



# Facts in Focus



2018

FACTS IN FOCUS

DID YOU KNOW?

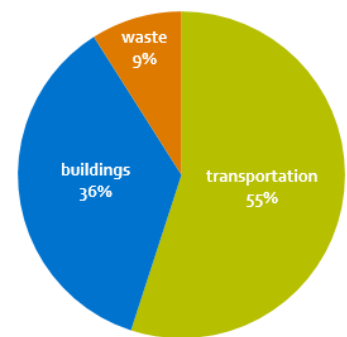
## A Changing Climate

There is global consensus among climate scientists that climate change is happening, and human activity is the cause.<sup>i</sup> Communities must be prepared to join others to respond to the impacts of climate change (climate adaptation) while at the same time reduce greenhouse gas (GHG) emissions (climate change mitigation) to minimize climate impacts.

Leaders in our community are already stepping up and taking action to reduce climate impacts. The City is working on an update to the Community Climate Action Plan, FortisBC is promoting a breadth of programs and funding options to advance energy reductions, and schools are enhancing their curriculum to teach our children about the environmental, ecological and educational values of modifying our human behaviours. Actions like these inspire a more resilient position, but we need to do more at the community level.

Climate change is not something that needs to be addressed in the distant future, it is happening now and the change affects everyone. Environmental, social and economic problems are already being experienced in Canadian communities, and these are projected to increase.<sup>ii</sup> Locally, Kelowna experienced one of its most extreme weather years on record in 2017. Extreme spring precipitation led to historic flooding of Okanagan Lake, Mission Creek and Mill Creek, impacting approximately 3,200 residents and causing approximately \$10.7 million dollars in damage to City property and infrastructure, and this does not take into account the costs for private property damage.<sup>iii</sup> This was followed by one of the hottest and driest July and August on record<sup>iv</sup>, factors contributing to a devastating wildfire season and the community blanketed in smoke. As the impacts of climate change continue to grow, these types of extreme weather events are expected to occur more regularly.

GHG Emissions in Kelowna



In 2012, Kelowna's greenhouse gas (GHG) emissions were over 642,000 tonnes, or about 5.4 tonnes per capita. This equates to \$341 million in energy expenditures, about \$3,000 per person per year. While 2012 emissions showed a slight decline from the 2007 baseline, preliminary data indicates that, since this time, emissions are rising.

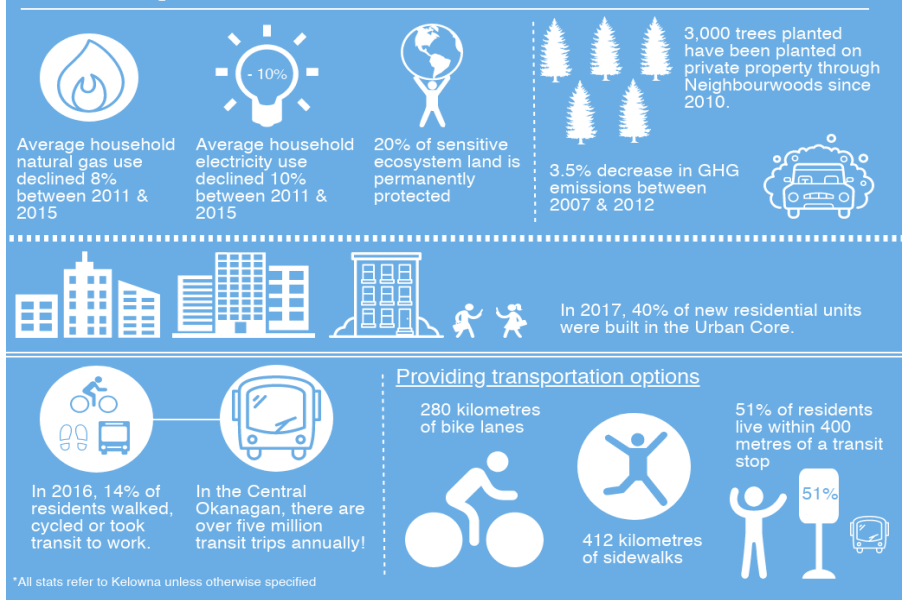
Source: City of Kelowna, 2018. Community Climate Action Plan DRAFT.

## CURRENT INITIATIVES

There have many initiatives related to Climate since the 2011 OCP. The following are either in progress or endorsed:

- Community Climate Action Plan
- Corporate Energy and Emissions Plan
- Urban Centres Roadmap
- Pedestrian and Bicycle Master Plan
- Transportation Master Plan
- Regional Strategic Transportation Plan
- Regional Solid Waste Management Plan
- Energy Step Code Implementation Strategy
- Community Energy Retrofit Strategy
- Urban Forestry Strategy
- Neighbourhoods

## We've proven Kelowna can do this



Moving towards a low carbon future is a monumental challenge, but planning for a healthy and resilient environment is also an enormous opportunity. Communities across BC, Canada, and abroad are taking up the responsibility on energy, sustainability and climate solutions. These solutions are ever more feasible, and the need to lead is ever more pressing. Community benefits are broad reaching from healthier residents, promoting a more livable and prosperous community, to notable reductions in energy costs.

A dynamic community that embraces diverse transportation options to shift away from a car-centric culture; growing vibrant urban centres and shifting away from sprawl; and protecting land, water and air will attract jobs in the new global economy, is healthier for citizens, and will be resilient in the face of a changing climate.

The tide is turning. Recently, the US saw three times more employees working in renewable energy than those in fossil fuels<sup>v</sup> and China's solar and wind capacity continue to grow beyond expected targets<sup>vi</sup> and the Netherlands made a commitment for all new cars to be emission-free by 2030<sup>vii</sup>.

## Current Direction of the 2030 Official Community Plan

The current OCP sets a target for reducing emissions, and all stakeholders in our community (government, local residents, and businesses) must play a role. While the OCP has one specific policy on reducing greenhouse gas emissions, policies throughout the document support the creation of a low carbon community while continuing to ensure the city is a desirable place to call home.

- **Contain urban sprawl:** The OCP introduced a Permanent Growth Boundary to contain sprawl and beyond which no significant development is supported.
- **Develop complete communities:** Encouraging the development of complete communities in the five urban centres that support live-work developments, amenities and optimizing land use.
- **Focus growth in Urban Centres:** Directing investments (parks, streetscaping, bike lanes, etc.) to the City's urban core and urban centres to attract investment and encourage growth.
- **Prioritize sustainable modes of transportation:** Prioritizing streets that are designed to serve a broader range of transportation modes focusing on pedestrians, cyclists, and transit service.
- **Improve the energy efficiency of new buildings:** Embracing sustainable solutions to improve the efficiency and performance of buildings.

## DID YOU KNOW?



A number of sustainable transportation solutions within the urban centres have been funded by the OCP's DCC program, reducing transportation-related emissions by making commuting by walking, cycling or transit easier.



The most recent Census (2016) shows that the commute to work remains dominated by vehicles (79 per cent as driver, 5 per cent as passenger).

- **Reduce and divert solid waste:** Providing opportunities to reduce and reuse waste in order to reduce the carbon footprint associated with it.
- **Increase local food production:** Encouraging more local food production to reduce reliance on imports by promoting healthy and productive agriculture and encouraging opportunities for local food production through community gardens and farmer's markets.

A number of policies in the 2030 OCP have been successful at curbing the growth of greenhouse gas emissions. With respect to development, the introduction of a Permanent Growth Boundary was to concentrate development and supporting infrastructure within its boundaries while simultaneously preserving agriculture and our natural resources. The Permanent Growth Boundary has been successful and has remained largely intact since its inception. Policies directing development to the urban core have also shown some success, with Kelowna seeing 40 per cent<sup>viii</sup> of all new residential units constructed within the Urban Core in 2017, up from 25 per cent in 2015<sup>ix</sup>.

### Strategic Direction from Imagine Kelowna

The City and community partners recently undertook the most extensive public engagement process to date to create a new community vision for the future. Imagine Kelowna is a vision for building a prosperous and sustainable city in the face of an uncertain future. The City will use Imagine Kelowna to help shape its short and long-term planning priorities and provide the foundation for future strategies, plans and projects. The wording of the Imagine Kelowna draft goals may change, however, the overall direction of the goals was supported by City Council at the March 12, 2018 City Council meeting. Key draft directions from Imagine Kelowna include:

#### Principles: Connected

- Embrace diverse transportation options to shift away from our car-centric culture

#### Principles: Smarter

- Take action and be resilient in the face of climate change

#### Principles: Responsible

- Concentrate on growing vibrant urban centres and limit urban sprawl
- Strengthen the protection of our land, water and air resources
- Protect agricultural land and promote sustainable farming
- Preserve Okanagan Lake as a shared resource



FAST FACTS



36%

The percentage of emissions that come from buildings in Kelowna.



40%

Policies directing development to the urban core have shown success, with Kelowna seeing 40 per cent of all new residential units constructed within the Urban Core in 2017.



25%

Percentage of new residential units constructed within the Urban Core in 2015.

Imagine Kelowna stresses the need for complete compact communities that support walking, cycling and transit. Focusing new housing in urban centres, making these centres easy to get around for daily trips without a car, and attracting a variety of businesses, services and amenities will create vibrant centres that not only will reduce greenhouse gas emissions by being more efficient but will also improve quality of life by making it easier for people to live, work, shop and play in the same neighbourhood.<sup>xxi</sup>

Looking Ahead: Future Trends

Climate change is already occurring. Regions across the globe have been and will be impacted in different ways and using the past as a predictor of the future is no longer viable. Over the last century, British Columbia’s Southern Interior warmed 0.9°C<sup>xxii</sup> and despite annual precipitation increasing 17 per cent in the region<sup>xxiii</sup>, snow depth decreased by 11 per cent in the second half of the century<sup>xxiv</sup>. Looking to the future, the Pacific Climate Impacts Consortium predicts the Okanagan-Similkameen’s climate will change significantly in the coming decades<sup>xxv</sup>:

	Season	2020s	2050s	2080s
Mean Temperature	Annual	+1°C	+1.9°C	+2.9°C
Precipitation	Annual	+4%	+6%	+8%
	Summer	-7%	-13%	-14%
	Winter	+2%	+6%	+10%
Snowfall	Winter	-6%	-14%	-22%
	Spring	-33%	-56%	-78%

These changes in climate will have impacts<sup>xxvi</sup> on many aspects of the community including:

- 1. **Water resources.** Declining snowpack and warmer summers could lead to increased drought and less water available for residents during the summer when demand is high. Increased precipitation could result in increased flooding. Further, earlier snowmelt and less spring snowpack will mean less water in streams for fish and wildlife during hot summers.
- 2. **Agriculture.** Hotter summers will increase the demand for irrigation at a time when water availability will be low. A warmer climate will increase pests.
- 3. **Biodiversity.** A warmer climate could impact the types of species that call the Okanagan home, as some will move to cooler climates and others may take their place.
- 4. **Trees.** With a warmer climate, trees will be at increased risk for pests such as pine beetle.





5. **Tourism.** The tourism sector could be significantly impacted. With reduced snow comes reduced winter recreation opportunities. Hotter, drier summers will increase forest fire risks, thus impacting air quality. These extremes were observed in 2017, with Tourism Kelowna noting a seven per cent decrease in hotel occupancy in July due to beaches and boat launches that were closed due to flooding as well as poor air quality due to smoke from nearby forest fires <sup>xxvii</sup>.
6. **Energy.** While warmer winters could result in less demand for energy for heating, hotter summers will increase the demand for cooling.
7. **Infrastructure.** Major flooding events will put increased demands on storm water systems. Upgrades or retrofits to vulnerable flood and erosion control infrastructure may be required. The 2017 flood events resulted in \$10.7 million in damages to the City's infrastructure including stormwater systems, parks, walking paths, bridges, retaining walls, roads and other public properties <sup>xxviii</sup>.
8. **Health.** The World Health Organization has said that "*climate change is the greatest threat to global health in the 21<sup>st</sup> century*" <sup>xxix</sup>. Health impacts due to climate change are numerous including heat related stress (especially for vulnerable populations such as seniors, children, etc.), reduced air quality, and poorer water quality. This was seen in Kelowna in 2017 when the City water utility issued a water quality advisory for 1.5 months due to high turbidity from high stream flows. This was followed by the community blanketed in smoke and the air quality health index was high for 25 days impacting vulnerable populations and requiring many others to stay indoors <sup>xxx</sup>.

## Current Challenges of the 2030 Official Community Plan

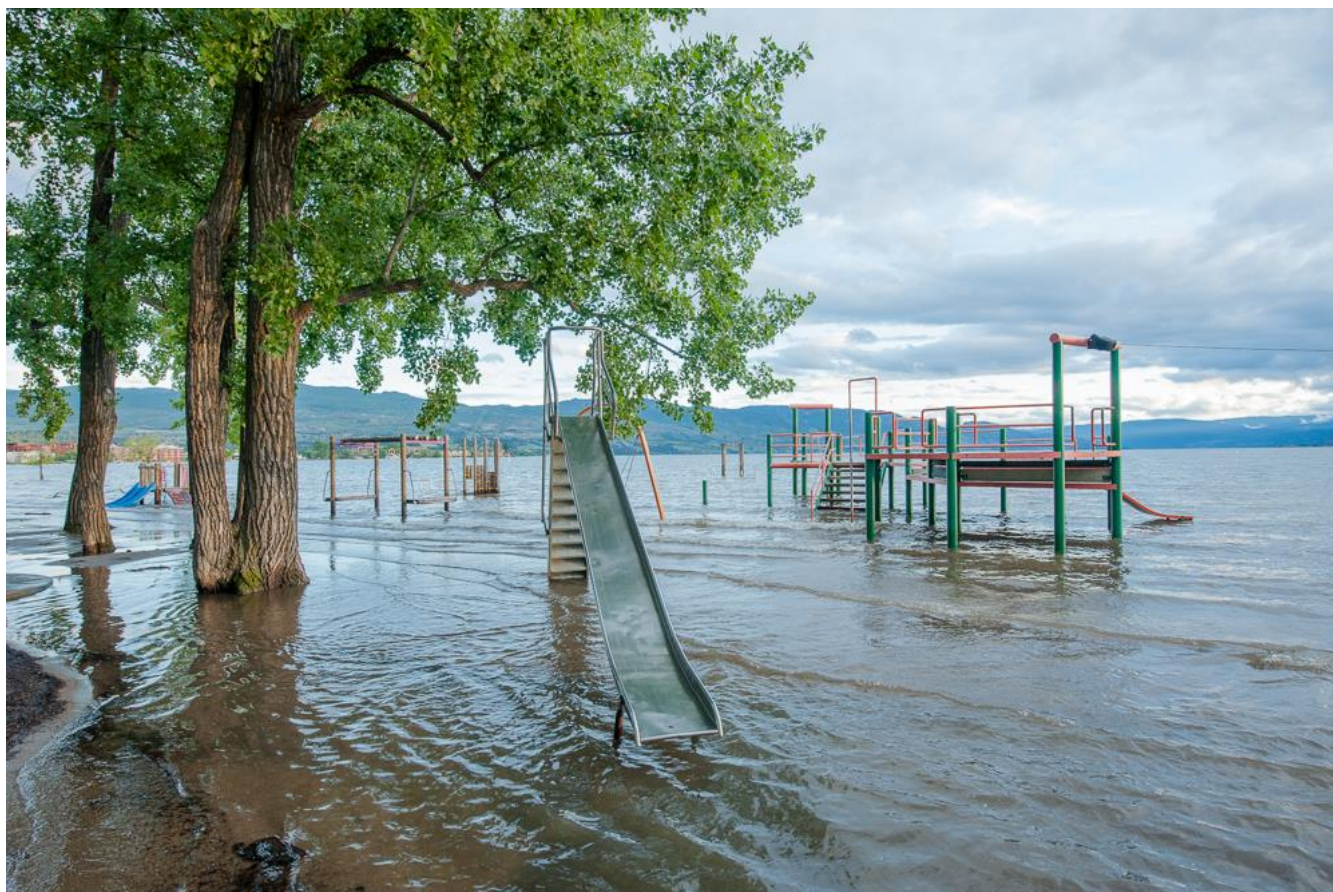
While the current OCP has established sound policy direction, more needs to be done to reduce emissions and prepare the community for a changing climate. The decisions made today will have long-term impacts on Kelowna's greenhouse gas emissions. Policy and choices that support suburban development and reliance on automobiles sets Kelowna on a path for continual increases in GHG emissions for decades to come <sup>x</sup>. However, by investigating options for Kelowna to become more compact, complete community this will lower reliance on vehicles and consequently emissions.

While we see the effects of climate change, the personal and business choices that we make do not necessarily match the direction that climate change requires us to take. These include:

- ▶ **Behavior change.** Although most people are aware and concerned about climate change, it does not translate into action <sup>xi</sup>. As seen in Imagine Kelowna, the community's long term desire to be less car dependent, reduce sprawl and to take action on climate change does not align with the current community behavior. For example, transportation (specifically traffic congestion) continues to be a top issue in the biannual citizen survey <sup>xii</sup>. The gap remains on how to connect with individuals and the community to promote sustainable behavior.
- ▶ **Growing community.** With an estimated growth of 50,000 residents between now and 2040, community emissions could continue to grow even with a decline in per capita emissions. Despite more development happening in the urban core, population growth will continue to put pressure on undeveloped land in Kelowna's suburban and rural areas.



- ▶ **Car-dependant neighbourhoods.** Many Kelowna neighbourhoods lack sufficient density to support transit and are too far away for walking and cycling to be convenient, so residents must rely on their automobile. The most recent Census (2016) shows that the commute to work remains dominated by vehicles (79 per cent as driver, 5 per cent as passenger). Despite a nineteen per cent increase in the percentage of people choosing to walk, cycle or take transit to work (to nearly 14 per cent in 2016)<sup>xiii</sup>, fuel sales (and associated emissions) continue to increase, up 14 per cent since 2012<sup>xiv</sup>.
- ▶ **Low efficiency buildings.** 36 per cent of emissions come from buildings in Kelowna. Progress is being made on increasing energy efficiency of new buildings (for example the introduction of the Provincial Energy Step Code which calls for all buildings to be net zero energy ready by 2032). This does not address existing buildings, 72 per cent of which were constructed prior to 2000<sup>xiv</sup>. Typical life expectancies of buildings can be for over half a century.
- ▶ **Funding change.** The Stern report confirms that the benefits of strong and early investment in climate change prevention far outweigh the economic costs of inaction<sup>xvi</sup>. However, this issue is competing with other high priority issues for limited government dollars such as housing and homelessness, and there is little appetite for tax increases at any level of government. The costs, however, could far outweigh the risks. The 2017 flooding event cost the City over \$10.7 million<sup>xvii</sup> (not including private property damage), and if these flooding or fire events become more frequent, these costs will only continue to rise.
- ▶ **Adaptation Measures.** The current OCP is silent on climate adaptation, specifically policies that are needed to minimize the impacts from changing climatic conditions. Kelowna, like the rest of the province, has already experienced extreme weather, flooding, droughts and fires, and these impacts are anticipated to become more severe and/or frequent<sup>xviii</sup>. Preparing to become resilient to these changes is crucial. Exploring the use of green infrastructure which can increase flood protection while providing shade, reducing heat in the urban core and improving air quality is one option. These improvements not only help the community adapt to climate change but also reduce GHG emissions, and can provide health, social and economic benefits<sup>xix</sup>.



## HEALTH AND CLIMATE CHANGE

The World Health Organization has said that "climate change is the greatest threat to global health in the 21<sup>st</sup> century"<sup>xxix</sup>



## Key Directions for the 2040 Official Community Plan

Even without growth, emissions will remain constant if infrastructure isn't provided to make walking, cycling, and transit the convenient choice for most trips. Without new infrastructure, new technology that will help reduce GHG emissions such as electric vehicles or driverless shared vehicles won't be able to become common place. When we reduce fossil-fuel pollution, it improves the health and security of our community. We can slow the rising temperatures that are changing weather patterns and causing more intense storms and heat waves, which in turn affect food and energy prices, as well as threaten our city infrastructure and health and safety of our families.

By taking action, we can be prepared for climate impacts, enhance our community, create good local jobs, and make our neighborhoods more attractive places to live in. Committing to policy and actions that create the desired future residents are asking for in *Imagine Kelowna* is intricately linked to climate change. By taking action, residents can benefit from:

1. **Healthy, complete community.** That includes healthy transportation options, quality housing, access to healthy food, expansive urban forest and good air quality. Saying no to development in the fringe results in a compact efficient city, with a corresponding transportation system that has a lighter environmental footprint. Further a complete, compact community is more economical to operate and maintain.
2. **Economic development.** Promoting Kelowna as environmentally conscious can help attract green innovation.
3. **Reduced energy consumption.** In 2012, Kelowna residents spent approximately \$3,000 per capita on energy. Reducing energy consumption saves residents and businesses money and also increases the dollars available for local goods and services.
4. **Social benefits.** Transportation and housing choices represent the two largest expenditures for most working households. Energy efficient homes in complete communities reduce utility costs for residents and save transportation costs by reducing the need for vehicle ownership.

In addition to achieving the goals of *Imagine Kelowna*, there are several changes on the horizon that could change the way communities develop and help to significantly reduce GHG emissions. Automakers are making commitments to reduce reliance on fossil fuels making electric vehicles become mainstream. Emission reductions achieved by shifting to electric vehicles will be further compounded with the introduction and growth of driverless shared vehicles (some predict that fully automated vehicles will become the prevailing mode of urban transportation by the 2030s<sup>xxx</sup>). Some studies show that if cities embrace vehicle technology, automation, electrification and ride sharing, there can be an 80 per cent cut in GHG emissions compared to the business as usual option.<sup>xxxii</sup>

Further, all new buildings will be required to be net zero energy ready in BC by 2032 (the BC Energy Step Code) and older building stock will start to be replaced with energy efficient buildings. Communities endorsing higher energy efficiency requirements early will ensure that more buildings will





have these efficiencies built in. Further, it is hoped that the annual increases to the provincial carbon tax<sup>xxxiii</sup> will encourage the reduction of fossil fuel use.

Success on reducing emissions and being prepared for a changing climate may require a new approach to policy and infrastructure investments. The shift to complete communities that allows for convenient access to alternative modes of transportation for daily commutes and errands will require leadership from the City, residents, businesses and development community. It may require making bold decisions on where new development goes and choosing to prioritize infrastructure funds differently from the past. Ultimately, the move to vibrant urban centres with diverse transportation options creates a healthy city for all.

The greatest action on climate begins with us. We have the capacity and community will to make a difference that will benefit our environment, our economy, our quality of life and our City's resiliency.

Explore the Story Map: [A Changing Climate](#) or visit [kelowna.ca/ImagineNext](http://kelowna.ca/ImagineNext) to see how you can influence *Our Kelowna as we Grow*, the Kelowna 2040 Official Community Plan update.

i Scientific American, 2014. Climate Risks as Conclusive as Link between Smoking and Lung Cancer. <https://www.scientificamerican.com/article/climate-risks-as-conclusive-as-link-between-smoking-and-lung-cancer/>

ii Green Resilience Strategies, SFU, Adaptation to Climate Change Team, 2017. Taking Action on Green Resilience: Climate Change Adaptation and Mitigation Synergies. [http://act-adapt.org/wp-content/uploads/2017/11/ACT\\_ALTGR\\_Web4.pdf](http://act-adapt.org/wp-content/uploads/2017/11/ACT_ALTGR_Web4.pdf)

iii City of Kelowna, 2017. A Changing Climate: Special Edition Community Trends Report 2017. [https://www.kelowna.ca/sites/files/1/docs/business/2017\\_community\\_trends\\_report\\_.pdf](https://www.kelowna.ca/sites/files/1/docs/business/2017_community_trends_report_.pdf)

iv Castanet. Sep 1, 2017. Hottest, driest on record. <https://www.castanet.net/news/Kelowna/205602/Hottest-driest-on-record>

v The Guardian, 25 May 2016. [Global clean energy employment rose 5% in 2015](#).

vi Yan, J and Myllyvirta, L, Aug. 24, 2017. Unearthed, [China has already surpassed its 2020 solar target](http://unearthed.greenpeace.org/2017/08/25). [Unearthed.greenpeace.org/2017/08/25](http://unearthed.greenpeace.org/2017/08/25)

vii Electrek, 10 October 2017. The Dutch government confirms plan to ban new petrol and diesel cars by 2030.

viii City of Kelowna, 2018. City of Kelowna Building Permit Issuances Quarterly Report 2017.

ix City of Kelowna, 2016. Official Community Plan Indicators Report 2016. [https://www.kelowna.ca/sites/files/1/docs/community/Publications/ocp\\_indicators\\_report.pdf](https://www.kelowna.ca/sites/files/1/docs/community/Publications/ocp_indicators_report.pdf)

x The University of British Columbia, Okanagan Campus. Investigating the Impacts of Urban Densities on City of Kelowna's GHG Emission Targets, 2016.

xi Pacific Institute for Climate Solutions, 2016. Social Mobilization: How to Encourage Action on Climate Change. <http://pics.uvic.ca/sites/default/files/uploads/publications/FINAL%20Social%20mobilization-Sussman%20Gifford.pdf>

xii Ipsos Public Affairs, 2017. 2017 Citizen Survey Prepared for the City of Kelowna. [https://www.kelowna.ca/sites/files/1/docs/related/final\\_report\\_-\\_city\\_of\\_kelowna\\_2017\\_citizen\\_survey\\_read-only.pdf](https://www.kelowna.ca/sites/files/1/docs/related/final_report_-_city_of_kelowna_2017_citizen_survey_read-only.pdf)

xiii Census Canada, 2016 and 2006 Census Profile for Kelowna.

xiv Kent Marketing, Fuel Sales Data for Kelowna 2012 – 2017.

xv Census Canada, 2016 Census Profile for Kelowna.

xvi City of Vancouver, 2009. [Vancouver 2020 A Bright Green Future](#).

xvii City of Kelowna, 2017. A Changing Climate: Special Edition Community Trends Report 2017. [https://www.kelowna.ca/sites/files/1/docs/business/2017\\_community\\_trends\\_report\\_.pdf](https://www.kelowna.ca/sites/files/1/docs/business/2017_community_trends_report_.pdf)

xviii Auditor General of British Columbia, 2018. Managing Climate Change Risks: An Independent Audit. [http://www.bcauditor.com/sites/default/files/publications/reports/Climate\\_Change\\_FINAL\\_o.pdf](http://www.bcauditor.com/sites/default/files/publications/reports/Climate_Change_FINAL_o.pdf)

xix Green Resilience Strategies, SFU, Adaptation to Climate Change Team, 2017. Taking Action on Green Resilience: Climate Change Adaptation and Mitigation Synergies. [http://act-adapt.org/wp-content/uploads/2017/11/ACT\\_ALTGR\\_Web4.pdf](http://act-adapt.org/wp-content/uploads/2017/11/ACT_ALTGR_Web4.pdf)

xx West Coast Environmental Law, 2012. Preparing for Climate Change: An Implementation Guide for Local Governments in British Columbia. [https://www.retooling.ca/cgi/content.cgi/WCEL\\_climate\\_change\\_FINAL.pdf?id=4515&name=Preparing+for+Climate+Change%3a+An+Implementation+Guide+for+Local+Governments+in+British+Columbia](https://www.retooling.ca/cgi/content.cgi/WCEL_climate_change_FINAL.pdf?id=4515&name=Preparing+for+Climate+Change%3a+An+Implementation+Guide+for+Local+Governments+in+British+Columbia)

xxi City of Kelowna, 2018. Imagine Kelowna Draft.

xxii Province of BC, Climate Change Long-term Change in Air Temperature in BC (1900-2013), <http://www.env.gov.bc.ca/soe/indicators/climate-change/temp.html>

xxiii Province of BC, Climate Change Long-term Change in Precipitation in BC (1900-2013), <http://www.env.gov.bc.ca/soe/indicators/climate-change/precip.html>

xxiv Province of BC, Climate Change, Change in Snowpack in BC (1950-2014), <http://www.env.gov.bc.ca/soe/indicators/climate-change/snow.html>

xxv Pacific Climate Impacts Consortium, Plan2Adapt, <https://www.pacificclimate.org/analysis-tools/plan2adapt>

xxvi West Coast Environmental Law, 2012. Preparing for Climate Change: An Implementation Guide for Local Governments in British Columbia. [https://www.retooling.ca/cgi/content.cgi/WCEL\\_climate\\_change\\_FINAL.pdf?id=4515&name=Preparing+for+Climate+Change%3a+An+Implementation+Guide+for+Local+Governments+in+British+Columbia](https://www.retooling.ca/cgi/content.cgi/WCEL_climate_change_FINAL.pdf?id=4515&name=Preparing+for+Climate+Change%3a+An+Implementation+Guide+for+Local+Governments+in+British+Columbia)

xxvii City of Kelowna, 2017. A Changing Climate: Special Edition Community Trends Report 2017. [https://www.kelowna.ca/sites/files/1/docs/business/2017\\_community\\_trends\\_report\\_.pdf](https://www.kelowna.ca/sites/files/1/docs/business/2017_community_trends_report_.pdf)

xxviii City of Kelowna, 2017. A Changing Climate: Special Edition Community Trends Report 2017. [https://www.kelowna.ca/sites/files/1/docs/business/2017\\_community\\_trends\\_report\\_.pdf](https://www.kelowna.ca/sites/files/1/docs/business/2017_community_trends_report_.pdf)

xxix World Health Organization, 2018. Climate Change and Human Health. <http://www.who.int/globalchange/global-campaign/cop21/en/>

xxx City of Kelowna, 2017. A Changing Climate: Special Edition Community Trends Report 2017. [https://www.kelowna.ca/sites/files/1/docs/business/2017\\_community\\_trends\\_report\\_.pdf](https://www.kelowna.ca/sites/files/1/docs/business/2017_community_trends_report_.pdf)

xxxi University of Toronto Faculty of Applied Science and Engineering, 2015. Driving Changes: Automated Vehicles in Toronto, page 20.

xxxii MOVMI. Summary: 3 Revolutions in Urban Transportation. <http://movmi.net/3-revolutions-urban-transportation/>

xxxiii Province of BC. BC Provincial Budget Tax Changes. <https://www2.gov.bc.ca/gov/content/taxes/tax-changes/budget-changes>