a partnership with UBC offering paid internships to graduate students working on City projects) and CityStudio (an innovation hub where staff, experts, and university students from six universities and colleges co-create projects that support City programs) support students to take action to green the city.

The sharing economy has grown and has the potential to reduce consumption and waste while creating social connections. The City continues to work to understand how to enable the sharing economy to achieve City priorities such as reducing ecological footprint.

2020 TARGETS & HIGH-PRIORITY ACTIONS

2020 TARGET: REDUCE VANCOUVER'S ECOLOGICAL FOOTPRINT BY 33% OVER 2006 LEVELS

- Baseline: Vancouver's ecological footprint is 3.4 planets
- Supporting indicator: Number of people empowered to take action on Greenest City 2020 Action Plan goals through City-led or supported initiative
- Baseline (2011): 600 people empowered to take action
- Actual (2014): 10,700 people empowered to take action

Some of the following actions lay the groundwork for achieving and measuring reductions in the ecological footprint, while some actions focus solely on getting people to take action.

PRIORITY ACTIONS FOR 2015-2020

ACTION 10.1
Continue to expand the Greenest City Fund and CityStudio Programs. ✱

WHY IS THIS A PRIORITY?
The City and the Vancouver Foundation contributed $1M each to create the Greenest City Fund in 2012, with the goal of empowering residents to take action on the Greenest City 2020 Action Plan. The Greenest City Fund Program has been a positive tool. There has been enthusiastic uptake by the community. By the end of 2014, the fund had distributed almost $1.5 million dollars, funded over 435 projects and empowered

thousands of people. Now, it is nearing the end of the four-year partnership. We need to explore options for continuing the program, as well as consider how to expand the program's impact.

CityStudio was established in 2011. This collaboration of six post-secondary institutions across multiple disciplines brings students together to work with City staff to co-create projects in support of Greenest City 2020 Action Plan goals. CityStudio has been a successful program, with over 2,200 students, 75 faculty and 50 City staff participating to date. The co-creation opportunities brought forward through the program have been useful in providing students insight into how to make things happen, and have contributed over 75,000 hours of project action, skills training, and public sector innovation.

ESTIMATED IMPACT

Estimating the impact of the Greenest City Grants Program and CityStudio is dependent on the extent of expansion for both programs. If some growth is experienced in both programs, and the Greenest City Grants Program continues past its current timeline, we estimate that over 700 people per year could be engaged through CityStudio and 3,000 people per year could be empowered through the Greenest City Grants Program by 2020. However, more conservative estimates are based on a current state of approximately 650 people per year engaged through CityStudio and approximately 2,800 people per year engaged through the Greenest City Grants Program until its end in 2015.

ACTION 10.2

Develop a municipal sharing economy strategy. ✳

WHY IS THIS A PRIORITY?

The sharing economy is an economic model that emphasizes the sharing of under-utilized assets and access over ownership. It includes the sharing of places, skills, and resources to help build relationships and community resilience while reducing the impact on the environment, supporting social equity, and creating value. For example, when people share a ladder or tool with their neighbour, it reduces the number of tools each individual may need to own; it also reduces the resources required to produce that tool. To this end, we can look for contributions from the sharing economy to reduce consumption and environmental impact.

The challenge is addressing the regulatory framework that protects residents, reduces risks, and addresses equity and access, while ensuring that the promise of the sharing economy may be achieved. There is a lot of excitement and potential in this area, as well as a lot of initiatives already in place relating to the Sharing Economy. We need to understand how the City can support the sharing economy in a way that supports City priorities and create a regulatory framework that protects residents, reduces risks, and addresses equity and access issues.

ESTIMATED IMPACT

Many people currently participate in sharing economy activities through their membership in groups such as the Vancouver Tool Library, Car2Go, Modo, and Zipcar. Because these are not City-led initiatives they don't show up in the Lighter Footprint metrics. Despite this, it is still expected that by sharing assets and making use of under-utilized assets, consumption levels are reduced in turn, reducing the resources required to produce that asset and lowering residents' ecological footprint.

ACTION 10.3

Support a community of action on Lighter Footprint by sharing information and facilitating and encouraging community leaders. ✱

WHY IS THIS A PRIORITY?

Many community organizations and businesses do work aligned with the Greenest City 2020 Action Plan and Lighter Footprint goal. We have multiple mechanisms in place to support these groups, through facilitating connections, creating strategic partnerships and funding, or promotion through our social network channels and our monthly newsletter. We need to continue to support organizations that help educate, engage, and empower residents to take action, and create necessary culture change. Increasing this support will help spread the message more efficiently and effectively.

Additionally, collaboration between community partners and coordination amongst each other will strengthen the message of sustainable, lighter footprint behaviors. By working together and identifying the overlaps and gaps, community leaders can leverage existing resources while creating new campaigns to address missing services or program areas; and the City can help to amplify those efforts.

ESTIMATED IMPACT

The impact of supporting a community of action is difficult to estimate, there are so many activities and organizations doing good work, it is hard to get exact numbers. While trying to estimate the number of people that will be empowered to take action through community initiatives is difficult, the collective impact will be noticed and will hopefully spur more people to notice that this is the new way to live lightly.

ACTION 10.4

Explore how partnerships and connections to programs and infrastructure can reduce the ecological footprint of food consumption.✱

WHY IS THIS A PRIORITY?

Food consumption choice represents the largest portion of the ecological footprint, primarily due to the carbon intensive resource requirements of raising and producing meat and dairy for consumption. A dietary choice, such as eating red meat, has huge implications on ecological footprint because of the resources required to raise the animal, slaughter, package, transport, and store it.

In Canada, the equivalent of 30-40% of the food produced is lost along the value chain, with much of it finding its way to landfill or compost, worth an estimated $27 billion each year.

Metro Vancouver is adopting the UK's *Love Food Hate Waste* campaign materials for launch in 2015. The City can play a role in supporting Metro Vancouver's campaign to create awareness and action around reducing waste and consumption and can explore how program partnerships with Metro Vancouver or other agencies can influence low ecological footprint diets.

ESTIMATED IMPACT

It is difficult to estimate the precise impact of this action on the actual ecological footprint because impact would be determined by the particular programs pursued; it is expected, however, that this action would provide assistance in meeting our goals by improving how food is produced and used along the value chain, and reducing food waste.

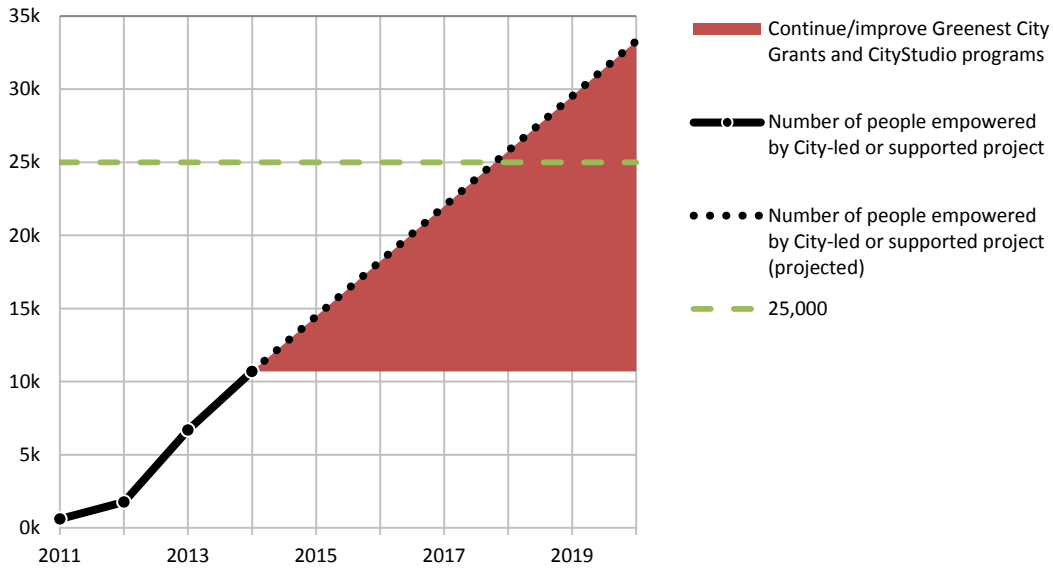
ADVOCACY

- **Improve data accuracy and access to data for the calculation of the ecological footprint by advocating the federal government to reinstate the long-form census.** The elimination of the long-form census in 2010 and replacement with a voluntary National Household Survey (NHS) has made it more difficult and expensive to access the data needed for planning public programs and projects. Without the census, cities must conduct their own surveys and gather data for planning purposes. Other Statistics Canada surveys have also been eliminated or compromised due to budget cuts, including: the Survey of Labour and Income Dynamics; the National Longitudinal Survey of Children and Youth; the Workplace and Employee Survey; and the Survey of Household Spending, Food Availability, and Production in Canada.

PROJECTIONS TO 2020

While there are numerous community-led initiatives that are empowering residents, it is difficult to quantify the impact. Therefore, our projections only include data from the CityStudio and Greenest City Fund programs because the numbers are trackable. Ultimately, the way this metric is currently measured does not reflect the total number of people taking action to reduce ecological footprint; it reflects only a small subset of people engaged in City-led initiatives.

PAST, PRESENT, AND PROJECTED NUMBER OF PEOPLE EMPOWERED BY CITY-LED OR SUPPORTED PROJECTS TO REDUCE ECOLOGICAL FOOTPRINT (number of people empowered by city-led or supported projects)



CONCLUSION

Achieving the Lighter Footprint goal requires everyone to take action. The focus for the next four years is on the collective impact toward reducing ecological footprint of the actions in the other GCAP goal areas, addressing gaps, and supporting culture change. It relies on empowering residents to take action.

We will work on expanding opportunities to empower residents and community leaders through programs like the Greenest City Fund and CityStudio, and through information sharing and facilitation. We will also focus on reducing food waste and looking at food recovery to reduce ecological footprint. Enabling the sharing economy will help us reduce consumption levels and improve community resilience.

Looking at the role that City regulations play in enabling lighter footprint action will also help to meet our goals. Finally, we can advocate the reinstatement of long-form census, which will improve data accuracy and availability needed to measure progress toward reducing ecological footprint.

SHARING IS CARING - A LIGHTER LIFE WITH LESS STUFF!
The sharing economy has been getting a lot of people excited lately, but what is it about? People have been sharing for years, from car-pooling to house-swapping, to other informal forms of sharing, but the latest advances in technology have helped to unlock the potential of even more idle-assets. Now, it is easier to share these things and more. This can help people get access to things they may not normally have, and also be able to afford things they may not otherwise have been. Sharing can also help to reduce the ecological burden of ownership and instead reduce waste and greenhouse gases by sharing an existing asset. Sharing can help the City achieve its Greenest City goals by providing options for access over ownership that will help to make the future of the city lighter, less wasteful, and more connected.

GREEN JOBS RELATED TO LIGHTER FOOTPRINT

- Neighbourhood pilot program coordinator
- Community-based repair person
- Engagement and monitoring tool developer
- Sustainability consultant
- Community planner
- Grants administrator
- Policy analyst and researcher
- Educator

WALKING THE TALK: GREENING OUR OPERATIONS

The Greenest City 2020 Action Plan recognizes that cooperation and participation of all Vancouver's residents and businesses is needed to meet our targets. In order to look to residents to take action, we must also "walk the talk" when it comes to our own City operations and facilities.

While the City has always been active in making its operations more sustainable, we've picked up the pace in order to walk the talk and become the Greenest City.

We've developed a Green Operations Plan that includes both corporate-wide initiatives, and department specific actions. Each department is taking action toward our targets in ways unique to what they do. For example, our Solid Waste Department is capturing harmful gas from the Vancouver landfill and putting it to beneficial use. Our Fire Department is right-sizing its fleet by sending smaller vans out to medical calls instead of big trucks. Our Park Board has installed wind screens around our outdoor pools that not only keep pool users more comfortable, but also save energy ($33,000 was saved in the first three months alone). And we're just getting started.

Since the baseline year in 2007, we've reduced operational GHGs by 29%. In 2014, our waste diversion at corporate and public-facing facilities was 83% and 64% respectively. Staff continue to work on projects to reduce environmental impacts, from reducing waste and traffic disruption with trenchless water main construction (where feasible) to renewing our print services contract to reduce printer units and better track printing. We've also banned the neonicotinoids class of pesticides. Thanks to the coordinated action of departments across the City organization, we are well on our way to reaching our targets.

2020 TARGETS & HIGH-PRIORITY ACTIONS

2020 TARGETS:
ZERO CARBON: 50% REDUCTION IN GHGs FROM CITY OPERATIONS OVER 2007 LEVELS.

- Baseline (2007): 530,000 tCO2e
- Actual (2013): 373,000 tCO2e (29% reduction)

ZERO WASTE: 70% WASTE DIVERSION IN PUBLIC-FACING CITY FACILITIES, AND 90% WASTE DIVERSION IN ALL OTHER CITY-OWNED FACILITIES.
(Note: A waste reduction target for all City operations is currently under development).

- Baseline (2013): 65% in public-facing facilities, 85% in other City-owned facilities
- Actual (2014): 64% in public-facing facilities, 83% in other City-owned facilities

HEALTHY ECOSYSTEMS: REDUCE WATER USE IN CITY OPERATIONS BY 33% OVER 2006 LEVELS.

- Baseline (2006): 22 billion litres
- Actual (2014): 19 billion litres (12% reduction)

PRIORITY ACTIONS FOR 2015-2020

GREEN OPERATIONS ACTION 11.1
Continue implementing the Fleet and Trip Optimization Initiative.

WHY IS IT A PRIORITY?
Vehicle and building energy emissions are a significant portion of the City's GHG emissions, excluding landfill emissions. While fleet management can equip vehicles with anti-idling technology and find the most appropriate size vehicle for each use; each department also plays a role in reducing emissions through route optimization and other driving behaviors. The City has adopted mobile and GIS technology to improve route planning and has one of the greenest fleets in the country with over 30 electric vehicles, 45 hybrid vehicles, and 29 compressed natural gas vehicles. The City is incorporating GPS and telematics technology to help optimize service delivery, route and fleet maintenance planning, and identify opportunities to reduce the fleet size. By redesigning business processes and optimizing the use of available modes of transportation for City operations, the City aims to improve productivity and service, reduce travel needs, reduce fleet costs, and support corporate environmental goals.

ESTIMATED IMPACT
It is a challenging task to map out the City's fleet needs while optimizing and reducing fleet costs, travel needs, and fleet size. New operational needs and providing the level of service expected, need to be balanced with the goal of reducing overall fleet size. The City has reduced fleet size by 4% since 2013 with a target of a 20% reduction in fleet size by 2020. Fleet optimization work such as right-sizing and anti-idling technology as well as improved fuel efficiency is estimated to reduce emissions by 12,550 tonnes of GHG or a 30% reduction of fleet emissions.

GREEN OPERATIONS ACTION 11.2
Continue implementing the newly developed deconstruction standards.

WHY IS IT A PRIORITY?
The City of Vancouver has made a commitment to reduce waste. Much like the mandatory deconstruction policy for all pre-1940 homes, the City has created deconstruction standards for its own operations and management of City facilities, requiring a 75% waste diversion rate but depending on the project, could also be much higher. An audit is conducted for each building and the diversion rate is then set depending on the building type and materials used. This is anticipated to create a significant reduction in waste going to landfill. The City has also implemented a tracking system to ensure the diversion has taken place.

ESTIMATED IMPACT
It is anticipated that this will reduce the amount of waste going to landfill from development projects under-taken by the City. It is estimated that roughly 7,000 tonnes

of waste (70%) is currently being diverted on average during the 3-4 projects a year with a potential for ~600 additional tonnes to be diverted if all projects meant the 75% diversion rate.

GREEN OPERATIONS ACTION 11.3

Develop and implement a toxic substances management plan for City operations.

WHY IS IT A PRIORITY?

In 2009, the Greenest City Action Team (GCAT) produced a suite of quick start actions. Under Protecting Human Health from Environmental Hazards, a goal of reducing exposure to toxins was identified. The City has been working to reduce the use of toxic substances for years, by purchasing green janitorial supplies, banning pesticides, and switching to low VOC paint for road lines and other marking needs. Because of the importance of this work to protect the health and safety of our employees, residents, and the environment, a new and more formal initiative to further reduce the use of toxic substances has begun. Once we are confident that we're walking our talk in this area, we will look city-wide and create enabling policy to reduce the use of toxic substances in the community.

In addition, last year, the City supported the David Suzuki Foundation's Blue Dot campaign, a movement to advocate the federal government to recognize the right to live in a healthy environment. This work is just the first step to the City taking leadership and action in reducing its impact of use and generation of toxic substances in City operations and in the community.

ESTIMATED IMPACT

It is difficult to quantify the impact of this initiative because impact would be determined by the particular actions pursued but it can be expected that the City will continue to reduce its impact of toxic substances by pursing environmentally friendly products were possible. A target will be established during the management strategy development.

CONCLUSION

The City is demonstrating leadership in green by looking closely not just at what we do across the community but also by looking at our own practices. We're taking action through corporate-wide efforts like moving to paperless transactions and implementing a sustainable purchasing policy. We're also taking action at the department level. The City will continue to look for greener ways to do the work we do in order to provide the services that enable the sustainable and thriving community we envision.

TO 2020 AND BEYOND

In 2011, the Greenest City 2020 Action Plan set the stage for a greener and more resilient Vancouver. Over 80% of the initial actions are already complete, moving us closer to achieving our ambitious targets. We worked with both thought leaders and the community at large to identify over 50 new actions to be completed between 2015 and 2020 that will help us meet our targets and be the world's greenest city.

As we move forward, we also begin to look beyond 2020 to create a renewable city. By leading the switch to renewable energy to power and heat our homes to fuel our transportation network, Vancouver will also be doing its part as a member of a global effort to reduce climate change. We will be setting the standard for what a successful, thriving, prosperous city looks like and setting an example that other cities around the globe can follow.

Vancouver has the drive, ingenuity, and energy to create a new kind of city. One that is sustainable, resilient, green, and built to last. We are a city of entrepreneurs, of makers, and leaders. We will show that it is possible for a city to thrive in balance with nature.

Together, we're choosing to make decisions and take action to preserve the essence of who we are and how we choose to live our lives. Our collaboration with neighbours and communities has made possible the progression towards our ambitious vision of the future. Vancouver is sharing this hope with cities around the world by becoming a model for green, sustainable living.

WE ALL HAVE A ROLE TO PLAY - GET INVOLVED

The success we've had to date is the result of a community-wide effort and the work of thousands of Vancouver residents.

There is a continued role for all to play in the success of this next set of priorities. Whether you're involved in the local business community, active in your neighbourhood, or interested in greening your own lifestyle, your efforts are essential to our shared success. If you're already involved, thank you. If you're not yet, join us: vancouver.ca/greenestcity.

APPENDIX 1: GOAL, TARGETS AND ACTIONS SUMMARY

GOAL 1 — CLIMATE AND RENEWABLES			
2015-2020 HIGH PRIORITY ACTIONS		RESPONSIBLE DEPARTMENT	SUPPORTS
1.1	Continue to work with partners to convert two existing steam heat networks to renewable energy.	Sustainability Group	CR, GB, LFP
1.2	Work with partners to develop four new neighbourhood energy systems.		CR, GB, LFP
1.3	Develop and begin implementing a renewable energy strategy.		CR, GB, GT, LFP
GOAL 2 — GREEN BUILDINGS			
2015-2020 HIGH PRIORITY ACTIONS		RESPONSIBLE DEPARTMENT	SUPPORTS
2.1	Update the retrofit requirement options in Vancouver's Building By-Law to further reduce energy use and greenhouse gas emissions.	Chief Building Official, Planning and Development Services, and Sustainability Group	GB, CR, GE, LFP
2.2	Launch a Green Condominium Program and expand the Green Landlord Program.		GB, CR, GE, LFP
2.3	Launch a Home Energy Efficiency Empowerment Program and a Home Energy Technology Program.		GB, CR, GE, LFP
2.4	Require annual energy benchmarking and reporting for large residential and commercial buildings.		GB, CR, GE
2.5	Launch a program for green industry partners.		GB, CR, GE, LFP
2.6	Develop a Zero Emission New Building Strategy.		GB, CR, GE, LFP
2.7	Restructure the City's Green Building Rezoning Policies to specifically target GHG emission reductions and introduce mandatory GHG emission targets for new buildings.		GB, CR, GE, LFP
2.8	Update minimum energy efficiency requirements for new buildings in the Vancouver Building By-Law.		GB, CR, GE, LFP
GOAL 3 —GREEN TRANSPORTATION			
2015-2020 HIGH PRIORITY ACTIONS		RESPONSIBLE DEPARTMENT	SUPPORTS
3.1	Improve walking and cycling infrastructure on the False Creek bridges and implement spot improvements throughout the existing walking and cycling networks.	Transportation and Planning	CR, GT, CA, LFP

3.2	Implement a Bike Sharing Program.		CR, GT, CA, LFP
3.3	Extend Millennium Line SkyTrain under Broadway to Arbutus.		CR, GT, CA, LFP
3.4	Implement transit improvements including new B-Line routes, more bus service, and station upgrades.		CR, GT, CA, LFP
GOAL 4 — ZERO WASTE			
2015-2020 HIGH PRIORITY ACTIONS		RESPONSIBLE DEPARTMENT	SUPPORTS
4.1	Increase overall diversion of organics by continuing to support the expansion of food scraps recycling to all sectors and support Metro Vancouver's 2015 disposal ban on organic materials to landfill and incinerator through education and enforcement.	Waste Management and Resource Recovery	ZW, CR, CA, GE, LFP
4.2	Increase the diversion of wood waste from landfill and incineration by expanding the Construction and Demolition (C&D) Waste Diversion Strategy to increase reuse and recycling of C&D waste.		ZW, GB, LF, GE, LFP
4.3	Reduce street litter and abandoned garbage in public spaces, including illegal dumping, and increase the diversion of these materials by implementing a comprehensive litter management strategy including an expanded Keep Vancouver Spectacular program.		ZW, LF, GE
4.4	Support Metro Vancouver's Zero Waste Challenge through the development of education and enforcement strategies for all sectors, with a focus on waste prevention and material reuse initiatives.		ZW, LFP
GOAL 5 — ACCESS TO NATURE			
2015-2020 HIGH PRIORITY ACTIONS		RESPONSIBLE DEPARTMENT	SUPPORTS
5.1	Complete the new park at Yukon Street and 17th Avenue.	Parks and Recreation and Streets	AN, CW, CA, LF
5.2	Acquire four hectares of park land at Cambie Street and the Fraser River.		AN, CW, CA, LF
5.3	Realize a new ~10 hectare park system in East Fraserlands.		AN, CW, CA, LF
5.4	Strategically expand private property, street, and park tree planting.		AN, CW, CA, LF, LFP
5.5	Create a new inventory system for trees on City land.		AN, GOP
5.6	Update tree management plans, planting		AN, CA

	standards, and best practices.		
5.7	Develop additional policies and decision-making criteria to retain healthy, mature trees.		AN, CA
GOAL 6 — CLEAN WATER			
2015-2020 HIGH PRIORITY ACTIONS		RESPONSIBLE DEPARTMENT	SUPPORTS
6.1	Include testing from drinking water fountains in the City's routine water quality monitoring program.	Water and Sewers	CW, LFP
6.2	Reduce institutional, commercial and industrial (ICI) water consumption through policy and compliance measures.		CW, LFP
6.3	Reduce residential water consumption through incentives, education, and compliance measures.		CW, LFP
6.4	Reduce water system loss and civic use.		CW, LFP
GOAL 7 — LOCAL FOOD			
2015-2020 HIGH PRIORITY ACTIONS		RESPONSIBLE DEPARTMENT	SUPPORTS
7.1	Adopt and implement urban farming policy to further enable commercial food production in the city and increase the number of urban farming businesses from 18 to 35.	Social Policy	LF, AN, GE, LFP
7.2	Increase the number of farmers markets from 11 to 22 and community food markets from 14 to 20.		LF, GE, LFP
7.3	Increase the number of urban agriculture projects and plots from 4,423 to 5,500 and community kitchens from 69 to 80 with particular emphasis on encouraging broader participation by ethno-cultural groups.		LF, LFP
7.4	Support the Food Bank in their relocation to a new facility and incorporate components of a food hub as envisioned in the Vancouver Food Strategy.		LF, GE, LFP
GOAL 8— CLEAN AIR			
2015-2020 HIGH PRIORITY ACTIONS		DEPARTMENT	SUPPORTS
8.1	Work with Metro Vancouver to ensure there are at least two permanent air quality stations within city limits.	Sustainability Group and Metro Vancouver	CA
8.2	Develop an electric vehicle (EV) infrastructure strategy to support EV uptake.		CA, CR, GT, GE
8.3	Investigate labeling gas pumps for their GHG and air quality impacts.		CA, CR, GT, GE

8.4	Work with Metro Vancouver to ensure air quality data and information is available for sources and locations across the city.		CA, CR
GOAL 9— GREEN ECONOMY			
2015-2020 HIGH PRIORITY ACTIONS		DEPARTMENT	SUPPORTS
9.1	Launch a cleantech accelerator.	Vancouver Economic Commission	GE, CR, GT, GB, ZW, LF, CA
9.2	Grow the Green & Digital Demonstration Program (GDDP).		CR, GT, GB, ZW, LF, CA
9.3	Help transform the False Creek Flats into the greenest place to work in the world.		CR, GT, GB, ZW, LF, CA, LFP
9.4	Develop a strategy and action plan to attract green investment capital.		CR, GT, GB, ZW, LF, CA
9.5	Organize and host targeted business trade missions (inbound and outbound) and leverage large conferences and events (local and global) to grow the green economy.		CR, GT, GB, ZW, LF, CA
9.6	Develop, launch, and maintain a greening businesses platform.		GE, CR, GB, ZW, CW, CA, LFP
GOAL 10 — LIGHTER FOOTPRINT			
2015-2020 HIGH PRIORITY ACTIONS		DEPARTMENT	SUPPORTS
10.1	Continue to expand the Greenest City Fund and CityStudio Programs.	Sustainability Group, CoV lead for other Greenest City targets and community partners	All goals
10.2	Develop a municipal sharing economy strategy.		All goals
10.3	Support a community of action on Lighter Footprint by sharing information and facilitating and encouraging community leaders.		All goals
10.4	Explore how partnerships and connections to programs and infrastructure can reduce the ecological footprint of food consumption.		All goals
GREEN OPERATIONS			
2015-2020 HIGH PRIORITY ACTIONS		DEPARTMENT	SUPPORTS
1	Continue implementing the Fleet and Trip Optimization Initiative.	Sustainability Group and GOP leads	Zero Carbon CR, GT, CA
2	Continue implementing the newly developed deconstruction standards.		Zero Waste ZW, GB, LFP
3	Develop and implement a management strategy for substances of concern used within City operations.		Healthy Ecosystem GE, LFP

APPENDIX 2: STATUS OF 2011-2014 ACTIONS

CLIMATE LEADERSHIP (now Climate and Renewables)	
2010-2014 High-Priority Actions	*Status*
Work with developers and energy utilities to establish four new renewable energy systems for new, large site, high density developments	Ongoing
Work with existing energy system operators to facilitate at least one major industrial or institutional energy system conversion to a local renewable energy source	Ongoing
Work with key stakeholders to research the key opportunities and considerations associated with district-scale renewable energy sources with the aim of developing a policy framework to establish clear expectations as to the conditions under which the City will (or will not) consider each of these energy sources	Complete
Work to expand the Neighbourhood Energy Utility in South East False Creek to serve new developments and connect Science World	Science World – Complete Great Northern Way Campus - Underway
Corporate Climate Leaders Program, currently working with three large emitters as well as small- and medium enterprises to measure and develop action plans for energy and GHG reduction (underway)	Complete
Offer incentives for solar thermal installations	Complete
Work with private sector partners and utilities to develop additional district energy systems across the city, including ones to serve East Fraser Lands and North East False Creek	Underway
Cisco & Pulse Energy MoU partnership for improved energy management and reduction	Complete
Develop a Carbon Neutral City Operations Plan	Complete
Enhance landfill gas capture so that by the end of 2012 the City will achieve the 2016 regulatory target of 75% capture efficiency	Ongoing

GREEN BUILDINGS	
2011-2014 High-Priority Actions	*Status*
Update Vancouver Building Bylaw with aim to increase energy efficiency and reduce greenhouse gas emissions	Complete
Develop and promote financing tools for building retrofits	Complete
Use price signals in permit fees to reward energy efficiency and greenhouse gas reductions in new and existing buildings	Cancelled
Green Rezoning Strategy requires that buildings are designed to LEED Gold standard for all new rezonings	Complete
Published passive design toolkit and green home renovation how-to guides	Complete
Require solar-ready homes and offer incentives for solar hot water in	Complete

homes	
LEED-ND Platinum for Olympic Village	Complete
First LEED Platinum certification for a community centre in Canada	Complete
United Nations Environment Program LivCom Award for South East False Creek	Complete
Laneway housing policy	Complete

GREEN TRANSPORTATION	
2011-2014 High-Priority Actions	*Status*
Complete new Active Transportation Master Plan	Complete
Update the Transportation Plan	Complete
Improve pedestrian safety by developing and implementing a pedestrian safety study and action plan	Complete
Support transportation and active transportation planning with land use policies that enable the City to meet mobility and transportation targets	Ongoing
Work with TransLink and the Province to advocate for high-capacity, fast, frequent and reliable rapid transit for the Broadway Corridor from Commercial Drive to UBC	Underway
Pursue the development and installation of a bike-share program in Vancouver's downtown and other high-potential cycling areas.	Underway

ZERO WASTE	
2011-2014 High-Priority Actions	*Status*
Collect all compostables from single family residential properties on a weekly basis and introduce every-other-week garbage collection and pilot collection of compostables from multi-family and commercial properties	Complete
Develop zero waste education and enforcement strategies for all sectors (single family households, apartments/condominiums, commercial businesses and institutions) to encourage behaviours that reduce waste, maximize reuse and recycling and recover resources from waste stream	Complete
Work with the Province to expand Extended Producer Responsibility (EPR) programs, especially for packaging, printed paper, plastic bags, and newsprint	Complete
Develop policy and incentives to encourage deconstruction for renovation and demolition projects	Complete
Composting of raw fruits and vegetables in single family and duplex residences; extension to additional compostable materials subject to Council approval	Complete
Collecting mattresses for recycling at the Vancouver transfer station and landfill	Complete
Neighbourhood composting pilot programs	Complete
Community based social marketing program to promote backyard composting	Cancelled

Enhanced waste diversion for City facilities	Complete
Pilot program for newspaper recycling on City streets	Underway
Building deconstruction pilot program	Complete
Clean wood waste diversion program at Vancouver landfill and transfer station	Complete
Diverting reusable items at the Vancouver transfer station and landfill	Complete

ACCESS TO NATURE	
2011-2014 High-Priority Actions	*Status*
Convert street rights-of-way into 4-6 mini-parks.	Complete
Identify land and build 2-3 new parks in priority neighbourhoods.	Underway
Plant 15,000 new trees on City and other public property.	Complete
Green Hastings Park.	Underway
Urban Forest Strategy Phase 2	Ongoing
Street to mini-park conversion at Main and 18 Ave	Complete
Increased number of community garden plots and other forms of urban agriculture.	Ongoing
Increased street tree planting.	Ongoing
Encourage planting with native and edible plants.	Ongoing
Green street program encouraging neighbourhood stewardship	Ongoing
Biodiversity Strategy	Underway

CLEAN WATER	
2011-2014 High-Priority Actions	*Status*
Require water metering on all new single and dual family home services (new construction and major renovations)	Complete
Develop and commence enhanced water education, incentive and conservation programs	Underway
Continue to expand public access to drinking water	Complete
Eliminate combined sewer overflows from sewage outfalls at Crowe and Burrard Streets and develop Integrated Stormwater Management Plan	Underway
Increase access to potable water through use of portable water stations and other activities	Complete
Program to encourage use of rain barrels for apartments	Complete
Explore bylaw revision to allow ticketing for lawn sprinkling	Complete
Lawn sprinkling education and awareness program pilot	Complete
Metro Vancouver's Capilano filtration plant construction	Complete

LOCAL FOOD	
2011-2014 High-Priority Actions	*Status*
Support urban agriculture by: a) Creating 5-6 community gardens/yr	a) to e) Complete

b) Enabling 3 new urban farms c) Encouraging 2 new farmers markets d) Adding public fruit trees e) Investing in 3 neighbourhood food networks f) Support the development of a Vancouver Food Hub	f) Underway
Provide local food in City facilities, such as community centres, through the development and implementation of a local food procurement plan	Complete
Develop a Vancouver Food Strategy	Complete
Comprehensive review of policy and regulatory barriers to growing local food for personal consumption or economic development, and plan to remove barriers	Complete
Support farm markets by making it easier to host them in all zones (complete)	Complete
Greenest City grants for neighbourhood food projects	Complete
Increased number of community garden plots and other forms of urban agriculture – 450 community garden plots added in 2010, including a community garden at City Hall	Complete
Edible landscaping information and support program	Complete
Expand street food vending program (summer-fall 2010)	Complete
Support urban farming on City land, including SoleFood farm lease on City land	Complete
Plant fruit trees in parks, first orchard	Complete
Increase food carts on public right of way including local foods	Complete
Bee hives located on City Hall	Complete
Backyard chicken bylaw	Complete
Encourage local food in City procurement processes	Complete
Support food business incubator	Complete

CLEAN AIR	
2011-2014 High-Priority Actions	*Status*
Encourage electric vehicle transport	Ongoing
Regulate uncontrolled wood burning appliances for residential buildings	Complete
Establish a framework for integration of air quality considerations into the City planning.	Ongoing
Collaborate with Port Metro Vancouver, Metro Vancouver and BC Hydro on joint air quality issues.	Ongoing
Electric vehicle charging station pilot program	Complete
Develop air quality protection plan that supports Metro Vancouver planning	Ongoing
Replace City waste transfer tractor trailers with cleaner fuel vehicles in partnership with Fortis BC	Complete
Develop and implement a green fleets plan for the City of Vancouver	Complete
Prohibition of coal handling and storage	Complete

GREEN ECONOMY	
2011-2014 High-Priority Actions	*Status*
Develop green hubs (such as an incubator, accelerator, or research facility) along with demonstration platforms to showcase local companies and relevant incoming and outgoing trade missions to create international linkages	Underway
Develop a formal green pre-procurement program to create ongoing dialogue between the City's purchasing category managers and technology companies	Delayed
Establish a Green Enterprise Zone	Underway
Deliver a business program that aligns the Greenest City and economic development tools to achieve measurable improvements in the environmental performance of Vancouver businesses	Underway
The Metro Vancouver Commerce Olympic Business Program.	Complete
Clean tech trade mission to China.	Complete
Home weatherization and green jobs pilot project with EMBERS	Complete
Building and promoting Green Capital brand and Vancouver as a global leader for green business.	Complete
Deconstruction and green jobs pilot projects	Complete
Green economic development strategy	Complete
Deliver robust green business retention, expansion, and attraction (BREA) program, including tracking of business activities.	Complete
MoUs and collaborative efforts with global technology companies and local green enterprises to demonstrate and test technology and grow international market potential.	Complete
Developing business plan for green technology centre and network.	Complete
Development of Campus-City Collaborative to connect post-secondary institutions with each other and the City to work on Greenest City challenges.	Complete
Ongoing support for community-based sustainability initiatives in the Downtown Eastside through capital allocations, project facilitation, business development support, etc. (e.g. RTS 9206)	Ongoing

LIGHTER FOOTPRINT	
2011-2014 High-Priority Actions	*Status*
Pilot a green neighbourhood outreach and infrastructure program in a Vancouver neighbourhood	Underway
Actively support non-profits and social enterprises working to reduce ecological footprint	Ongoing
Work with the Open Data initiative to open Greenest City data	Ongoing
Greenest City Scholars program in partnership with UBC	Ongoing

Partner with UBC to develop innovative ways to engage the public on sustainability issues	Ongoing
Pilot an eco-concierge program	Underway
Launch the Greenest City Mayor's Award	Complete
Launch Greenest Neighbourhood engagement program	Complete
Partner with, and support local community organizations in their implementation efforts	Ongoing
Allocate $100,000 per year as Greenest City grants	Ongoing
CityStudio	Ongoing

GREEN OPERATIONS	
2011-2014 High-Priority Actions	*Status*
Plan and implement a comprehensive corporate waste reduction and diversion program for all City facilities	Complete
Develop a procurement policy and practice that supports the purchase and use of local food in City-run facilities	Complete
Look for opportunities to green community events that the City runs, sponsors, and permits	Complete
Plan and implement a program to significantly reduce greenhouse gas emissions and fossil fuel use in City-run buildings and vehicles	Complete

APPENDIX 3: GREENEST CITY ADVISORS

The Greenest City 2020 Action Plan is the culmination of countless hours of work, as well as the invaluable expertise, leadership and creativity offered by hundreds of organizations and individuals. It is with great appreciation that we recognize all who are playing a role in building a green and renewable future for our city and our planet.

GREENEST CITY ACTION PLAN - STEERING COMMITTEE

GCAP STEERING COMMITTEE – 2015-2020 STRATEGY
Albert Shamess, Director, Waste Management & Resource Recovery
Amanda Pitre-Hayes, Director, Sustainability Group
Bill Harding, Director, Parks, Vancouver Park Board
Brian Crowe, Director, Water, Sewers & District Energy
Bryan Buggey, Director, Strategic Initiatives and Sector Development, Vancouver Economic Commission
Chris Underwood, Manager, Solid Waste Strategy
Dave Hutch, Manager, Planning and Research
Donny Wong, Waterworks Engineer
Doug Smith, Assistant Director, Sustainability Group
Lon LaClaire, Acting Director, Transportation Division
Malcolm Shield, Climate Policy Manager, Sustainability Group
Mary Clare Zak, Managing Director, Social Policy and Projects Division
Pat Ryan, Chief Building Official & Building Review
Rena Kendall-Craden, Director, Corporate Communications
Sadhu Johnston (Chair), Acting City Manager
Sean Pander, Green Buildings Program Manager, Sustainability Group

GCAP STEERING COMMITTEE – 2011-2014 STRATEGY
Amanda Pitre-Hayes, Director, Sustainability Group
Brent Toderian, Director, Planning
Brian Crowe, Director, Water and Sewers Division
Chris Underwood, Acting Director, Waste Reduction and Recovery Management
Danica Djurkovic, Acting Director, Planning and Operations, Vancouver Park Board
David Ramslie, Senior Programs Manager, Sustainability Group
Jerry Dobrovolny, Director, Transportation Division
John Tylee, Director, Policy and Research, Vancouver Economic Commission
Lee Malleau, CEO, Vancouver Economic Commission
Mairi Welman, Director, Corporate Communications
Mary Clare Zak, Director, Social Policy Division
Neal Carley, Director, Streets Division
Peter Kuran, Deputy General Manager, Vancouver Park Board
Rowan Birch, Director, Waste Reduction and Recovery Management
Sadhu Johnston (Chair), Deputy City Manager
Sean Pander, Assistant Director, Sustainability Group
Tilo Driessen, Manager, Planning and Research, Vancouver Park Board

Will Johnston, Chief Building Official

GREENEST CITY ACTION PLAN - PLANNING TEAM

GCAP PLANNING TEAM – 2015-2020 STRATEGY
Amanda McCuaig, Greenest City Communications Coordinator, Corporate Communications
Amanda Mitchell, Greenest City Public Engagement Coordinator, Corporate Communications
Amanda Pitre-Hayes, Director, Sustainability Group
Amy Fournier, Sustainability Specialist, Sustainability Group
Emory Davidge, Greenest City Public Engagement Coordinator, Corporate Communications
Jennifer Wahl, Sustainability Specialist, Sustainability Group
Keltie Craig, Sustainability Specialist, Sustainability Group
Lloyd Lee, Monitoring and Reporting Planner, Sustainability Group

GCAP PLANNING TEAM – 2011-2014 STRATEGY
Amanda Mitchell, Greenest City Public Engagement Coordinator, Sustainability Group
Amy Fournier, Project Analyst, Sustainability Group
Lindsay Cole, Greenest City Planner, Sustainability Group
Lisa Brideau, Sustainability Specialist, Sustainability Group
Olive Dempsey, Greenest City Public Engagement Coordinator, Sustainability Group
Ryan Merkley, Director, Corporate Communications

GREENEST CITY ACTION PLAN - EXTERNAL ADVISORY OVERSIGHT COMMITTEE

For the 2015-2020 refresh of the Greenest City Action Plan, an oversight committee was established comprised of representatives from the external advisory committees of each of the ten goal areas.

This group was invited to review an early draft of this strategy, to participate in a focused workshop, and to share their views with City Council.

GREENEST CITY ADVISORY GROUP (GCAG) – 2015-2020 STRATEGY	
Andrea Reimer (Co-Chair)	Vancouver City Councillor
Adam Vasilevich	Vancouver Public Space Network
Andrew Marr	Metro Vancouver
David Boyd (Co-Chair)	Simon Fraser University
Elizabeth Sheehan	Climate Smart
Ian Bruce	David Suzuki Foundation
Muneesh Sharma	Building Owners and Managers Association
Neil Huff	Foresight Cleantech Accelerator Centre
Ray Cole	University of British Columbia
Roger Quan	Metro Vancouver
Shauna Sylvester	SFU Centre for Dialogue
Tara Moreau	Vancouver Food Policy Council
Vanessa Timmer	One Earth

This work builds on the foundational work completed by the Greenest City Action Team who set the original direction for Vancouver to become the Greenest City in the world by 2020.

GREENEST CITY ADVISORY TEAM (GCAT) – 2011-2014 STRATEGY	
Alex Lau	Vice President, Golden Properties Ltd.
Andrea Reimer	Vancouver City Councillor
Cheeying Ho	Director, Whistler Centre for Sustainability
Dr. David Boyd	Environmental Lawyer
David Cadman	Vancouver City Councillor
Dr. David Suzuki	Scientists, environmentalist and broadcaster
Gordon Price	Director, SFU City Program and former City Councillor
Gregor Robertson	Mayor of Vancouver
Karen Cooling	National Staff Representative, Communications, Energy and Paperworks Union of Canada and Treasurer, Toxic Free Canada
Linda Coady	Distinguished Fellow, Liu Institute for Global Issues, UBC
Linda Nowlan	Director, Pacific Conservation, World Wildlife Fund – Canada
Lindsay Cole	Director, Sustainability Solutions Group
Mark Holland	Principal, HB Lanarc
Mike Harcourt	Former Premier of BC, Former Mayor of Vancouver, Honorary Chair of the International Centre for Sustainable Cities
Mossadiq S. Umedaly	Executive Chairman, Enecsys
Moura Quayle	UBC Sauder School of Business
Robert Safrata	CEO, Novex Delivery Solutions
Tamara Vrooman	CEO, Vancity Credit Union

GOAL 1 — CLIMATE AND RENEWABLES

CLIMATE AND RENEWABLES - CONSULTATION PROCESS (2015-2020)

The City of Vancouver convened an External Advisory Committee made up of members from the regional and provincial government, academia, utilities, health authorities and NGOs. They discussed action taken to date by the City in its pursuit of Climate and Renewables and how those actions had resulted in GHG emissions reductions. The Committee, in addition to being made aware of the direction being taken by the Green Buildings, Green Transportation and Zero Waste goals areas, was also asked to advise on the other action areas and the current direction being set by the City's district energy approaches. The Committee was content that the most significant areas were being tackled, and supported the City's desire to start development of a comprehensive long-term carbon strategy. The Committee also commended the City for taking a robust position against the expanded development of large scale fossil fuel infrastructure.

CLIMATE AND RENEWABLES – EXTERNAL ADVISORS – 2015-2020 STRATEGY	
Amy Seabrook	BC Hydro
Ben Finkelstein	BC Climate Action Secretariat
Dale Littlejohn	Community Energy Association
Dan Cupa	Urban Land Institute

Dave Woodson	University of British Columbia
Elizabeth Sheehan	Climate Smart
Jason Emmert	Metro Vancouver
Jeremy Moorhouse	Clean Energy Canada
John Robinson	University of British Columbia
Josha MacNab	Pembina Institute
Keane Gruending	Renewable Cities
Mauricio Acosta	Vancouver Coastal Health
Nigel Protter	BC Sustainable Energy Association
Paul Shorthouse	Globe Foundation
Ron MacDonald	Vancouver School Board
Tom Pedersen	Pacific Institute for Climate Solutions

CLIMATE AND RENEWABLES – INTERNAL ADVISORS – 2015-2020 STRATEGY	
Albert Shamess	Engineering Services
Chris Baber	Engineering Services
Chris Underwood	Engineering Services
Ian Neville	Sustainability Group
Kieran McConnell	Engineering Services
Lloyd Lee	Sustainability Group
Malcolm Shield (Chair)	Sustainability Group
Sean Pander	Sustainability Group
Steve Brown	Engineering Services

CLIMATE AND RENEWABLES – EXTERNAL ADVISORS – 2011-2014 STRATEGY	
Alan Boniface	Urban Land Institute
Colleen Sparks	BC Climate Action Secretariat
Dale Littlejohn	Community Energy Association
Elizabeth Sheehan	Climate Smart
Eve Hou	Metro Vancouver
Guy Dauncey	BC Sustainable Energy Association
John Robinson	University of British Columbia
John Turner	Fortis BC
Josha MacNab	Pembina Institute
Kevin Millsip	Vancouver School Board
Mark Roseland	Simon Fraser University
Mauricio Acosta	Vancouver Coastal Health
Nicholas Heap	David Suzuki Foundation
Norm Connolly	Community Energy Association
Paul Shorthouse	Globe Foundation
Stacey Bernier	Canadian District Energy Association
Stephen Sheppard	University of British Columbia
Victoria Smith	BC Hydro

CLIMATE AND RENEWABLES – INTERNAL ADVISORS – 2011-2014 STRATEGY	
Brian Beck	Sustainability Group
Brian Crowe	Engineering Services
Chris Baber	Engineering Services
Dave Ramslie	Sustainability Group
Derek Pope	UBC Greenest City Scholar
Hugo Haley (Staff Lead)	Sustainability Group
Lisa Westerhoff	UBC Greenest City Scholar
Malcolm Shield	UBC Greenest City Scholar/Sustainability Group
Paul Henderson	Engineering Services
Sean Pander (Chair)	Sustainability Group
Tamsin Mills	Sustainability Group

CLIMATE AND RENEWABLES - PARTNERSHIP ROLES

The development and ultimate achievement of long term carbon goals is predicated upon the effective engagement of a wide range of diverse stakeholders. The major stakeholders and their relationship to carbon and emissions is described below, although the exact nature of their roles and how each should be engaged must be determined as part of a tailored consultation process.

CLIMATE AND RENEWABLES - MAJOR STAKEHOLDERS
Vancouver Residents make up the Vancouver community and are ultimately responsible for its emissions. The energy choices they make, the products and food they consume, how they recreate and the business they engage in all determine what carbon emissions are produced
Energy Utilities deliver our heat and power and must be able to meet the needs of a clean energy future, with systems that are resilient, flexible and clean, while delivering remaining affordable.
NGOs cover a broad range of interests and we must maximize that breadth using NGO expertise not only in climate change, but public engagement and civic representation.
The City of Vancouver must lead from the front, but cannot lead alone, we must work closely with **Metro Vancouver** to ensure the economies of scale and efficiency that come from regional progress are realized.
The Provincial Government has jurisdiction in many areas that municipal and local governments do not, it is imperative that a clear and consistent regulatory environment is established that commits to deep greenhouse gas emissions reductions.
The City of Vancouver is a world renowned city second to none, yet the challenges it face are not unique. We must work with **our peers** to find effective solutions to common problems, while also sharing our knowledge to help other cities in their own efforts to tackle climate change.
The **Federal Government** controls some aspects of local emissions sources, such as vehicle efficiency standards and emissions from Federal lands, and must accordingly take national action to ensure that these emissions are abated.
Vancouver has some significant large **businesses** as well as many small and medium enterprises. The full spectrum of businesses, sectors and business associations must be engaged to reduce emissions from economic activity. The continued development of the clean and tech sectors is critical to long term success in reducing emissions.
The **development community** delivers the built form that underpins our community. Influencing the way that built form evolves and how it affects emissions will only come from a comprehensive

partnership.
There are many **agencies**, both government related and none, such as TransLink, Vancouver School Board and Vancouver Coastal Health, that need to be fully engaged if the Vancouver community is to have access to the improved services that can come from a clean future.
Local and international **academic institutions** provide a wealth of expertise and insight into the latest research and test new ideas in their on-campus living laboratory. The City should actively access these learnings and apply them across the City of Vancouver.

GOAL 2 — GREEN BUILDING

GREEN BUILDING - CONSULTATION PROCESS (2015-2020)

These refreshed short-term actions were informed by the consultation process for the development of the Existing Building Energy Retrofit Strategy, ongoing engagement with the Urban Develop Institute and the Greater Vancouver Homebuilders Association, and the participation in shared research and planning exercises with BC Hydro, Fortis, the Homeowner Protection Office, the Provincial Government, and local non-profits such as the Pembina Institute and Lighthouse Sustainable Building Centre.

In addition, the Green Building External Advisory Committee was re-convened in January 2015 and includes participation by all of these groups as well as that of the Canadian Green Building Council, the Canadian Passive House Institute West, the University of British Columbia, and a small number of leading green building designers.

GREEN BUILDING - EXTERNAL ADVISORS – 2015-2020 STRATEGY	
Alexander Maurer	Marken Projects
Daniel Klemky	Building Owners and Managers Association - BC
Dave Ramslie	Integral Group
David Hutniak	Landlord BC
Graham Finch	RDH Building Engineering
John Madden	University of British Columbia
Jonathan Meads	Concert Properties
Jordan Fisher	Urban Development Institute
Kathy Wardle	Perkins + Will
Luke Smeaton	Lighthouse Sustainable Building Centre
Mark Sakai	Greater Vancouver Home Builders' Association
Monte Paulsen	Canadian Passive House Institute West
Ray Cole	University of British Columbia
Sarah Smith	Fortis BC
Thomas Mueller	Canadian Green Building Council
Toby Lau	BC Hydro
Tom Awram	Adera
Thomas Mueller	Canadian Green Building Council
Tom-Pierre Frappé-Sénéclauze	Pembina Institute
Tony Gioventu	Condominium Home Owners Association of BC
Trudy Rotgans	Province of British Columbia

GREEN BUILDING - INTERNAL ADVISORS – 2015-2020 STRATEGY	
Andrea Wickham	Sustainability Group
Anita Molaro	Urban Design
Chris Baber	Engineering Services
Chris Higgins	Sustainability Group
Craig Edwards	Facilities Planning & Development
George Fujii	Planning and Development Services
Gregory McCall	Planning and Development Services
John Greer	Planning and Development Services
Kevin McNaney	Planning and Development Services
Kieran McConnell	Engineering Services
Pat Ryan	Chief Building Official & Building Review
Ryan The	Planning and Development Services

GREEN BUILDING – EXTERNAL ADVISORS – 2011-2014 STRATEGY	
Allan Francis	Architectural Institute of BC, Sustainability Committee
Allan Francis	CEI Architecture Planning Interiors
Amy Spencer-Chubey	Greater Vancouver Homebuilders Association
Brenda Martens	Recollective
Chris Corps	Asset Strategies Ltd / Canadian Royal Institute of Chartered Surveyors
Denisa Ionescu	Homeowner Protection Office
Graham Finch	RDH Building Engineering
Guido Wimmers	Passive House Institute
Heather Tremain	reSource Rethinking Building
Helen Goodland	Light House Sustainable Building Centre
Jeff Fischer	Urban Development Institute
Jennie Moore	BC Institute of Technology
Jennifer Sanguinetti	Smart Buildings & Energy Management BC Housing
Jessica Woolliams	Cascadia Green Building Council
Joe Stano	Canada Green Building Council
Joel Sisolak	Cascadia Green Building Council
John Cordonier	Bentall Group
John Scott	CEI Architecture Planning Interiors
Jonathan Meads	Concert Properties
Juvarya Warsi	Vancouver Economic Commission
Katherine Muncaster	Province of British Columbia
Keith Sashaw	Vancouver Regional Construction Association
Kevin Hydes	Integral Group
Lorina Keery	Building Owners and Managers Association BC
Lyn Bartram	SFU School of Interactive Arts + Technology
Martin Nielsen	Busby, Perkins + Will
Michael Blackman	Association of Professional Engineers and Geoscientists / Read Jones Christoffersen Ltd.
Michael Yeates	Vancity Credit Union
Mona Lemoine	Cascadia Green Building Council

Murray Mackinnon	Canadian Contact, Ledcor
Norm Shearing	Parklane Homes
Paul LaBranche	Building Owners and Managers Association BC
Peter Laforest	Building Owners and Managers Association BC
Ray Cole	UBC School of Architecture + Landscape Architecture
Sophie Mercier	BC Building Envelope Council Member
Teresa Coady	Bunting Coady Architects
Thomas Mueller	Canada Green Building Council
Toby Lau	BC Hydro
Trudy Rotgans	Province of British Columbia
Warren Knowles	RDH Building Engineering

GREEN BUILDINGS – INTERNAL ADVISORS – 2011-2014 STRATEGY	
Chris Warren	Planning and Development Services
Dave Ramslie (Chair / Staff Lead)	Sustainability Group
Jay Worthing	UBC Greenest City Scholar
Kandiah Pavananthan	Planning and Development Services
Mark Hartman	Sustainability Group
Pat Ryan	Planning and Development Services
Rachel Moscovich	Sustainability Group
Rick Michaels	Planning and Development Services
Ron Dyck	Planning and Development Servcies
Sailen Black	Planning and Development Servcies
Will Johnston (Chair)	Chief Building Official

GOAL 3 — GREEN TRANSPORTATION

GREEN TRANSPORTATION - CONSULTATION PROCESS (2015-2020)

At a high level, the actions described in the Green Transportation section were advanced through the Transportation 2040 planning process, which was based upon best practices from around the world as well as local expertise and public input.

Key inputs included:

- Broad public consultation in 2011 focused on ideas generation, with over 8,000 people participating at events including town hall meetings, artist-facilitated co-design workshops, surveys, and online discussion boards.
- Detailed public review of draft directions in 2012, with over 10,000 people participating at public events, open houses, and festivals, as well as through social media and 944 responses to an online questionnaire.
- Ongoing engagement with over 50 stakeholder groups, including representatives from other government agencies, emergency services, health care and social service providers, industry leaders, non-profit organizations, and local business groups.
- A peer review by leading transportation experts from around the world.

- Approved high-level direction and detailed ideas generated through the Greenest City planning process, which were the result of extensive public engagement in 2010.

Individual projects continue to go through extensive public and stakeholder engagement processes, which vary on a case-by case basis.

GREEN TRANSPORTATION – EXTERNAL ADVISORS – 2011-2014 STRATEGY	
Adam Cooper	UBC TREK Program Centre
Alice Miro	Heart and Stroke Foundation
David Feldhaus	Vancouver Electric Vehicle Association
Gordon Price	Simon Fraser University
Greg Yeomans	TransLink
Heather McKay/Sara Lusina/ Azaria Botta	Vancouver Coastal Health
Karen Parusel/Karen Fung	Vancouver Public Space Network
Keith Ippel	Vancouver Area Cycling Coalition
Kevin Millsip	Vancouver School Board
Kevin Volk	BC Ministry of Transportation
Larry Frank/Andrew Devlin	School of Community & Regional Planning at UBC
Margaret Mahan	Better Environmentally Sound Transportation
Mike Elwood	Electric Mobility Canada
Raymond Kan/Eve Hou	Metro Vancouver

GREEN TRANSPORTATION – INTERNAL ADVISORS – 2011-2014 STRATEGY	
Andrew Pask	Social Policy Division
Brent Toderian (Chair)	Planning and Development Services
Brian Beck	Sustainability Group
Dale Bracewell	Engineering Services
Jerry Dobrovolny (Chair)	Engineering Services
Jo Fung	Engineering Services
Lon LaClaire	Engineering Services
Maggie Baynham	UBC Greenest City Scholar
Neal LaMontagne	Planning and Development Services
Paul Krueger (Staff Lead)	Planning and Development Services
Tate White	UBC Greenest City Scholar

GREEN TRANSPORTATION - PARTNERSHIP ROLES

Partnerships are critical to achieving success, particularly in a region with 21 other municipalities, regional transportation and planning agencies, and many overlapping jurisdictions and interests.

GREEN TRANSPORTATION - MAJOR PARTNERS
TransLink, the regional transportation agency
Province of British Columbia
Metro Vancouver and neighbouring municipalities (including Regional Mayor's Council)

Vancouver Coastal Health and other health care agencies and providers
Schools and academic institutions
Port Metro Vancouver, a federal authority
Vancouver International Airport, a federal authority
Rail companies
ICBC, the provincial auto insurance provider
Trucking, taxi, and commercial transit providers
Transportation non-profit organizations
Local business and community associations
Enforcement and emergency service providers

The City also coordinates with other Metro Vancouver municipalities to share lessons learned and address regional transportation issues, both directly and through TransLink's Major Roads and Transportation Advisory Committee. Its regular meetings explore regional transportation issues within and between Metro Vancouver's municipalities.

Perhaps the most significant partnership in the past year has been through the regional Mayors' Council. The region's political leadership worked tirelessly with municipal and TransLink staff to reach consensus on a detailed package of transportation and transit improvements offering improvements for every mode of transportation in every part of the region.

GOAL 4 — ZERO WASTE

ZERO WASTE - CONSULTATION PROCESS (2015-2020)

External advisory consultation occurred during the development of the initial actions for the Greenest City 2020 Action Plan, as well as throughout the implementation of priority actions. As a result, no separate engagement process was required for the development of this next phase of the Greenest City 2020 Action Plan priority actions. The majority of the actions had been identified in the initial consultation and are simply entering into phase two.

Metro Vancouver consulted with stakeholders across the region in 2014 on the implementation of the Organics Disposal Ban, and on broader zero waste policies and actions during the development of the 2010 Regional Integrated Solid Waste and Resource Management Plan.

The City no longer has one specific advisory committee for Zero Waste. Instead our recent approach has been to engage with stakeholders specific to the initiatives we are pursuing, which has resulted in four groups of stakeholders covering food scraps diversion, MMBC EPR, DLC waste diversion and litter/public realm.

COV WORKED WITH THE FOLLOWING ORGANIZATIONS TO ADVANCE FOOD SCRAPS DIVERSION
Waste Management Association of BC – private haulers
Non-WMABC private haulers
Landlord BC
Condo Home Owners Association

Co-Operative Housing Federation of BC
BC Non-profit Housing Association
Professional Association of Managing Agents
Strata Property Agents of BC
Building Owners and Managers Association
Canadian Condominium Institute, Vancouver Chapter
Vancouver Business Improvement Associations
BC Restaurant & Food Services Association
Vancouver Board of Trade
Tourism Vancouver
BC Food Processor Association
Hotel Association of Vancouver
DTES Kitchen Tables Project
Vancouver Farmer's Market
West End Neighbourhood Food Network

COV PARTICIPATED IN THE FOLLOWING PROCESSES
Encorp, where we helped them implement a pilot for streetscape recycling and another pilot to locate a Return-It Express mini-depot downtown
Encorp and Product Care, on behalf of Electronics Stewardship Association of BC and Canadian Electrical Stewardship Alliance, respectively, to do e-waste round-up events through the City's Keep Vancouver Spectacular Program.
The City also sits on several advisory committees — the Major Appliance Recycling Roundtable (large appliances), Encorp and the National Zero Waste Committee. Encorp, where we helped them implement a pilot for streetscape recycling and another pilot to locate a Return-It Express mini-depot downtown

COV WORKED WITH THE FOLLOWING ORGANIZATIONS TO IMPROVE STREET CLEANLINESS AND ON-STREET RECYCLING
Various Vancouver Business Improvement Associations
Community Volunteer Clean Up Groups (i.e. West End Clean Up, Great Canadian Shoreline Cleanup and SurfRider Foundation)
Community Policing Centers (i.e. Hastings Sunrise, Grandview Woodland, West End, Collingwood)
Neighbourhood Houses (i.e. Gordon, Mt. Pleasant)
Youth Groups – Citywide Youth Council
Stewardship Agencies (i.e. Encorp)
Social Enterprise Micro-cleaners (i.e. United We Can, Coast, SYJA, Kettle, Mission Possible)

2014 CONSULTATION DIVERSION OF DEMOLITION WASTE (VARIOUS WORKSHOPS)
Octiscapes Demolition Excavation & Drainage
HeatherBrae Builders
3R Demolition
Re-Use Consulting
Embers Green Renovations
Broadway Roofing

Ledcor
Ellisdon
Pacific Blasting & Demolition
MWL Demolition
City of Vancouver - Supply Chain Management
City of Vancouver - Real Estate and Facilities Management
Metro Vancouver - Solid Waste Services
Hans Demo
T&T Demo
Litchfield
Green Coast Rubbish
Haebler Construction
Kinetic Construction
Basran Fuels
Smithers Industries
InnerCity Recycling
Lafarge
Gemaco Sales
Habitat for Humanity - ReStore
RichVan Holdings
Harvest Power/Urban Wood Waste
Ecowaste Industries
Pacific Carpet Recycling
Metro Vancouver
Fairway Demolition
LockBlock

ZERO WASTE – EXTERNAL ADVISORS – 2011-2014 STRATEGY	
Avtar Sundher	Ministry of the Environment
Brock Macdonald/ Jordan Best	Recycling Council Of BC
Charles Gauthier	Downtown Vancouver BIA
Dennis Ranahan	Metro Vancouver
Helen Spiegelman	Zero Waste Vancouver
Kevin Millsip	Vancouver School Board
Louise Schwarz	Recycling Alternative
Norman Point	Musqueam Indian Band
Richard Taki	Vancouver Coastal Health
Robert Weatherbe	Recycling Alternative
Ruth Abramson	Provincial Health Services Authority
Sam Dahabieh	Simon Fraser University

ZERO WASTE – INTERNAL ADVISORS – 2011-2014 STRATEGY	
Catherine Kinahan	Legal Services
Chris Underwood	Engineering Services

(Chair/Staff Lead)	
Darlene Seto	UBC Greenest City Scholar
David Robertson	Engineering Services
Lynn Belanger	Engineering Services
Mani Deo	Engineering Services
Monica Kosmak	Engineering Services
Rowan Birch (Chair, retired)	Engineering Services
Valerie Presolly	UBC Greenest City Scholar

ZERO WASTE - PARTNERSHIP ROLES

Metro Vancouver, the Province of British Columbia, and industry continue to be important partners in delivering the vision for the Zero Waste goal.

The City participated in the following processes:

- Encorp, regarding implementation of a pilot for streetscape recycling and another pilot to locate a Return-It Express mini-depot downtown.
- Encorp and Product Care, on behalf of Electronics Stewardship Association of BC and Canadian Electrical Stewardship Alliance, respectively, to hold e-waste round-up events through the City's Keep Vancouver Spectacular Program.
- The City also sits on several advisory committees — the Major Appliance Recycling Roundtable (large appliances), Encorp and the National Zero Waste Committee. Encorp, where we helped to implement a pilot for streetscape recycling and another pilot to locate a Return-It Express mini-depot downtown.

GOAL 5 — ACCESS TO NATURE

ACCESS TO NATURE - CONSULTATION PROCESS (2015-2020)

The City no longer has one specific advisory committee for Access to Nature. Instead our recent approach has been to engage with stakeholders specific to the initiatives we are pursuing.

CONSULTATION PROCESS BY RELATED TARGET OR STRATEGY
150,000 trees: An internal advisory committee including the City Manager's Office, Park Board Planning, Urban Forestry and Operations, Development Services, Law and Engineering went through a robust consultation process. This group will continue to meet as implementation of priority actions proceeds. Each priority action item will also continue to involve lead and support staff from relevant City departments as they move into implementation. External consultation is planned in the form of two advisory committees: one to advise on technical documents and best practices; the other to advise on private property planting strategies and public engagement.
5 Minute Walk: Park Planning discussed potential projects for 2015-18 with active transportation, community planning, and streets that may influence the 5 minute walk target. Consultation is done on a project by project basis with communities and stakeholders.
Biodiversity Strategy: Staff committee met 3 times in 2013 but further work was deferred until schedule better defined; will reinvigorate in late 2014/early 2015. An external advisory committee was established to advise on creation of strategy and included 12 people from non-profits,

research/academic institutions, and community. The group met twice in 2013 and reviewed the draft report. Their participation will continue through 2015.
Bird Strategy: City Staff from a variety of departments and a wide range of partners met as the Vancouver Bird Advisory Committee for two years to collaboratively develop the Vancouver Bird Strategy, adopted in January 2015. Implementation will be undertaken by staff and partners on each action item and internal consultative work will continue as actions are implemented. Partner organizations including Tourism Vancouver, Environment Canada, Bird Studies Canada, academics, artists, non-profits, and community members were involved in the development of the Strategy, Bird Week activities and other action items. The Advisory Committee will continue to meet as a committee and through working groups tasked with specific actions and working towards the International Ornithological Congress to be hosted in Vancouver in 2018.

ACCESS TO NATURE - EXTERNAL ADVISORS – 2011-2014 STRATEGY	
Andrew Appleton	Evergreen
Catherine Berris	BC Society of Landscape Architects
David Zandvliet	Science and Environmental Education Faculty of Education at Simon Fraser University
Dawn Hanna	Jericho Stewardship Group
Emily Jubenvill	Vancouver Public Space Network
Kai Chan	University of British Columbia
Kevin Millsip	Vancouver School Board
Margaret Coutts	Nature Vancouver
Patricia Thomson	Stanley Park Ecology Society

ACCESS TO NATURE – INTERNAL ADVISORS – 2011-2014 STRATEGY	
Alan Duncan (Staff Lead)	Vancouver Park Board
Amit Gandha	Vancouver Park Board
Andrew Pask	Social Policy Division
Ben Mulhall	Vancouver Park Board
Bill Stephen	Vancouver Park Board
Cathy Buckham	Planning and Development Services
Doug Manarin	Engineering Services
Douglas Scott	Engineering Services
Eileen Curran	Engineering Services
Katherine Isaac	Vancouver Park Board
Lindsay Bourque	UBC Greenest City Scholar
Megan Stuart-Stubbs	Vancouver Park Board
Neal Carley (Chair)	Engineering Services
Piet Rutgers (retired)	Vancouver Park Board
Tilo Driessen (Chair)	Vancouver Park Board

ACCESS TO NATURE - PARTNERSHIP ROLES

ACCESS TO NATURE - PARTNERS
Private property tree planting: The Park Board plans to continue partnering with external non-profit or social enterprises to develop and deliver programming that encourages and supports tree planting on private property.

Food tree planting: The Park Board would like to initiate a new partnership with a non-profit or social enterprise to plant, maintain and harvest food trees on public properties, with food being distributed to a variety of community organizations serving vulnerable populations.
Stewardship and environmental education: Formal and informal stewardship and partnership agreements will be put in place to support implementation of the Rewilding, Biodiversity, and Bird Strategies. Fieldhouse residencies for environment- and stewardship focused initiatives will be sought.

GOAL 6 — CLEAN WATER

CLEAN WATER - CONSULTATION PROCESS (2015-2020)

An external advisory group composed of ICI representatives was assembled in October 2014 to start the dialogue on the importance, challenges and opportunities for improved water efficiency. Smaller tactical working groups then met through a series of City-led workshops in January 2015 with ongoing open dialogue through email and phone conversations.

CLEAN WATER – EXTERNAL ADVISORS – 2015-2020 STRATEGY	
Alberto Cayuela	University of British Columbia
Alf Hunter	Brewery employee
Anthonia Ogundele	Vancity
Anthony Lucas	Vancouver Hotel Association and Westin Bayshore
Bryn Jones	FortisBC
Caryn Westmacott	Brewery employee
Craig Jangula	Craft Breweries
Daniel Klemky	Building Owners and Managers Association
Daniel Ward	University of British Columbia SCARP
Glen Garrick	Vancouver Coastal Health
Graham With	Craft Breweries
Gwendal Castellan	Tourism Vancouver
Jennifer Tan	Vancity
Ken Beattie	BC Craft Brewers Guild
Kirby Ell	Irrigation Industry Association of BC
Lindsey Tourand	Bentall Kennedy
Muneesh Sharma	Building Owners and Managers Association
Paul Hemmings	Vancouver Hotel Association and Delta Hotels
Ron Macdonald	Vancouver School Board
Ted van der Gulik	Irrigation Industry Association of BC
Troy Vassos	Nova Tech Consultants
Victoria Schedel	International Facility Management Association – BC
CLEAN WATER – INTERNAL ADVISORS – 2015-2020 STRATEGY	
Amanda McCuaig	Corporate Communications
Brad Badelt	Sustainability Group
Brian Crowe	Engineering Services
Craig Edwards	Facilities, Planning and Development
David Robertson	Engineering Services
Donny Wong	Engineering Services
Jennifer Bailey	Engineering Services

Kyra Lubell	Engineering Services
Lindsay Cole	Vancouver Park Board
Nick Page	Vancouver Park Board
Shelley Heinricks	Engineering Services

CLEAN WATER - EXTERNAL ADVISORS – 2011-2014 STRATEGY	
Bob Jones	Metro Vancouver
Dr. Dirk Kirste	Simon Fraser University
Dr. Gunilla Oberg	University of British Columbia
Kirk Stinchcombe	Econnics
Oliver Brandes	POLIS
Dr. Patricia Daly	Vancouver Coastal Health
Stan Woods	Metro Vancouver
Dr. Tim Takaro	Simon Fraser University
Dr. Troy Vassos	NovaTech Consultants Inc.

CLEAN WATER – INTERNAL ADVISORS – 2011-2014 STRATEGY	
Andrew Ling	Engineering Services
Brian Crowe (Chair)	Engineering Services
Carolyn Drugge	Engineering Services
David Ramslie	Sustainability Group
Donny Wong	Engineering Services
Grace Cheng	Finance
Jack Chen	Finance
Jennifer Bailey	Engineering Services
Joshua Welsh	UBC Greenest City Scholar
Peter Navratil (Staff Lead)	Waterworks Design
Piet Rutgers/Danica Djurkovic	Vancouver Park Board
Sara Orchard	UBC Greenest City Scholar

CLEAN WATER - PARTNERSHIP ROLES

The City's Water, Sewers & District Energy Division and Real Estate and Facilities Management group are working together to track water consumption of city-owned buildings; currently exploring opportunities to retrofit fixtures and once through cooling systems. The team is also working with Vancouver Park Board to eliminate potable water use in fish bearing waterways and implement efficiency measures in ornamental fountains.

CLEAN WATER - PARTNERSHIPS
Healthcare - Partnering with Vancouver Coastal Health and Providence Health care on conducting water audits of four facilities under the mutual agreement that recommendations with a two year payback will be implemented.
School Board - Working with Vancouver School Board to identify water efficiency measures to be implemented.
BC Craft Brewers Guild - Working with the Guild to develop Best Management Practices for water

efficiency and sewer discharge.
Multi-family residential - Working in partnership with Green Landlords BCand Fortis BC to target apartment rental buildings constructed before 1985 in an incentive program for energy and water retrofits.
Hotel and tourism - Through the external advisory group, an information sharing relationship with Delta and Westin Bayshore hotels has developed in which results from water saving pilots are being shared. These hotels are part of the Delta Green and Starwood Initiatives respectively, which aim to reduce water consumption by 20% from 2008 levels by 2020.
Building Operators - Keeping open dialogue with BOMA Best and large building owner/operators to keep apprised of benchmarking, certification and other initiatives that may forward water conservation in this sector.

GOAL 7 — LOCAL FOOD

LOCAL FOOD - CONSULTATION PROCESS (2015-2020)

The Vancouver Food Strategy, a comprehensive road-map for action to create more sustainable food systems, was approved by Council in January, 2013. There was comprehensive consultation process conducted during the development of the Food Strategy. The proposed GCAP refresh priority actions are a continuation of implementing the Food Strategy actions. As such, we continue to consult and work with the Food Policy Council and the Food Systems Steering Committee. Staff are now implementing the 71 actions outlined described in the Food Strategy.

The Park Board's Local Food Action Plan was created via a stakeholder engagement process led by a Task Force. The Task Force was co-chaired by two Park Board Commissioners, and included stakeholders from six key organisations as well as several City departments. Three additional working groups included another 30+ people from community organisations and different City and Park Board departments. Together this group produced the Local Food Action Plan adopted by the Park Board in July 2013.

Staff attend the monthly Food Policy Council meetings and provide a status update on the Food Strategy actions and receive input from the Vancouver Food Policy Council on a number of initiatives.

The Food Systems Steering Committee, the inter-departmental staff committee, meets on a monthly basis to discuss implementation of Food Strategy actions.

LOCAL FOOD – EXTERNAL ADVISORS – 2011-2014 STRATEGY	
André LaRivière	Green Table Network
Brent Mansfield	Vancouver School Board
Cale Price	Vancouver Chef
Carla S. Shore	C-Shore Communications Inc.
Carole Christopher	Society Promoting Environmental Conservation
Daryl Arnold	Commercial poultry farmer
David Tracey	Vancouver Community Agriculture Network

Doug Aason	Greater Vancouver Food Bank
Helen Spiegelman	Zero Waste Vancouver
Herb Barbolet	Centre for Sustainable Community Development and Local Food First, SFU
Janine de la Salle	Food Systems Planning, HB Lanarc
Jeff Nield	Farm Folk City Folk
Joanne Bays	Public Health Association of British Columbia
Kim Sutherland	BC Ministry of Agriculture
Maria Burglehaus	Vancouver Coastal Health
Ross Moster	Village Vancouver
T'Uy'Tanat-Cease Wyss	Skwxw'u7mesh Nation
Tara McDonald	Your Local Farmers Market Society
Trish Kelly	Horizon Distributors
Yona Sipos	Faculty of Land and Food Systems, UBC

LOCAL FOOD – INTERNAL ADVISORS – 2011-2014 STRATEGY	
Alan Duncan	Vancouver Park Board
Andrew Pask (Staff Lead)	Social Policy Division
Bill Manning	Vancouver Park Board
Brent Toderian	Planning and Development Services
Douglas Scott	Engineering Services
Erin MacDonald	Engineering Services
James O'Neill (Staff Lead)	Social Policy Division
John Breckner	Real Estate Services
Kevin Millsip	Vancouver School Board
Liane McKenna (retired)	Vancouver Park Board
Mary Clare Zak (Chair)	Social Policy Division
Rick Michaels	Planning and Development Services
Scott Edwards	Engineering Services
Sean Pander	Sustainability Group
Tami Gill	Planning and Development Services
Tegan Adams	UBC Greenest City Scholar
Wendy Mendes	Social Policy Division

LOCAL FOOD - PARTNERSHIP ROLES

Partnerships are integral to successful implementation of priority actions. Because of the many issues and stakeholder groups involved in creating a just and sustainable food system in Vancouver, collective responsibility is key. This means active participation not only by local government, but equally by citizens, community groups, institutions, agencies, businesses, governmental partners, and other stakeholders. Only by working together will we achieve our food system and sustainability goals.

To ensure successful implementation of the key strategies, a number of City and non-City groups and coalitions have been identified. These include:

- City of Vancouver Food Systems Steering Committee

- Vancouver Food Policy Council
- Community and other partner institutions
- Food-related coalitions and stakeholder groups
- Government and universities

GOAL 8 — CLEAN AIR

CLEAN AIR - CONSULTATION PROCESS (2015-2020)

Metro Vancouver has statutory authority for air quality management in the Metro Vancouver region, and as such the City of Vancouver has developed 2015-2020 priority actions in close collaboration with them. The actions are intended to maximize where the City can take action, and where it can best support those actions Metro Vancouver is already undertaking to deliver its *Integrated Air Quality and Greenhouse Gas Management Plan*. The actions were jointly presented by Metro Vancouver and the City to an External Advisory Committee with membership from the University of British Columbia, Vancouver Coastal Health, and BC Lung Association. The committee approved the proposed actions.

This team did not have a large EAC, rather the City of Vancouver and Metro Vancouver staff worked collaboratively to develop this plan.

CLEAN AIR – INTERNAL AND EXTERNAL ADVISORS – 2011-2014 STRATEGY	
Adam Hyslop	UBC Greenest City Scholar
Brian Beck	Sustainability Group
Derek Jennejohn	Metro Vancouver
Laurie Bates-Frymel	Metro Vancouver
Malcolm Shield	Sustainability Group
Roger Quan	Metro Vancouver
Sean Pander	Sustainability Group

CLEAN AIR - PARTNERSHIP ROLES

MAIN PARTNERS FOR CLEAN AIR ACTIONS
Metro Vancouver – regulatory authority and policy alignment
University of British Columbia – air quality technical expertise
Vancouver Coastal Health – human health impact expertise
BC Lung Association – respiratory health expertise

GOAL 9 — GREEN ECONOMY

GREEN ECONOMY - CONSULTATION PROCESS (2015-2020)

Over the past year, the VEC hosted several meetings in addition to its regular ongoing dialogue with the business community. The list of stakeholders included business owners & leaders, property owners, real estate professionals, technology developers, and not-for-profit organizations. These stakeholders came from both the green economy sectors as well as sectors outside the green economy but are actively looking to “green-up” their operations.

Typically, during these meetings, the VEC would:

- Share insights and research gathered by the VEC, CityStudio, Climate Smart, the City's Planning Department, and other relevant organizations;
- Facilitate high-paced networking among businesses in the room to highlight immediate green economic development opportunities; and
- Highlight short and long-term priorities for seeding and supporting new activity around enabling the green economy.

GREEN ECONOMY –EXTERNAL ADVISORS – CIRCULAR ECONOMY – 2015-2020 STRATEGY	
Amy Roberts	Mountain Equipment Coop
Brock Macdonald	Recycling Council of BC
Cody Dimitrijevic	BCIT Sustainable Business
Derek Gaw	MakerLabs
Dharini Thiruchittampalam	D.Studio
Esther Speck	Speck Consulting
Fabio Scaldaferri	Mattress Recycling
Fiona McAlpine	Future Strategies
Gregory Dreicer	Museum of Vancouver
Irina Molohovsky	Frameworq
Jennifer Cutbill	Design Week
Jenniffer Sheel	Viva Vancouver
Jeremy Van Nieuwkerk	Shrapnel Design
Karen Storry	Metro Vancouver Zero Waste
Karen Wan-Gauthier	Projects in Place Society
Kaya Dorey	BCIT Sustainable Business
Lena Soots	CityStudio
Lisa Papania	Simon Fraser University
Louise Schwarz	Recycling Alternative
Mahbod Rouhany	Re-vivify
Maia Rowan	Emily Carr
Matt Fiddes	Re-vivify
Meg O'Shea	Strathcona BIA
Melanie Conn	Common Thread
Moni El Batrik	Chikum
Natalie Tillen	Emily Carr Industrial Design
Robyn Kimber	Lululemon
Sandra Garcia	Rescued Clothing Co.
Sara Blenkhorn	Future Strategies
Sarah Van Borek	Emily Carr
Theunis Snyman	Basic (Re)Purpose Design
Theunis Snyman	Basic (Re)Purpose Design
Tim Clark	Habitat for Humanity
Tina Cheung	Aritzia
Toby Russell	Capilano Textile Waste Management
Valerie Presolly	Mountain Equipment Coop
Wes Baker	Debrand Services

GREEN ECONOMY –EXTERNAL ADVISORS – SMART LOGISTICS – 2015-2020 STRATEGY	
Ana Lukyanova	ClimateSmart
Andrew Kronquist	Novex
Anwar Sukkarie	Saturna Green
Ben Wells	Shift Urban Delivery
Brad Caton	Invictus
Chelsia Chui	Fresh Direct Produce
Chris Godfrey	Telus
David Swan	Eco Options
Fez Rismani	Daily Delivery
Frank Tallarico	GVFBS
Grace Quan	Hydrogen in Motion
Jared Girman	West Coast Reduction
Jay Giraud	Mojio
Jim Vanderwal	Fraser Basin Council
J-M Toriel	Big Green Island
Joe Fantillo	LordCo
John Stonier	VeloMetro
Kody Baker	VeloMetro
Mary MacPhee	PowerDisc
Maureen Cureton	VanCity
Mengo McCall	Aquaterra
Michelle Reid	Mills Office Productivity
Mike Cornford	Webtech Wireless
Mike Karamanian	Digitech Laser
Scott Foran	505 Junk
Scott Mason	Landsea Tours
Shaugn Schwartz	The Cleaning Solution
Simon Pickup	Hydra Energy
Tim Verster	Agile Tracking Solutions
Tyson Jerry	Powerfuel CNG Systems

GREEN ECONOMY –EXTERNAL ADVISORS – SPACES TO GROW– 2015-2020 STRATEGY	
Aaron Quesnel	Sky Harvest
Adam Levine	Electric Owl
Braden Hall	FX/GX
Broek Bosma	Emily Carr
Chris Dragan	Colcom
Dallas Luther	Maker Labs
Dave Rurak	Ralph's Radio
David Porte	Porte Developments
Derek Gaw	Maker Labs
Ed Ferreira	CBRE
Elvy Del Bianco	Vancity

Emily Kaplan	GNW Trust
Gord Wylie	Chard Development
Hani Lammam	Cressey Development
Harvey Burritt	Burritt Bros.
Jamie Vaughan	Onni
Janine de la Salle	Vancouver Food Bank
Keith Donegani	Burrit Bros.
Laura Cassin	Discovery Parks
Louise Schwarz	Recycling Alternative
Martin Hogan	Stemcell
Maureen Cureton	Vancity
Mike Blomkamp	PCI Group
Rob Baxter	Vancouver Renewable Energy
Ronan Pigott	JLL
Sarb Mund	Commissary Connect
Steve Hall	FX/GX
Tim Clark	Habitat for Humanity
Tori Holmes	Nectar Juicery

GREEN ECONOMY –INTERNAL ADVISORS – 2015-2020 STRATEGY	
Brian Beck	Engineering Services
Bryan Buggey	Vancouver Economic Commission
Christiaan Iacoe	Engineering Services
Doug Smith	Sustainability Group
Jessie Adcock	Digital Services
John McPherson	Vancouver Economic Commission
Juvarya Veltkamp	Vancouver Economic Commission
Peter Leathley	Digital Services
Pietra Basilij	Vancouver Economic Commission
Rachael Carroll	Supply Chain Management
Wendy Mendes	Social Policy Division

GREEN ECONOMY – TARGET 1 - EXTERNAL ADVISORS – 2011-2014 STRATEGY	
Bob Ingratta	LifeSciences BC
Brian Smith	Building Opportunities with Business
Gil Yaron	Light House Sustainable Building Centre
Heather Tremain	reSource Rethinking Building
Helen Goodland	Light House Sustainable Building Centre
James Tansey	University of British Columbia
Jennie Moore	BC Institute of Technology
John Lerner	EMBERS
Lee Loftus	BC & Yukon Construction Trades Council
Linda Nowlan	Environmental Lawyer & Consultant
Linda Oglov	Oglov Business Development
Lori Law	National Research Council -IRAP

Marcia Nozick	EMBERS
Mark Holland	HB Lanarc
Maureen Cureton	Vancity
Michael Heeney	Bing Thom Architects
Pascal Spothelfer	BC Technology Industry Association
Paul Austin	Sustainable Development Technology Canada
Paul Shorthouse	Globe Foundation
Richard Hallman	BC Innovation Council
Robin Hemmingsen	BC Institute of Technology
Sean Markey	Simon Fraser University
Shirley Chan	Building Opportunities with Business
Wal van Lierop	Chrysalix
Walter Wardrop	National Research Council -IRAP
Wayne Peppard	BC & Yukon Construction Trades Council

GREEN ECONOMY – TARGET 2 EXTERNAL ADVISORS – 2011-2014 STRATEGY	
Bernie Magnan	Board of Trade
Catherine Chick	Business Development Bank of Canada
Charles Gauthier	Downtown Vancouver BIA
Christy Intihar	BC Hydro PowerSmart
Elizabeth Sheehan	Climate Smart
Gordon Hardwick	BC Film Commission
Joy Beauchamp	BC Government LiveSmart
Lorina Keery	BOMA BC
Maureen Cureton	Vancity
Michael Krafczyk	Translink
Sophie Agbonkhese	Strathcona BIA
Walt Judas	Tourism Vancouver
Wes Regan	Hastings Crossing BIA

GREEN ECONOMY – INTERNAL ADVISORS – 2011-2014 STRATEGY	
Abhijeet Jagtap	UBC Greenest City Scholar
Bryan Buggey	Vancouver Economic Commission
Chris Clibbon	Planning and Development Services
John McPherson	Vancouver Economic Commission
John Tylee (Chair)	Vancouver Economic Commission
Jonathan Kassian	Vancouver Economic Commission
Juvarya Warsi (Staff Lead)	Vancouver Economic Commission
Kira Gerwing	Planning and Development Services
Lee Malleau	Vancouver Economic Commission
Nouri Najjar	UBC Greenest City Scholar
Peter Vaisbord	Community Services

GREEN ECONOMY - PARTNERSHIP ROLES

The VEC works with multiple partners to achieve its goals.

ACTION 9.1 – CLEAN TECH ACCELERATOR PARTNERS
City of Vancouver Real Estate & Facilities Management
Vancity Community Foundation
Foresight Cleantech Accelerator
BC Innovation Council
Clean tech start-ups and entrepreneurs

ACTION 9.2 – GREEN AND DIGITAL DEMONSTRATION PROGRAM PARTNERS
City of Vancouver asset owners (Real Estate & Facilities Management, Engineering, Park Board, IT, etc)
City of Vancouver Sustainability Group
Sustainable Development Technologies Canada
Clean tech start-ups and entrepreneurs

ACTION 9.3 – FALSE CREEK FLAT PARTNERS
City of Vancouver Planning & Development
City of Vancouver Real Estate & Facilities Management
City of Vancouver Engineering (Strategic Transportation Planning Branch)
City of Vancouver Sustainability Group
City of Vancouver Social Policy
CityStudio
Habitat for Humanity
Museum of Vancouver
Maker Labs
Projects in Place Society
Viva Vancouver
False Creek Flats businesses
False Creek Flats land and/or building owners

ACTION 9.4 - VANCOUVER CAPITAL ATTRACTION INITIATIVE (VCAI) PARTNERS
Canada's Department of Foreign Affairs, Trade & Development
BC's Ministry of International Trade
Variety of business leaders in the financial services sectors yet to be determined

ACTION 9.5 - BUSINESS MISSION PARTNERS
City of Vancouver's Mayor's Office
BC's Ministry of International Trade
Canada's Department of Foreign Affairs, Trade & Development
Consider Canada Cities Alliance
Sustainable Development Technologies Canada
United Kingdom Trade & Investment and other Trade & Investment agencies from around the world including China, USA, Belgium, France, Germany and more.
Industry Trade Associations such as the BC Technologies Industry Assoc.
Vancouver businesses

ACTION 9.6 – GREENING BUSINESS PLATFORM PARTNERS

City of Vancouver Sustainability Group
Promotional partners (e.g. Tourism Vancouver; Business Improvement Associations; other Industry Associations)
Sustainability service providers aka 'Green Advisors'
Contributors of user generated content TBD (e.g. green advisors, green suppliers, City of Vancouver green program managers)
Sponsors and/or funders TBD (e.g. Telus, BC Hydro, Metro Vancouver)
Media partners (e.g. Business in Vancouver)
Vancouver businesses

GOAL 10 — LIGHTER FOOTPRINT

LIGHTER FOOTPRINT - CONSULTATION PROCESS (2015-2020)

The Lighter Footprint External Advisory Committee was asked to provide direction on 2015-2020 priorities by focusing on the top five areas for action for reducing the ecological footprint, and addressing gaps not covered by the other goal areas. They met four times with the City and two additional times outside of City staff coordination to formulate recommendations to the City. This committee evolved into the Feet to the Fire Committee.

To assist with planning, the committee developed a theory of change and ranked various tools for respective importance. Regulation and policy were deemed the most important for systemic change, followed by infrastructure and programs, and then incentive/disincentives applied to enact the system changes. The committee then prioritized the actions by focusing on the top areas for action and some guiding principles.

The committee indicated the crucial importance of continuing to strive towards measuring the city's actual ecological footprint, rather than continuing to rely solely on the proxy measurement of number of people empowered. Unfortunately, any efforts to measure and see shifts in the ecological footprint will be challenging until local food metabolism data is available.

The committee identified a number of actions, some in which the City could play a lead role and others where the community would lead. These community-led actions include measuring ecological footprint and leading cultural interventions.

LIGHTER FOOTPRINT – EXTERNAL ADVISORS – 2015-2018 STRATEGY	
Bill Rees	One Earth/University of British Columbia
Chris Diplock	Ponder Research
Emmanuel Prinet	Consultant
James Boothroyd	Boothroyd Communications
Janet Moore	CityStudio
Jennie Moore	BC Institute of Technology
Kevin Millsip	Consultant
Paula Leyton	Project Green Bloc
Rosemary Cooper	One Earth
Ruben Anderson	Consultant

Vanessa Timmer	One Earth

LIGHTER FOOTPRINT – INTERNAL ADVISORS – 2015-2018 STRATEGY	
Amy Fournier	Sustainability Group
Becky Till	Vancouver Parks Board
Desiree Baron	Vancouver Public Library
Doug Smith	Sustainability Group
James O'Neil	Social Policy Division
Jennifer Wahl	Sustainability Group
Keltie Craig	Sustainability Group
Leslie Ng (Staff lead)	Sustainability Group
Lindsay Cole	Vancouver Park Board

LIGHTER FOOTPRINT – EXTERNAL ADVISORS – 2011-2014 STRATEGY	
Aftab Erfan	Deep Democracy
Alex Lau	Golden Properties
Bill Rees	One Earth/University of British Columbia
Emmanuel Prinet	One Earth
James Boothroyd	David Suzuki Foundation
Janet Moore	SFU -Semester in Dialogue
Jason Mogus	Communicopia
Jennie Moore	CityStudio
Kevin Millsip	Vancouver School Board
Meg Holden	Simon Fraser University
Nancy McHarg	Hoggan and Associates
Ruben Anderson	Metro Vancouver
Susanna Haas Lyons	UBC Greenest City Conversations Project
Vanessa Timmer	One Earth

LIGHTER FOOTPRINT – INTERNAL ADVISORS – 2011-2014 STRATEGY	
Amy Fournier	Sustainability Group
Andrew Pask	Social Policy Division
Avery Titchkosky	UBC Greenest City Scholar
Baldwin Wong	Social Policy Division
Barb Floden	Communications, Vancouver Park Board
Brenda Prosken	Community Services
Colin Fenby	Corporate Communications
Cornelia Sussmann	UBC Greenest City Scholar
Daphne Wood	Vancouver Public Library
Jennifer Bailey	Engineering Services
Joseph Li	Corporate Communications
Joyce Uyesugi	Planning and Development Services
Laurie Best	Web Redevelopment Project
Lindsay Cole (Staff Lead)	Sustainability Group
Maggie Wang	UBC Greenest City Scholar

Mairi Welman (Chair)	Corporate Communications
Nancy Eng	Corporate Communications
Paul Henderson	Engineering Services
Polly Ng	UBC Greenest City Scholar
Sean Pander	Sustainability Group

LIGHTER FOOTPRINT - PARTNERSHIP ROLES

The City has little control over the areas that impact resident's ecological footprints, and as such partnerships are key. The Vancouver Foundation and CityStudio are key partnerships that have been established to work toward this goal. Further identification of lead partners is anticipated to develop as the new actions are implemented.

While additional organizations are not explicitly identified here, we anticipate continuing to work with organizations that are already leading good work to educate and empower residents to take action, as well as reaching out to new organizations.

APPENDIX 4: GREENEST CITY ACTION PLAN REFRESH SURVEY RESULTS

Note: Only Greenest City related survey results are included in this appendix. Survey results related the renewable energy strategy (2050) and the Trans Mountain Pipeline Project have been excluded.

Survey Results
September 2015

Executive Summary

Background

- In 2010 Vancouver set a goal to be the greenest city in the world by 2020. The Greenest City 2020 Action Plan (GCAP) includes 10 goals and 15 measurable targets to get there.

- Of the initial actions outlined in the plan, 80% are now complete. The City is now setting priority actions for 2015-2020 based on the consultation conducted in 2010 and ongoing dialogue with internal and external advisors.

- Being the Greenest City doesn't stop in 2020. The City has committed to transforming itself into a city powered completely by renewable energy by 2050. To achieve this, the City is establishing high level priorities to guide Vancouver's path to a renewable future by 2050. The two new 2050 targets are:
  - Derive 100% of the energy used in Vancouver from renewable sources.
  - Reduce greenhouse gas emissions 80% over 2007 levels.

- In the summer of 2015, the City of Vancouver launched the Bright Green Summer, a celebration of reaching the halfway point in the Greenest City Action Plan, and its new commitment to being a renewable city by 2050. The public was invited to take part in events, tell their stories and engage in discussions about the road ahead.

- As part of the Bright Green Summer, the GCAP Refresh Survey was launched, collecting public feedback on the next phase of the Greenest City Action Plan, and the Renewable City Strategy currently under development.

Consultation Overview

Survey Implementation

- The GCAP Refresh Survey ran from to June 15 to September 7, 2015 and was administered online using the City's public engagement platform, Talk Vancouver.
- The survey was promoted through the Bright Green Summer in-person engagement events, Greenest City Newsletter, City of Vancouver website and the City's Facebook and Twitter accounts.
- A total of 854 respondents completed the survey, and the survey could be accessed in the following ways:
  - Open invitation to the general public via the Bright Green Summer project page and other Greenest City Action Plan pages on the City of Vancouver website;
  - Email invitation sent to Talk Vancouver panel members; and,
  - Through the Greenest City Newsletter

Who did we hear from?

- Equal proportions of men and women completed the survey.
- The majority of respondents were young adults or middle aged, with the largest proportion being 40 to 59 years old (42%).
  - Similar numbers of those 20 to 29 years (29%) and 60 to 79 (27%) years of age completed the survey.
- Respondents came from all across the City, although the Southern portion of the City was less represented (11% to 19%), relative to those living Downtown, or in the Northwest and Northeast areas of the City (21% to 25%).

Consultation Overview cont.

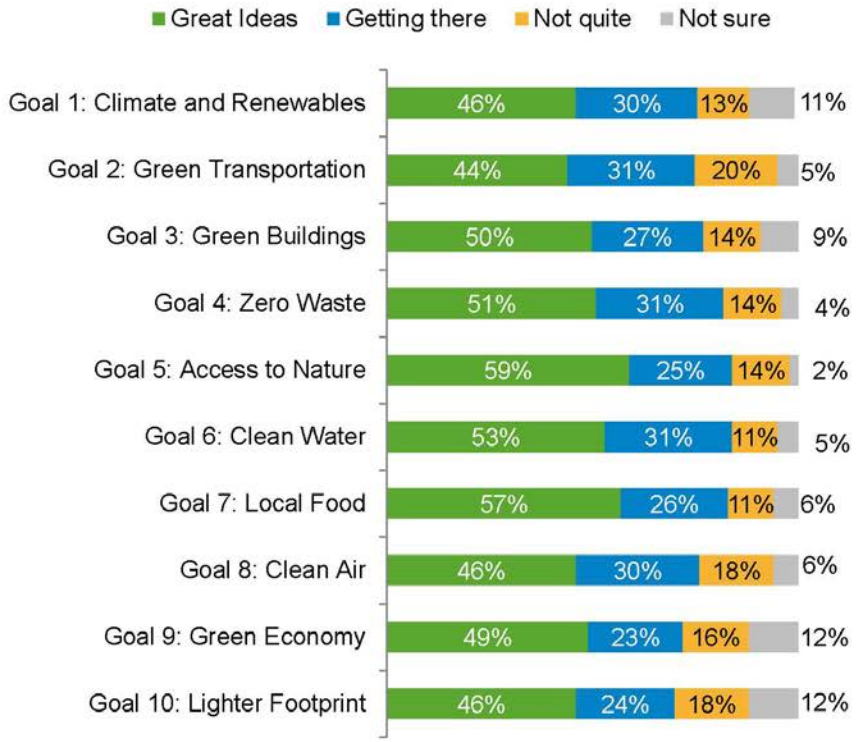
What did we hear about?

- Respondents could choose which 10 GCAP Goals Areas, or four 2050 Renewable City Priority Areas they commented on. The total number of respondents who completed each of these areas is as follows:
  - GCAP Goal Area
    - Goal 1: Climate and Renewables - 536
    - Goal 2: Green Transportation - 661
    - Goal 3: Green Buildings - 496
    - Goal 4: Zero Waste - 552
    - Goal 5: Access to Nature - 546
    - Goal 6: Clean Water - 514
    - Goal 7: Local Food - 551
    - Goal 8: Clean Air - 513
    - Goal 9: Green Economy - 447
    - Goal 10: Lighter Footprint – 471

  - 2050 Renewable City Priority Areas
    - Climate and Renewables – 469
    - Green Transportation - 602
    - Green Buildings - 452
    - Zero Waste - 451

Perceptions of Short Term Actions by Goal Area

- Respondents are very supportive of the 2015 to 2020 actions which are part of the Greenest City Action Plan. Across the goal areas, between 70% and 84% of respondents like the City's direction.
- The 2015 to 2020 actions associated with Goal 5: Access to Nature, Goal 7: Local Food and Goal 6: Clean Water, particularly resonate with respondents - 59%, 57% and 53% respectively, thought the ideas were great.



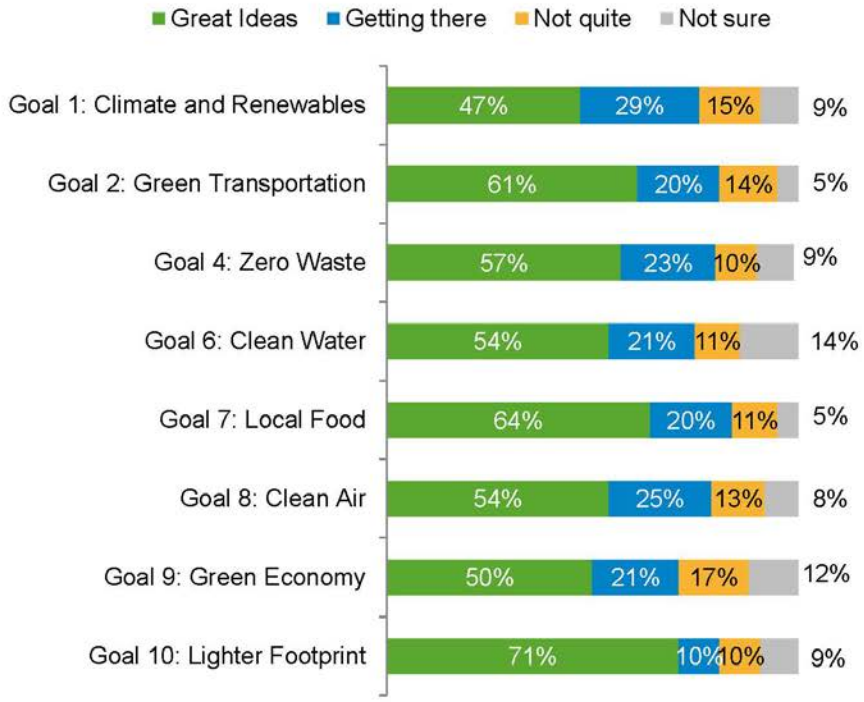
Base: varies
What do you think of this suite of 2015-2020 actions? (For each goal area and associated actions)

GCAP Refresh Survey Results (September 2015)

6

Perceptions of Advocacy Priorities by Goal Area*

- Respondents are similarly supportive of the advocacy priorities identified as part of the Greenest City Action Plan. Across goal areas between 75% and 84% of respondents like the City's direction.
- For Goal 10: Lighter Footprint, the reactions to the advocacy priority was particularly positive, with 71% saying they thought the priority was "a great idea".

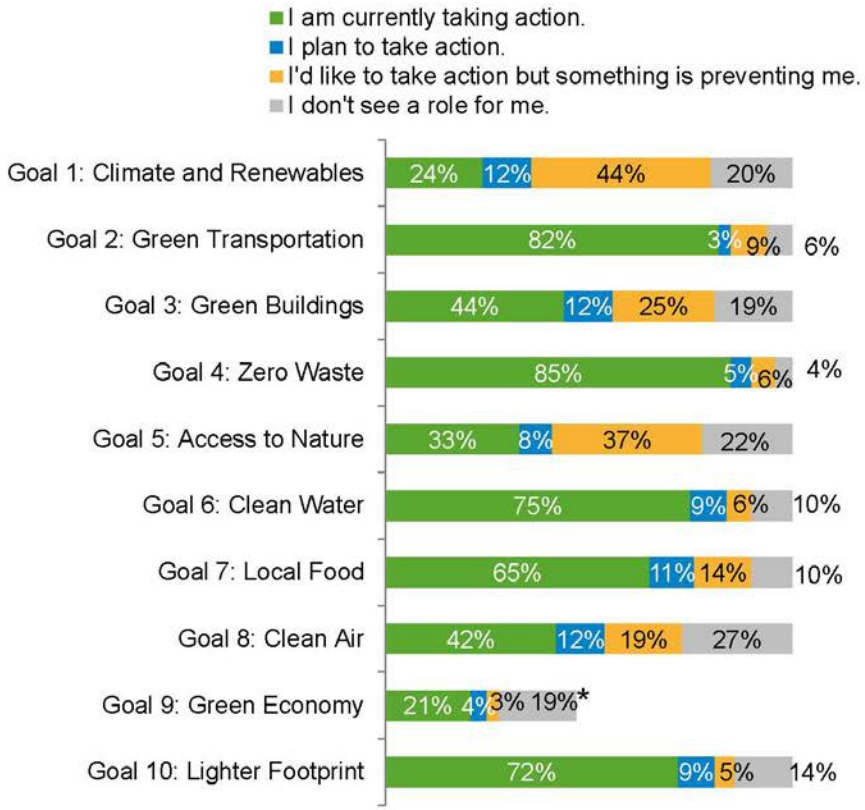


Base = varies
What do you think of this advocacy priority/suite of advocacy priorities?

**Advocacy priorities not applicable for Goal 3: Green Buildings and Goal 5: Access to Nature*

Citizen Action by Goal Area

- The actions being taken by citizens varied widely by goal area.
- Citizen action is most prevalent in Zero Waste (85%), Green Transportation (82%) and Clean Water (75%).



Base = varies

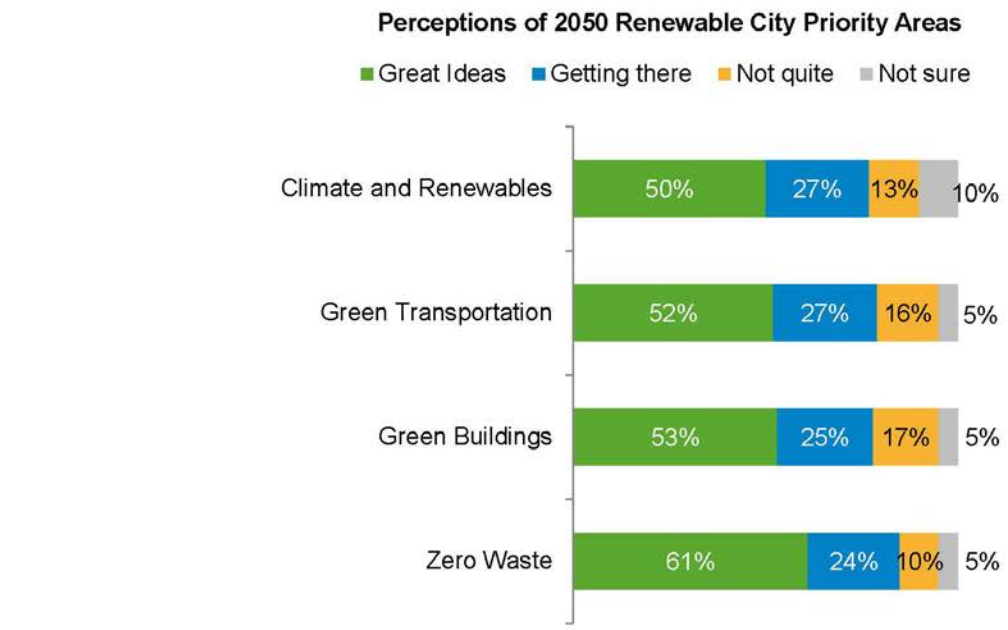
Which of the following statements best applies to you with regards to (Goal Area)?

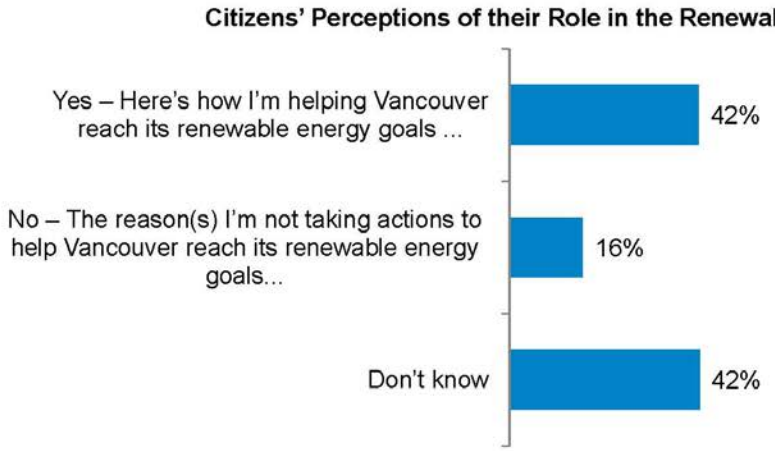
**For Goal 9: Green Economy, 53% of respondents chose "I am not a business owner".*

GCAP Refresh Survey Results (September 2015)

8

Perceptions of the Renewable City





Base = varies

What do you think of this suite of long-term priorities?

Do you see a role for yourself in contributing to Vancouver's renewable energy future?

GCAP Refresh Survey Results (September 2015)

9

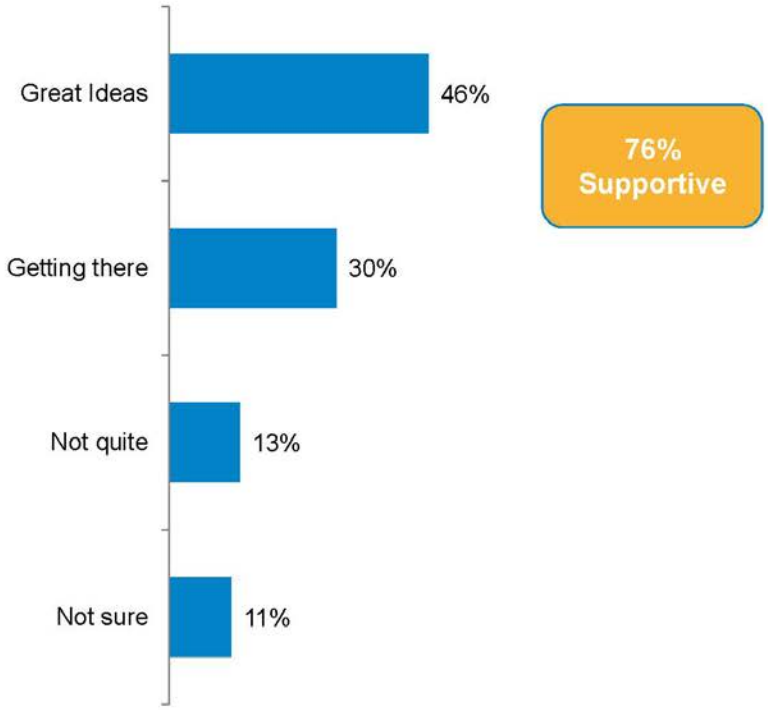

DETAILED QUESTIONNAIRE
RESULTS


GOAL 1: CLIMATE AND
RENEWABLES

Goal 1: Climate and Renewables – Perceptions of Short Term Actions

2015-2020 Short Term Actions for Goal 1: Climate and Renewables

- Work to convert two existing district-scale energy systems to renewable energy.
- Develop four new neighbourhood energy systems.
- Develop and begin implementing a renewable city strategy.



Base: 536
What do you think of this suite of 2015-2020 actions?

GCAP Refresh Survey Results (September 2015)

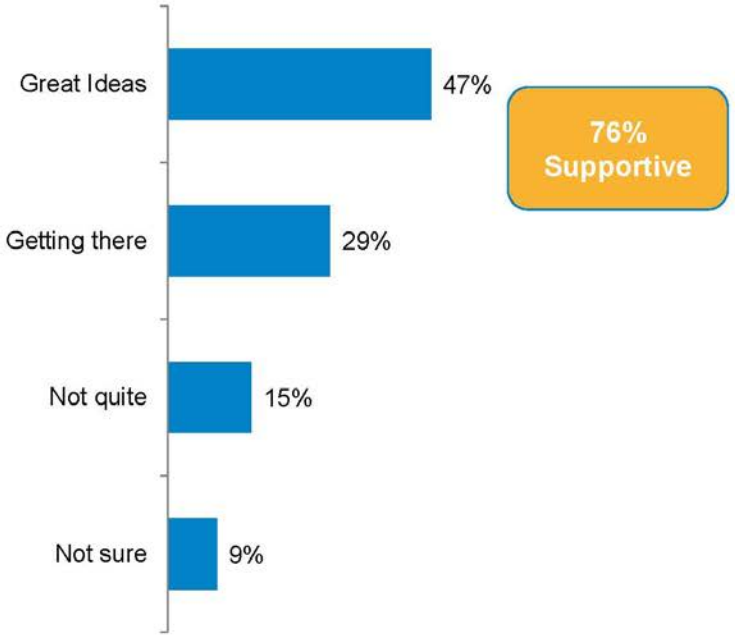
13

Goal 1: Climate and Renewables - Perceptions of Advocacy Priorities

Advocacy Priorities for Goal 1: Climate and Renewables

The City plans to advocate:

- For the Provincial government to continue and improve the Carbon Tax
- For the Provincial government to continue commitment to the Greenhouse Gas Reductions Target Act
- For the Provincial government to continue and strengthen the Renewable and Low Carbon Fuel Standard
- For a regional Climate Action Fund



Base: 536

What do you think of this suite of advocacy priorities?

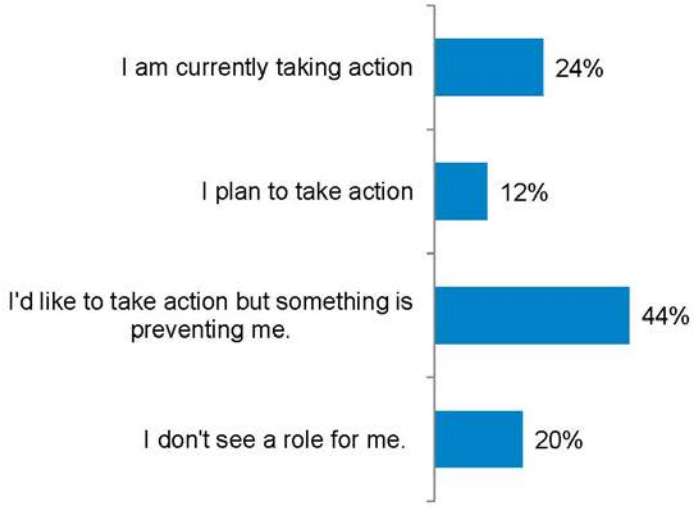
GCAP Refresh Survey Results (September 2015)

14

Goal 1: Climate and Renewables – Citizen Action

Citizen Actions Related to Goal 1: Climate and Renewables

- Actions like buying clean power and installing solar panels will help Vancouver to reach its Climate and Renewables targets.
- Which of the following statements best applies to you with regards to Climate and Renewables?

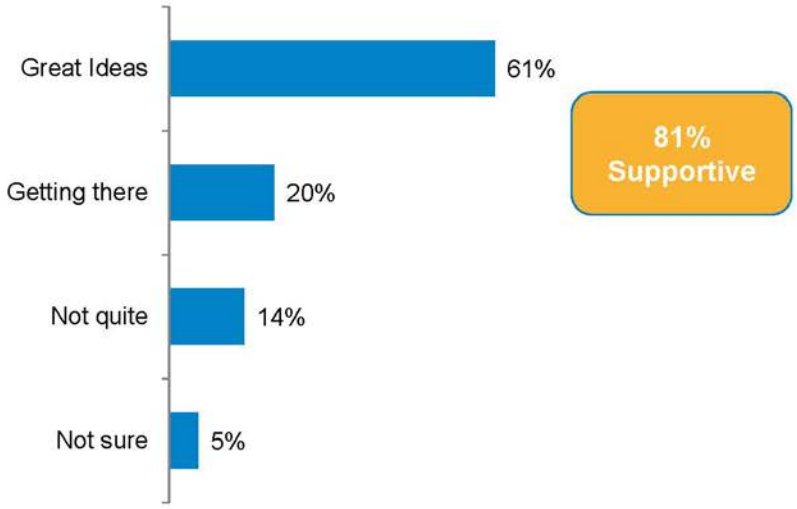


Base = 536

Goal 2: - Green Transportation Perceptions of Advocacy Priorities

Advocacy Priority for Goal 2: Green Transportation

- Continue to advocate to the provincial and federal government for transit improvements.



Base: 661
What do you think of this advocacy priority?

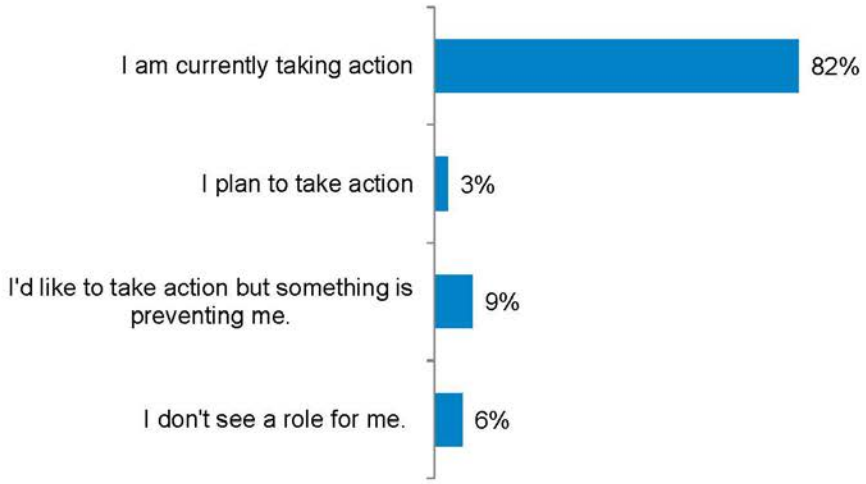
GCAP Refresh Survey Results (September 2015)

17

Goal 2:– Green Transportation Citizen Action

Citizen Actions Related to Goal 2: Green Transportation

- Making more trips on foot, bike or transit will help the City to reach its Green Transportation targets.
- Which of the following statements best applies to you with regards to Green Transportation?



Base = 661

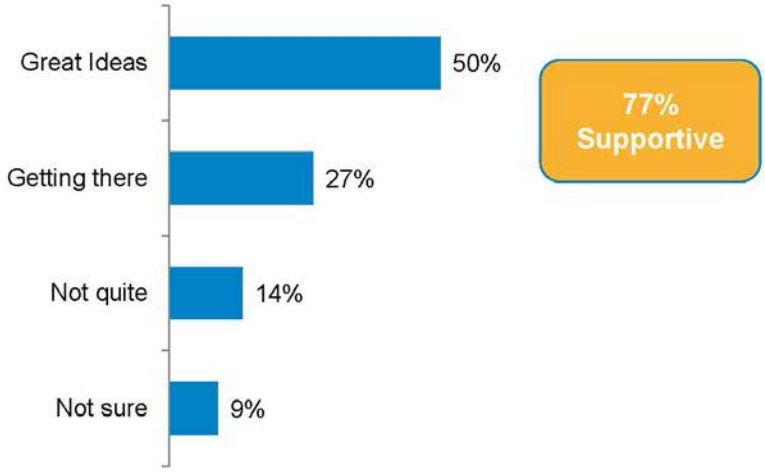
GCAP Refresh Survey Results (September 2015)

18

Goal 3:– Green Buildings
Perceptions of Short Term Actions

2015-2020 Short Term Actions for Goal 3: Green Buildings

- Update the retrofit requirement options in Vancouver's Building By-Law to further reduce energy use and greenhouse gas emissions.
- Launch a Green Condominium Program and expand the Green Landlord Program.
- Launch a Home Energy Efficiency Empowerment Program and a Home Energy Technology Program.
- Require annual energy benchmarking and reporting for large residential and commercial buildings.
- Launch a program for green industry partners
- Develop a Carbon-Neutral Buildings Strategy.
- Restructure the City's Green Building Rezoning Policies to specifically target GHG emission reductions and introduce GHG emission targets for new buildings. Update minimum energy efficiency requirements for new buildings in the Vancouver Building By-Law.



Base: 496
What do you think of this suite of 2015-2020 actions?

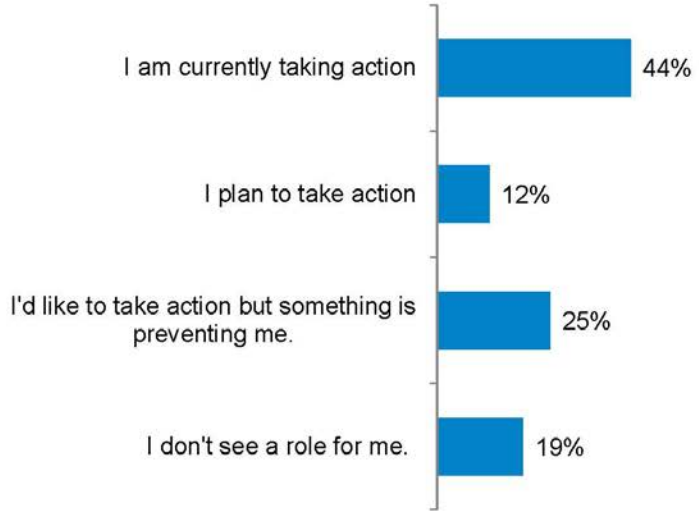
GCAP Refresh Survey Results (September 2015)

19

Goal 3:– Green Buildings Citizen Action

Citizen Actions Related to Goal 3 :Green Buildings

- Improving the energy efficiency at home or work will help the City to reach its Green Building target.
- Which of the following statements best applies to you with regards to Green Buildings?

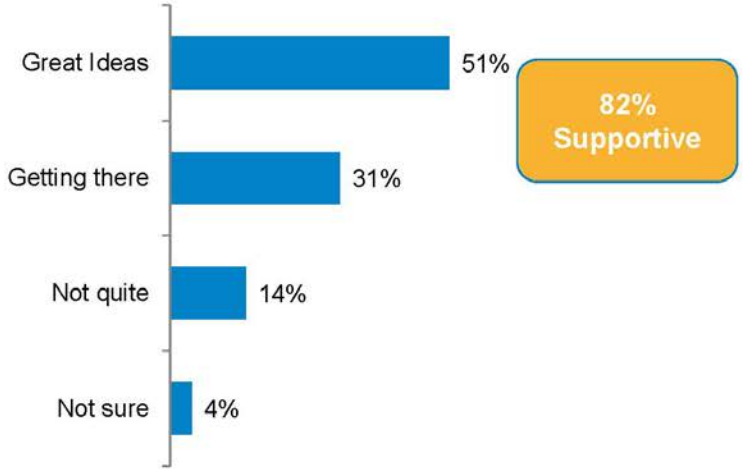


Base = 496

Goal 4: Zero Waste - Perceptions of Short Term Actions

2015-2020 Short Term Actions for Goal 4: Zero Waste

- Increase overall diversion of organics by continuing to support the expansion of food scraps recycling to all sectors and support Metro Vancouver's 2015 disposal ban on organic materials to landfill and incinerator through education and enforcement.
- Increase the diversion of wood waste from landfill or incineration by implementing the Construction and Demolition (C&D) Waste Diversion Strategy to increase reuse and recycling of C&D waste.
- Reduce street litter and abandoned garbage in public spaces, including illegal dumping, and increase the diversion of these materials by implementing a comprehensive litter management strategy including an expanded Keep Vancouver Spectacular program.
- Support Metro Vancouver's Zero Waste Challenge through the development of education and enforcement strategies for all sectors, with a focus on waste prevention, and material reuse initiatives.



Base: 552
What do you think of this suite of 2015-2020 actions?

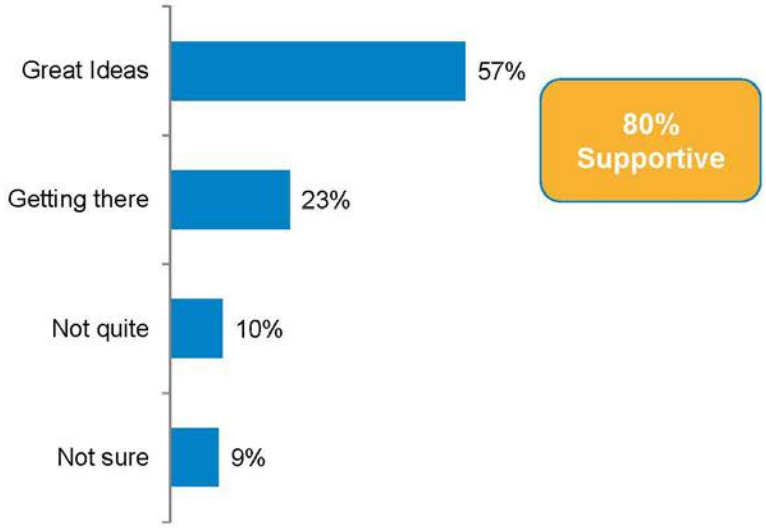
GCAP Refresh Survey Results (September 2015)

21

Goal 4: Zero Waste - Perceptions of Advocacy Priorities

Advocacy Priority for Goal 4: Zero Waste

- Continue advocacy of Extended Producer Responsibility (EPR) recycling programs to the Provincial Government in accordance with the Canada-wide Action Plan for EPR, with specific focus on carpet, textiles, and furniture.



Base: 552
What do you think of this advocacy priority?

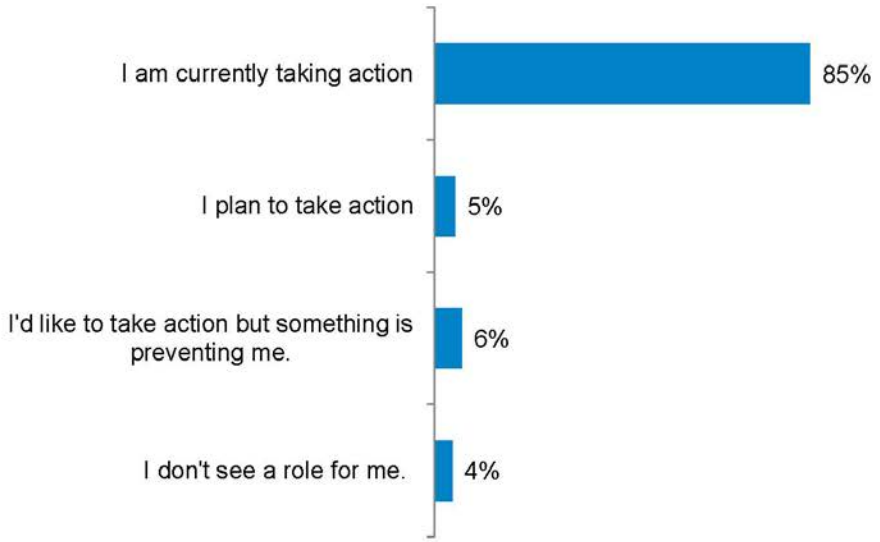
GCAP Refresh Survey Results (September 2015)

22

Goal 4: Zero Waste – Citizen Action

Citizen Actions Related to Goal 4: Zero Waste

- Reducing, reusing and recycling even more than current levels will help the City to reach its Zero Waste target.
- Which of the following statements best applies to you with regards to zero waste?

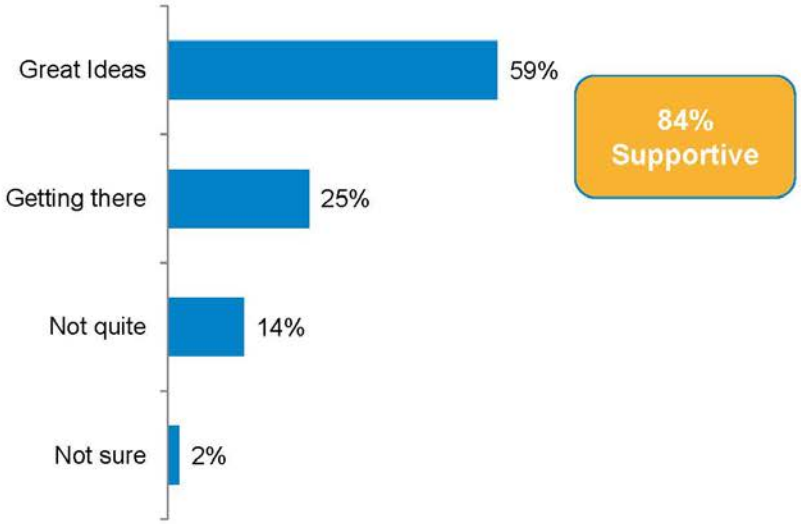


Base = 552

Goal 5: Access to Nature – Perceptions of Short Term Actions

2015-2020 Short Term Actions for Goal 5: Access to Nature

- Complete the new park at Yukon Street and 17th Avenue.
- Acquire 4 hectares of park land at Cambie and the Fraser River.
- Realize a new ~10 hectare park system in East Fraserlands.
- Strategically expand private property, street and park tree planting.
- Create a new inventory system for trees on City land.
- Develop policies and decision-making criteria to retain more healthy, mature trees.
- Update tree management plans, planting standards and best practices.



Base: 546
What do you think of this suite of 2015-2020 actions?

GCAP Refresh Survey Results (September 2015)

24

Goal 5: Access to Nature – Citizen Action

Citizen Actions Related to Goal 5: Access to Nature

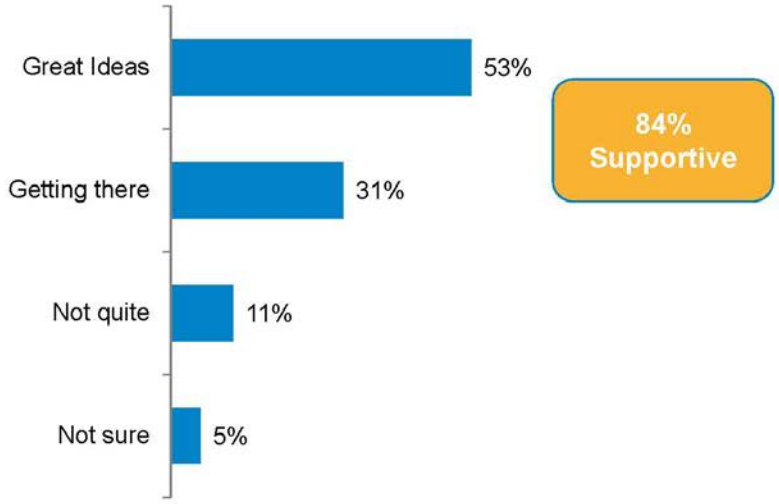
- Planting more trees on private property will help Vancouver grow its urban forest by 150,000 trees.
- Which of the following statements best applies to you with regards to Access to Nature?

Base = 546

Goal 6: Clean Water – Perceptions of Short Term Actions

2015-2020 Short Term Actions for Goal 6: Clean Water

- Improve routine testing program of distribution system to include drinking water fountains to maintain a high standard of drinking water throughout the city.
- Reduce institutional, commercial and industrial (ICI) water consumption through policy and compliance measures.
- Reduce residential water consumption through incentives, education and compliance measures.
- Reduce water system loss and civic use.



Base: 514
What do you think of this suite of 2015-2020 actions?

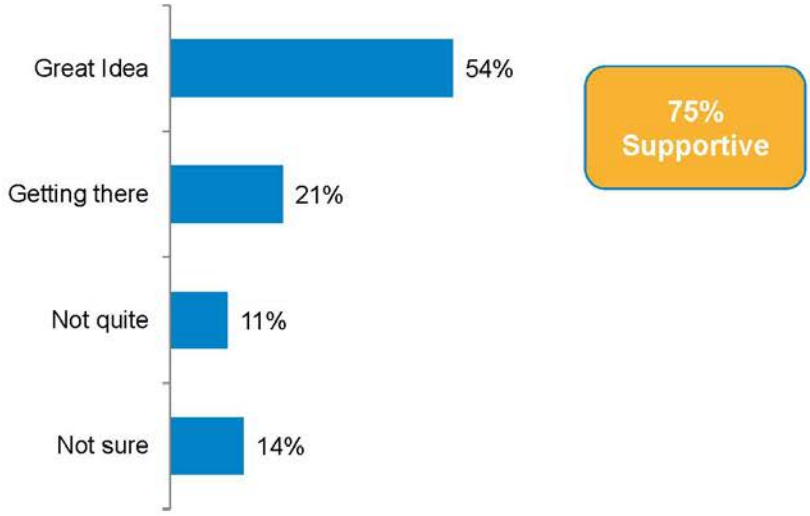
GCAP Refresh Survey Results (September 2015)

26

Goal 6: Clean Water - Perceptions of Advocacy Priorities

Advocacy Priority for Goal 6: Clean Water

- Continue to advocate to the provincial government for the authority to require annual energy benchmarking, including water.



Base: 514
What do you think of this advocacy priority?

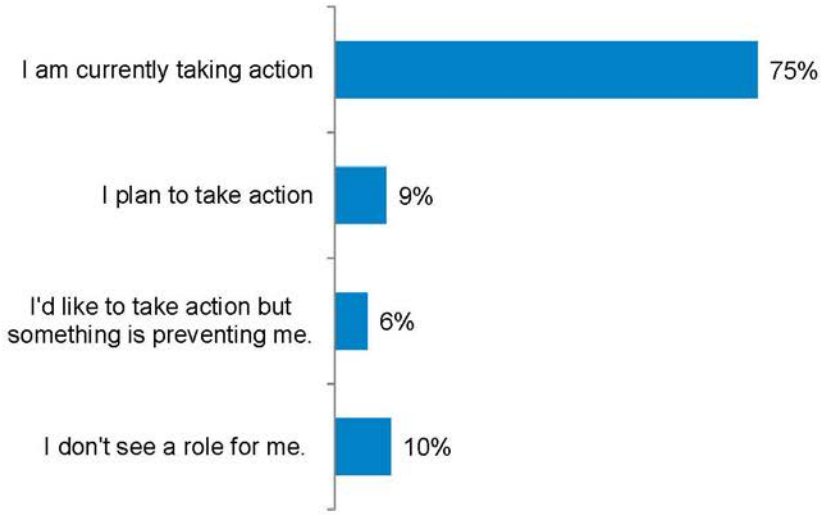
GCAP Refresh Survey Results (September 2015)

27

Goal 6: Clean Water – Citizen Action

Citizen Actions Related to Goal 6: Citizen Activity

- Having residents conserve water will help the City reach its Clean Water target.
- Which of the following statements best applies to you with regards to Clean Water?



Base = 514

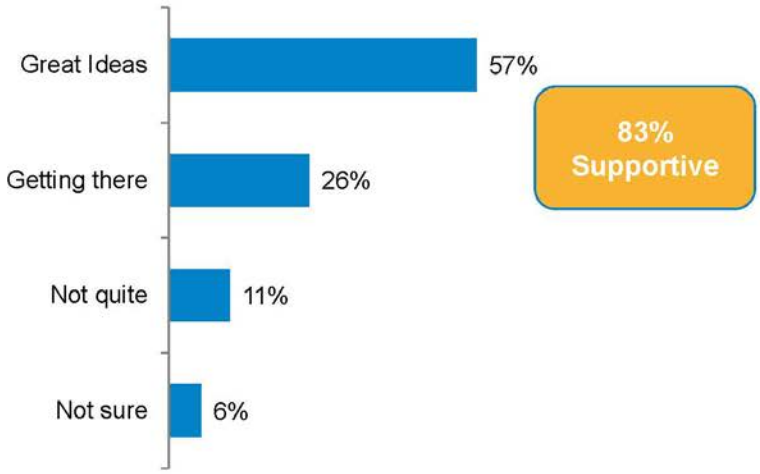
GCAP Refresh Survey Results (September 2015)

28

Goal 7: Local Food – Perceptions of Short Term Actions

2015-2020 Short Term Actions for Goal 7: Local Food

- Adopt and implement urban farming policy to further enable commercial food production in the city and increase the number of urban farming businesses from 18 to 35.
- Increase the number of farmers markets from 11 to 22 and community food markets from 14 to 20.
- Increase number of community garden plots from 4,423 to 5,500 and community kitchens from 69 to 80 with particular emphasis on encouraging broader participation by ethno-cultural groups.
- Support the Food Bank in their relocation to a new facility and incorporate components of a food hub as envisioned in the Vancouver Food Strategy.



Base: 551
What do you think of this suite of 2015-2020 actions?

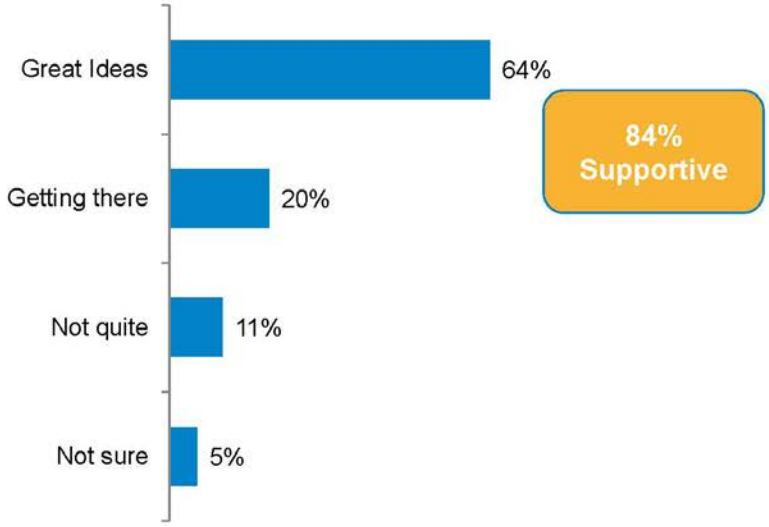
GCAP Refresh Survey Results (September 2015)

29

Goal 7: Local Food - Perceptions of Advocacy Priorities

Advocacy Priorities for Goal 7: Local Food

- Preservation and enhancement of Agricultural Land Reserve to protect sustainable food production and support local economic development.
- The creation of a comprehensive anti-poverty program that brings attention to the links between food, health and income.

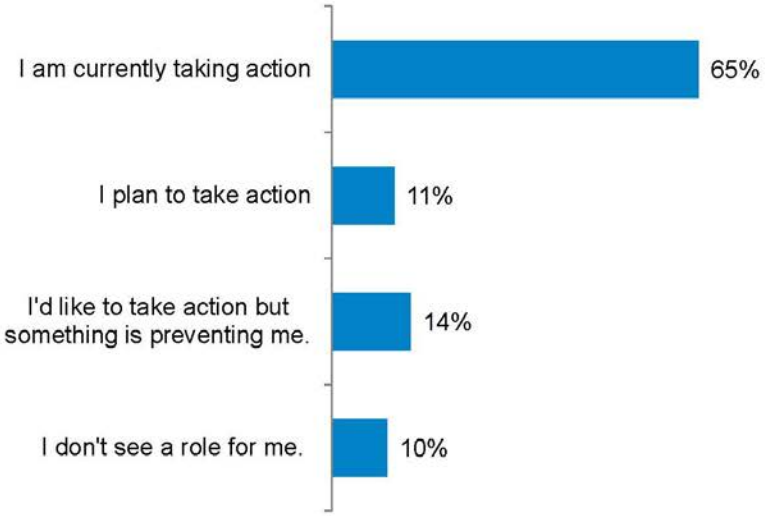


Base = 551
What do you think of this suite of advocacy priorities?

Goal 7: Local Food – Citizen Action

Citizen Actions Related to Goal 7: Local Food

- Gardening and/or supporting local farmers will help the City reach its Local Food target.
- Which of the following statements best applies to you with regards to Local Food?



Base = 551

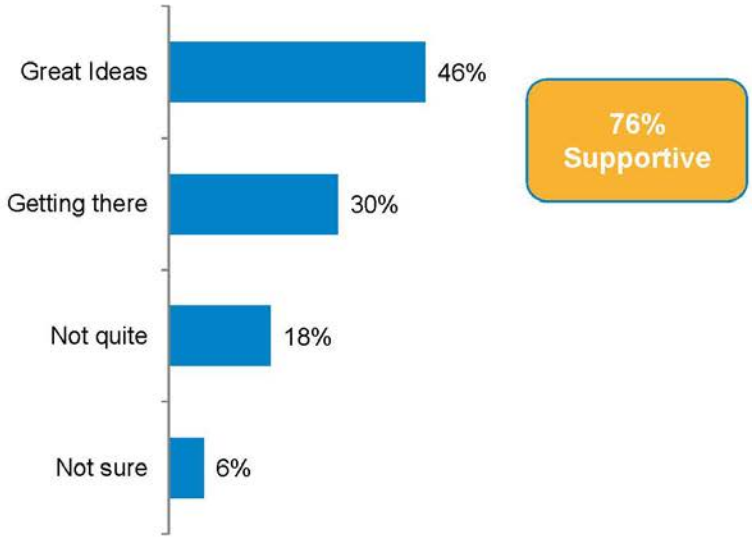
GCAP Refresh Survey Results (September 2015)

31

Goal 8: Clean Air – Perceptions of Short Term Actions

2015-2020 Short Term Actions for Goal 8: Clean Air

- Commit to ensuring there are at least two permanent air quality stations within City limits.
- Develop an electric vehicle (EV) infrastructure strategy to support EV uptake.
- Investigate labeling gas pumps for their GHG and air quality impacts.
- Work with Metro Vancouver to ensure air quality data and information is available for sources and locations across the city.



Base: 513
What do you think of this suite of 2015-2020 actions?

GCAP Refresh Survey Results (September 2015)

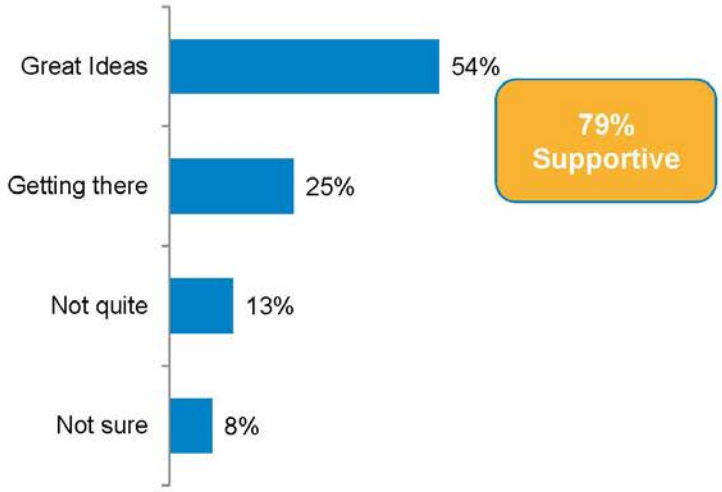
32

Goal 8: Clean Air - Perceptions of Advocacy Priorities

Advocacy Priorities for Goal 8: Clean Air

Continue to advocate for:

- The Provincial Government to make changes to the Utilities Commission Act to enable the resale of electricity for electric vehicle use
- The Provincial Government to make tougher in-use diesel engine standards
- Metro Vancouver and the Federal Government to set tougher Sulphur Dioxide objectives



Base = 513
What do you think of this suite of advocacy priorities?

Goal 8: Clean Air – Citizen Action

Citizen Action Related to Goal 8: Clean Air

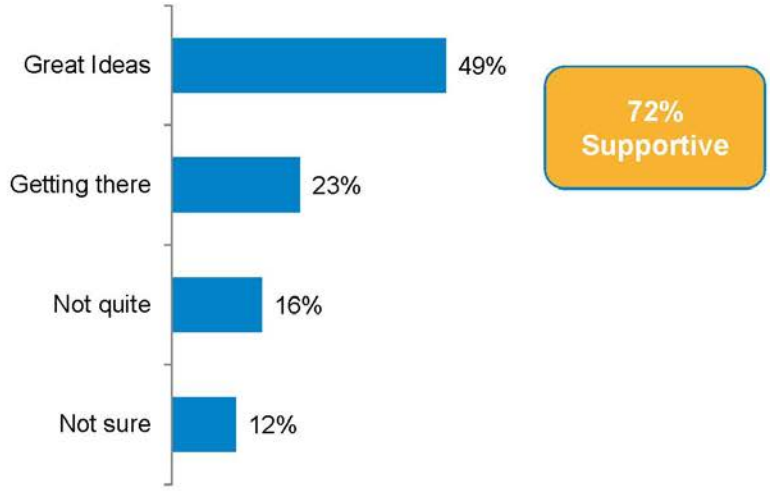
- Actions like switching to electric vehicles or replacing any domestic wood burning appliances will help Vancouver to reach its Clean Air target.
- Which of the following statements best applies to you with regards to Clean Air?

Base = 513

Goal 9: Green Economy – Perceptions of Short Term Actions

2015-2020 Short Term Actions for Goal 9: Green Economy

- Launch a cleantech accelerator.
- Implement the Green & Digital Demonstration Program.
- Help transform the False Creek Flats into the greenest place to work in the world.
- Develop a strategy and action plan to attract green investment capital.
- Organize and host targeted business trade missions (inbound and outbound) and leverage large conferences and events (local and global)
- Develop, launch and maintain a greening businesses platform.



Base: 477
What do you think of this suite of 2015-2020 actions?

GCAP Refresh Survey Results (September 2015)

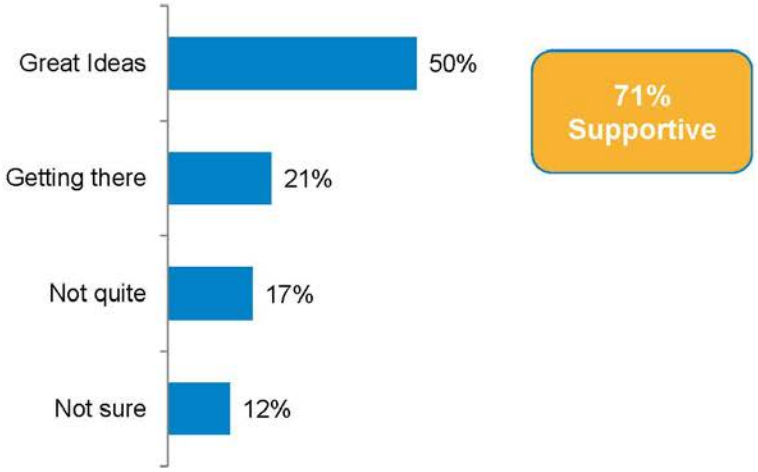
35

Goal 9: Green Economy - Perceptions of Advocacy Priorities

Advocacy Priorities for Goal 9: Green Economy

Continue to advocate:

- To Metro Vancouver for supportive land use planning and solutions-based, outcome-oriented, codes at the regional level.
- For a national and North American carbon tax.
- To the provincial government to return the Integrated Clean Energy (ICE) fund, or equivalent, to target innovation in the green sectors.
- To the federal government for flexible immigration policies that attract well educated green talent and entrepreneurs from around the world, and for programs that continue to make Vancouver one of the most immigrant-friendly cities in the world.
- To the federal government for federal climate change policy.



Base = 477
What do you think of this suite of advocacy priorities?

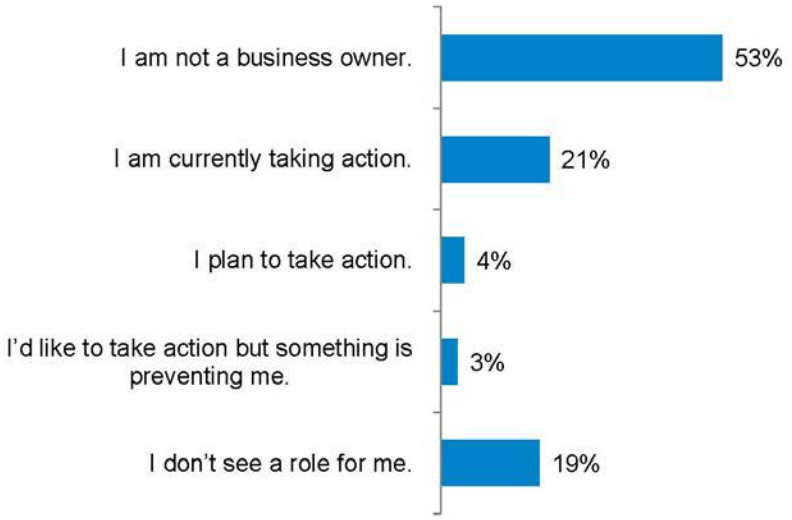
GCAP Refresh Survey Results (September 2015)

36

Goal 9: Green Economy – Citizen Action

Citizen Action Related to Goal 9: Green Economy

- Having more businesses green their operations (i.e. conserve water and energy, convert fleets, reduce waste, etc.) will help the City to reach its Green Economy target.
- Which of the following statements best applies to you with regards to Green Economy?

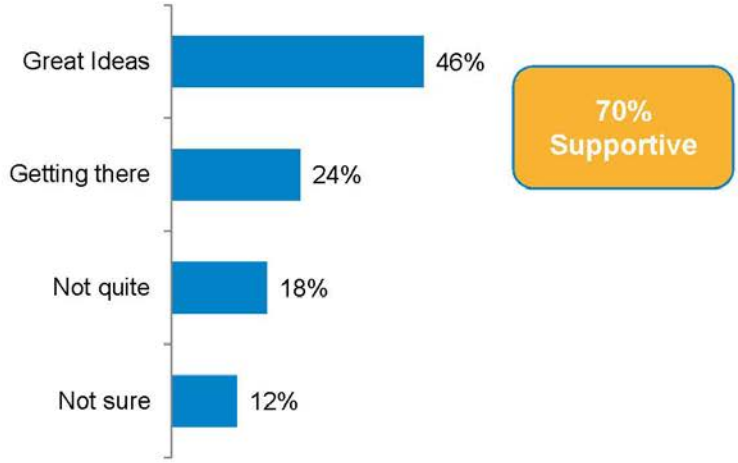


Base = 477

Goal 10: Lighter Footprint – Perceptions of Short Term Actions

2015-2020 Short Term Actions for Goal 10: Lighter Footprint

- Continue or expand Greenest City Grants and CityStudio Programs.
- Develop a municipal sharing economy strategy.
- Support a Community of Action on Lighter Footprint and the Greenest City Action Plan by sharing information and facilitating and encouraging community leaders.
- Explore how partnerships and connections to existing and emerging programs and infrastructure can reduce ecological footprint of dietary choices and food waste.



Base: 471
What do you think of this suite of 2015-2020 actions?

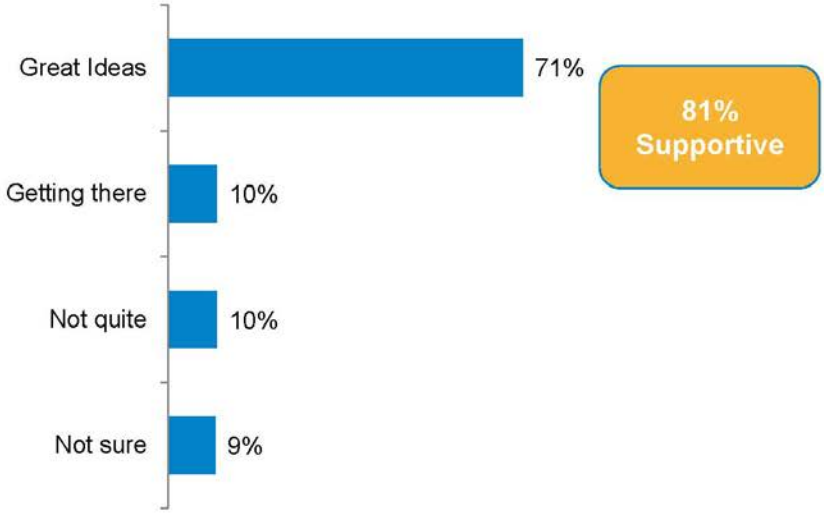
GCAP Refresh Survey Results (September 2015)

38

Goal 10: Lighter Footprint - Perceptions of Advocacy Priorities

Advocacy Priority for Goal 10: Lighter Footprint

- Advocate for federal government to reinstate the long-form census to improve data accuracy and access to data for the calculation of the ecological footprint.



Base = 471
What do you think of this advocacy priority?

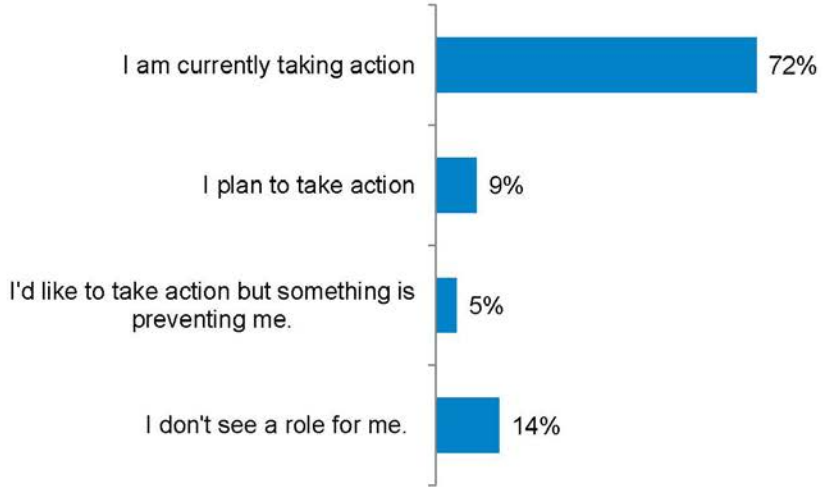
GCAP Refresh Survey Results (September 2015)

39

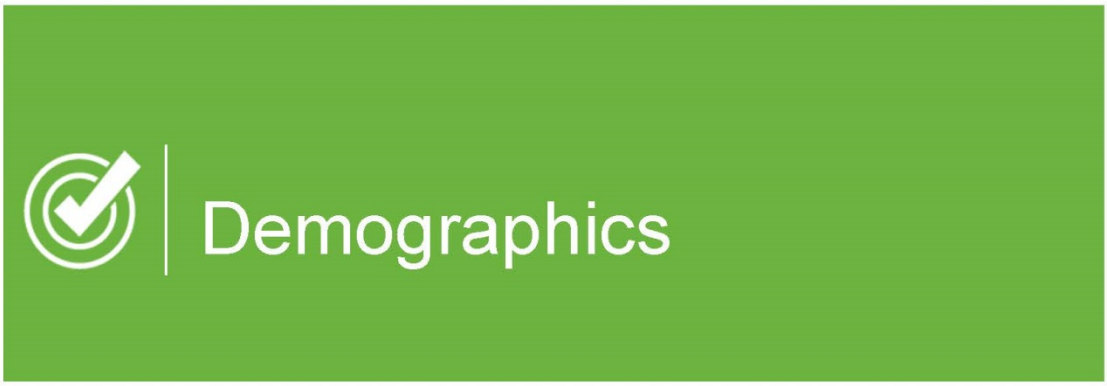
Goal 10: Lighter Footprint – Citizen Action

Citizen Action Related to Goal 10: Lighter Footprint

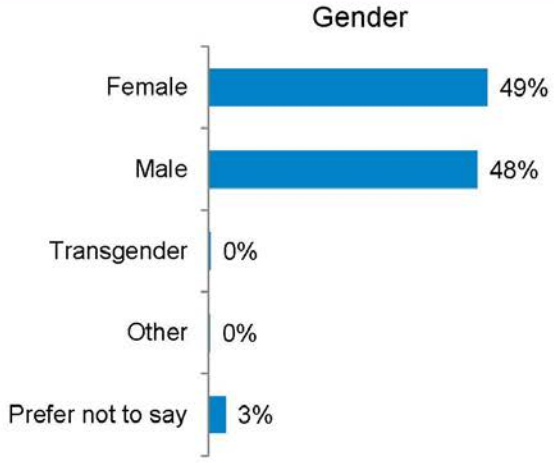
- Having residents reduce their environmental impact will help the City to reach its Lighter Footprint Target.
- Which of the following statements best applies to you with regards to Lighter Footprint?

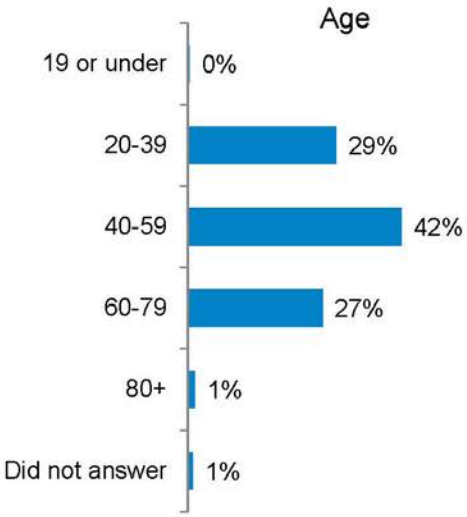


Base = 471


Demographics

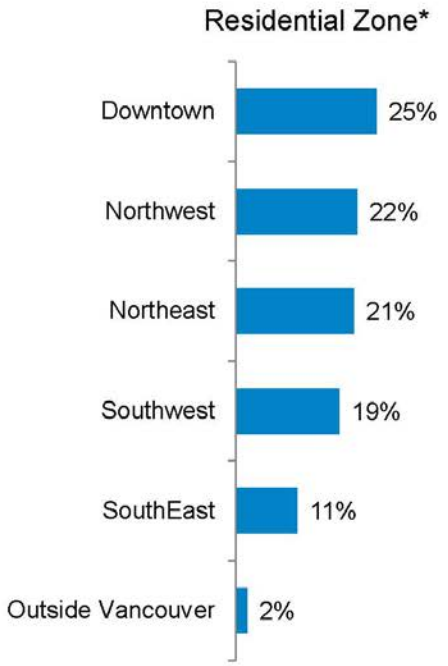
Demographics





Base: 854
Do you primarily identify as:
What age group do you fall into?

Demographics cont.



Base: 729
*Talk Vancouver members only. Residential zone based on home postal code.

Downtown (Downtown and West End), Northwest (North of 16th Ave, West of Main St.), Northeast (North of 16th Ave., East of Main St.), Southwest (South of 16th Ave., West of Main St.), Southeast (South of 16th Ave., East of Main St.)