



CITY OF KIRKLAND
Planning and Building Department
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MEMORANDUM

To: Kurt Triplett, City Manager

From: David Barnes, Senior Planner
Adam Weinstein, AICP, Planning and Building Director

Date: January 3, 2019

Subject: City of Kirkland 2018 Greenhouse Gas Emission Report

Staff Recommendation

Provide feedback to staff on the draft City of Kirkland 2018 Greenhouse Gas Emissions Report.

Background Discussion

The City of Kirkland has a long history of designing its built environment to protect the natural environment, which is one of the motivations that led the City to address greenhouse gas emissions in its planning efforts. The intent of the 2018 Greenhouse Gas (GHG) Emissions Report (see Attachment 1) is to provide a snapshot view of both community-wide and government operations GHG emissions. The City has been tracking GHG emissions from municipal operations since 2005, along with measuring progress towards meeting GHG reduction goals established in prior Mayor's Agreements, and more recently the King County Cities Climate Collaborative reduction goals. These goals have been memorialized in policy E-5.1 of the Comprehensive Plan's Environment Element.

Analysis

A significant aspect of the 2018 report is that it is the first one to measure Community-Wide GHG emissions since the base year emissions were calculated in 2005. Easy access to Kirkland's GHG emission calculations from Puget Sound Energy (PSE), Vehicle Miles Traveled data from the Bellevue Kirkland Redmond transportation model, and the purchase of the Scope5 software has allowed staff to efficiently aggregate and evaluate the information that provides the basis for this report.

This report covers the period from 2005 to 2017 for GHG emissions from government operations; and 2005, then 2014 to 2017 for community-wide GHG emissions.

As of 2017, the City has met its 2020 municipal operations goal to reduce emissions 25% below 2005 levels, and it is anticipated that further actions will help the City stay on track to achieve the 2030 and 2050 reduction goals. The community-wide emissions

goals will be more difficult to achieve, although the City is not far from the 2020 reduction goal. Overall community emissions have been trending downward since 2005. It will take significant effort from the City, residents, businesses, energy providers, transit agencies, along with behavioral changes, to move towards achievement of the 2030 reduction goal.

Report Recommendations

The following actions are not an exclusive list, but would help the City achieve the 2020, 2030 and 2050 GHG Emission Reduction Targets:

For Community-Wide Emissions

- Work in collaboration with K4C member cities to procure 90% renewable electricity from Puget Sound Energy by 2030 for all Kirkland residents and businesses
- Work with K4C, King County Metro and other transit entities to electrify all mass transit travelling through Kirkland
- Work in collaboration with K4C to establish a low carbon fuel standard for all vehicles in Washington state
- Encourage businesses in Kirkland to promote ride sharing, encourage work from home and other alternative forms of transportation such as bike share programs, bicycling, walking, establishing onsite electric vehicle charging stations and continued promotion of and utilization of the Cross Kirkland Corridor
- Expand 10-minute neighborhoods and incorporate sustainability principles into long range planning efforts
- Plan for Transit-Oriented Development around regional transit investments

For Municipal Operations Emissions

- Procure renewable electricity through PSE's Green Direct program for all municipal operations such as City operated street lights
- Establish a fleet policy and implement purchase of all electric vehicles (unless not feasible for Fire, Police and Public Works heavy duty vehicles) starting in 2019 with a schedule to achieve all electric vehicles by 2030 or sooner
- Audit all City buildings for energy use reductions with a priority on older facilities and especially those that use natural gas for heating, utilizing EPA's Portfolio Manager software or similar software. Implement measures to eliminate emissions from natural gas or other fossil fuels and reduce energy use for electricity to a minimum required for safety and comfort of occupants
- Update Commute Trip Reduction (CTR) ordinance to encourage carpool, vanpool, transit use, bicycling, walking to work and working from home to help reduce congestion, fuel consumption and air pollution

Attachments:

1. 2018 Greenhouse Gas Emissions Report



CITY OF KIRKLAND 2018 greenhouse gas emissions report



EXECUTIVE SUMMARY

This report meets the requirement to perform an inventory of Greenhouse Gas (GHG) emissions for both community-wide and of City government operations. The City has committed to achieving specific reductions in GHG by 2020, 2030 and 2050 for both the Kirkland community and government operations.

The City's 2020 target for Community-Wide emissions is 611,342 Metric Tons Carbon Dioxide equivalent greenhouse gases, or MTCO_{2e}. As of 2017, the community-wide emissions have been calculated at 640,900 MTCO_{2e}.

The 2020 target could be achieved by working on the following initiatives:

- » Collaborate with King County Cities Climate Collaborative (K4C) and Puget Sound Energy (PSE) to provide 100% renewable electricity for all Kirkland residents and businesses
- » Work with regional transit agencies to electrify all mass transportation in Kirkland and in King County while incentivizing alternative commutes to reduce vehicle miles travelled in single occupancy vehicles

The City's 2020 Government Operations GHG emission target is 3,825 MTCO_{2e} and the 2017 government operations emissions have been calculated at 3,530 MTCO_{2e}. These emissions could be further reduced by:

- » Procurement of 100% renewable electricity from PSE for all government operations
- » Transition to an electric fleet starting in 2019

BACKGROUND

According to the United States Environmental Protection Agency (EPA), greenhouse gases trap heat and make the planet warmer. Human activities are responsible for almost all of the increase in greenhouse gases in the atmosphere over the last 150 years. The largest source of greenhouse gas emissions from human activities in the United States is from burning fossil fuels for electricity, heat, and transportation. Greenhouse gases consist of carbon dioxide, methane, nitrous oxide, and fluorinated gases.

The City of Kirkland has committed to reduce operational and community-wide (GHG) emissions since 2005 with the adoption of resolution R-4569 by the Kirkland City Council. The GHG targets community and government operations. In 2006, Council authorized Kirkland's membership in the International Council for Local Environmental Initiatives (ICLEI) by Resolution R-4591.

In 2007, the Council adopted GHG reduction targets via Resolution R-4659 for community and government operations. These targets were incorporated into the Comprehensive Plan:

- » 10 percent below 2005 levels by 2012
- » 20 percent below 2005 levels by 2020
- » 80 percent below 2005 levels by 2050

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METHODOLOGY

Although 2007 is the base year for the most current emission reduction targets identified by K4C and King County, Kirkland does not have a 2007 GHG gas inventory. Kirkland has an established GHG inventory with a base year of 2005 because an inventory was conducted by the City with the assistance of Puget Sound Clean Air Agency (PSCAA) and Puget Sound Regional Council (PSRC). All Kirkland’s calculations for reporting purposes utilize the following 2005 base year data: 5,100 MTCO_{2e} for Kirkland’s government operations and 815,242 MTCO_{2e} for community-wide emissions.

Policy E-5.1 of the Environment Element of the Comprehensive Plan is aligned with the most recent reduction targets and states:

“Achieve the City’s greenhouse gas emission reductions as compared to a 2007 baseline” and it establishes the following GHG emission reductions:

- » 25 percent by 2020
- » 50 percent by 2030
- » 80 percent by 2050

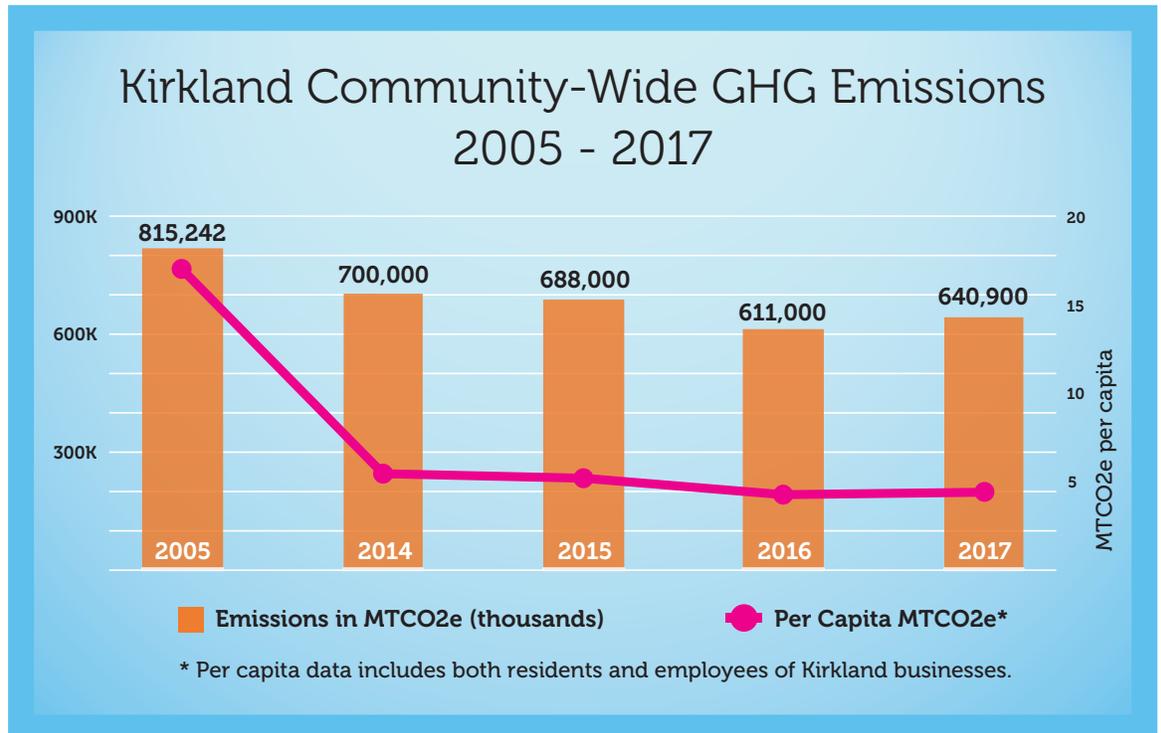
An update to the Climate Protection Action Plan report monitors GHG emissions for government operations. Until now, a community-wide GHG emissions inventory has not been conducted for Kirkland. This report intends to comply with Resolution R-4746 and meet the requirement for both the government operations and community-wide emissions inventory.

The City is now utilizing a new software package along with other K4C cities called Scope5, instead of the previously used ICLEI Clearpath software. This allows us to pull large amounts of data from PSE directly into the Scope5 software. Other K4C member cities are using the same software and following similar methodologies in calculating GHG emissions. The change of software has saved staff a tremendous amount of time and resources in compiling the GHG emission numbers shown in this report. The ICLEI Clearpath software was compared side by side with Scope5’s GHG emission totals for 2017. The differential was negligible which provided additional confidence in the data used to prepare this report.

WHAT IS OUR TOTAL ANNUAL GHG EMISSIONS FOR 2017?

- **Kirkland Community-Wide Emissions**

In 2017, the Kirkland community emitted 640,900 metric tons of carbon dioxide equivalent greenhouse gases (MTCO_{2e}).





The overall community emissions decreased from the 2005 amount calculated at 815,242 MTCO_{2e}. Comparing years 2005 and 2017, community-wide emissions decreased by 21.4 percent or 174,342 MTCO_{2e}. This decrease occurred while the City's population increased from 45,909 in 2005 to over 88,630 residents in 2017. On June 1, 2011, Kirkland added approximately 31,000 new residents due to the annexation of former unincorporated King County neighborhoods of Juanita, Finn Hill and Kingsgate. One possible explanation for decreases in GHG emissions is that overall vehicle miles travelled have declined in the Puget Sound region even as population has grown. One factor is that younger drivers (ages 21-30) are less interested in driving and more interested in walkable, bikeable and transit-oriented communities.

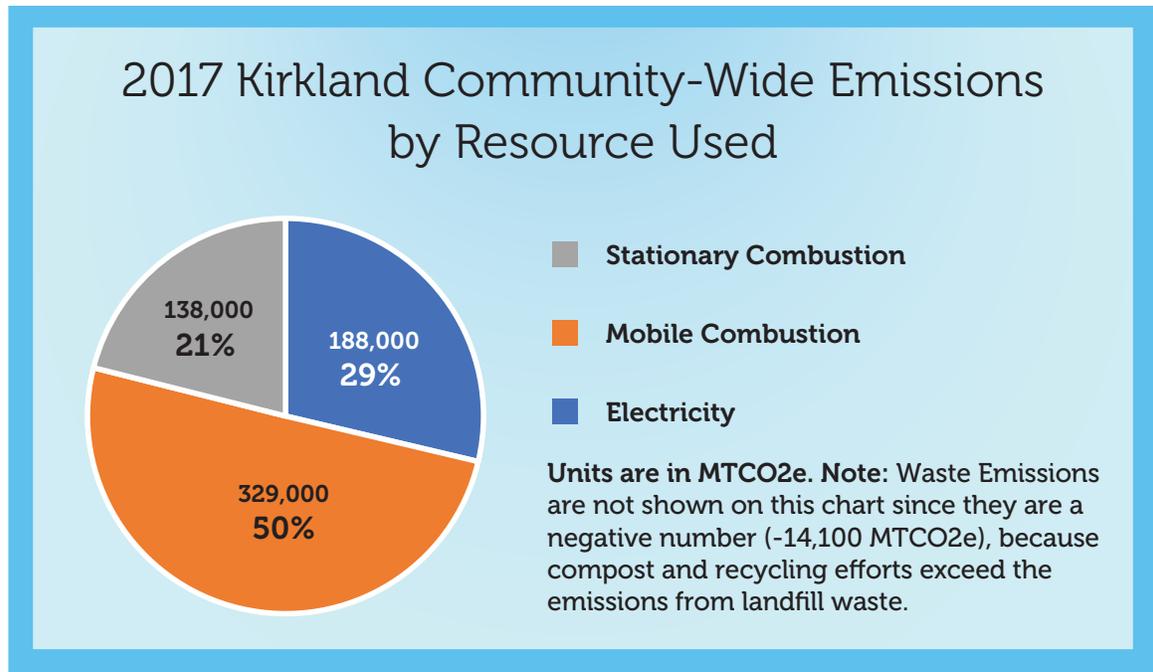
• **Kirkland Community-Wide Emissions by Resource Used - 2017**

Community GHG emissions were identified using the following sources: electricity, natural gas, waste (includes reductions in overall GHG emissions for recycling and composting (-14,100) and gasoline or diesel for vehicles.

WHAT CAUSED THESE EMISSIONS?

The greenhouse gas (GHG) emissions being tracked can be categorized as follows:

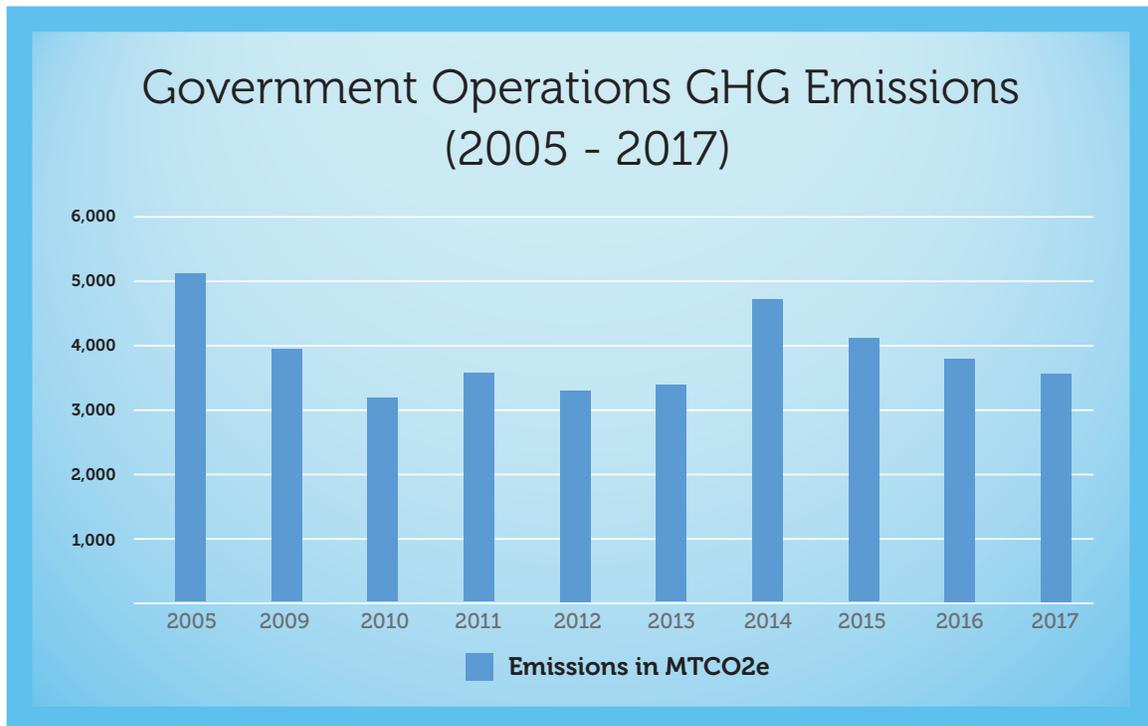
1. **Stationary Combustion** – Emissions from natural gas used for heat and other gas appliances (data provided by Puget Sound Energy (PSE).
2. **Electricity** - Emissions from energy used for buildings and streetlights and signals and pump stations (data provided by Puget Sound Energy (PSE).
3. **Mobile Combustion** - Emissions from vehicles travelling in and through Kirkland (gas, diesel). Vehicle miles traveled (VMT) data is derived from a transportation model called the Bellevue-Kirkland-Redmond Model (BKR). This model estimates a total of all vehicle miles travelled within the entire Kirkland Community.



- **Government Operations Emissions**

In 2017, the Kirkland government emitted 3,530 metric tons of carbon dioxide equivalent greenhouse gases (MTCO₂e). Overall emissions decreased from their 2005 levels calculated at 5,100 MTCO₂e. Between 2005 and 2017, government operation emissions decreased by 30.8 percent or 1,570 (MTCO₂e). This slight decrease occurred even with serving a larger population and the additional energy used for public facilities such as the new Kirkland Justice Center, streetlights, signals, and City vehicles travelling further distances to provide services to a larger territory. The City is now 17.83 square miles as compared to pre-annexation size of approximately 11 square miles.

Note: In 2014 Kirkland took over streetlights from King County that were associated with the annexation of Juanita, Finn Hill and Kingsgate neighborhoods. This helps explain the increase in electricity usage which caused a spike in emissions.



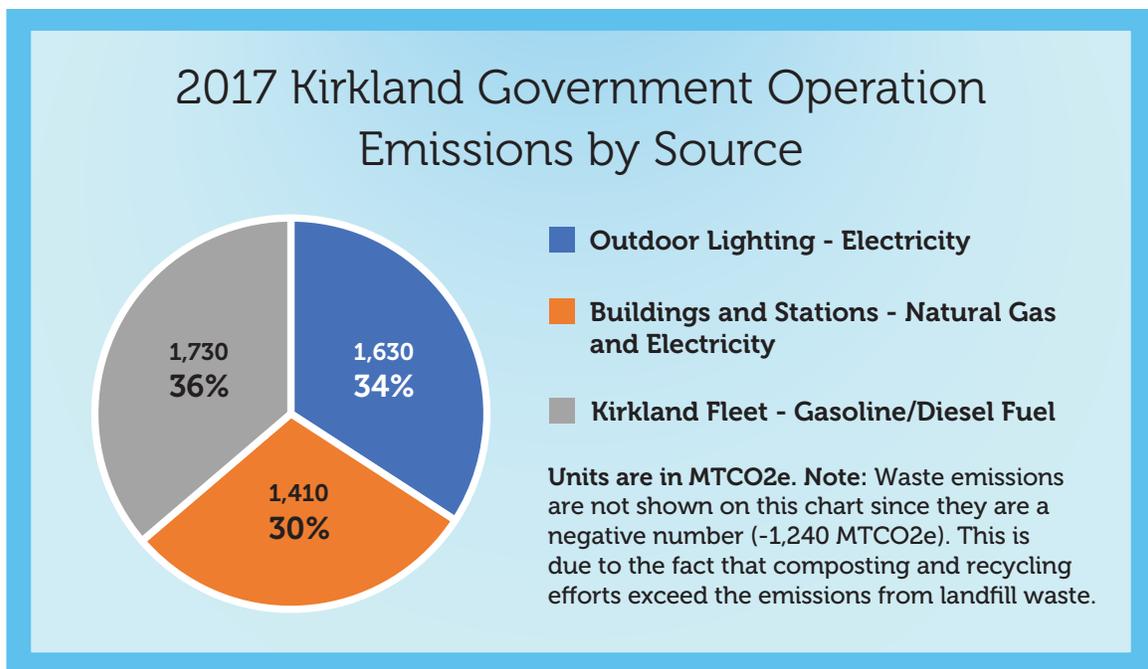
- **Total Emissions Government Operations by Source - 2017**

In 2017, GHG emissions were identified by using the following sources: electricity, natural gas, and gasoline/diesel.

WHAT SPECIFICALLY IS THE SOURCE OF THESE GREENHOUSE GAS (GHG) EMISSIONS?

The sources of (GHG) emissions being tracked can be categorized as follows:

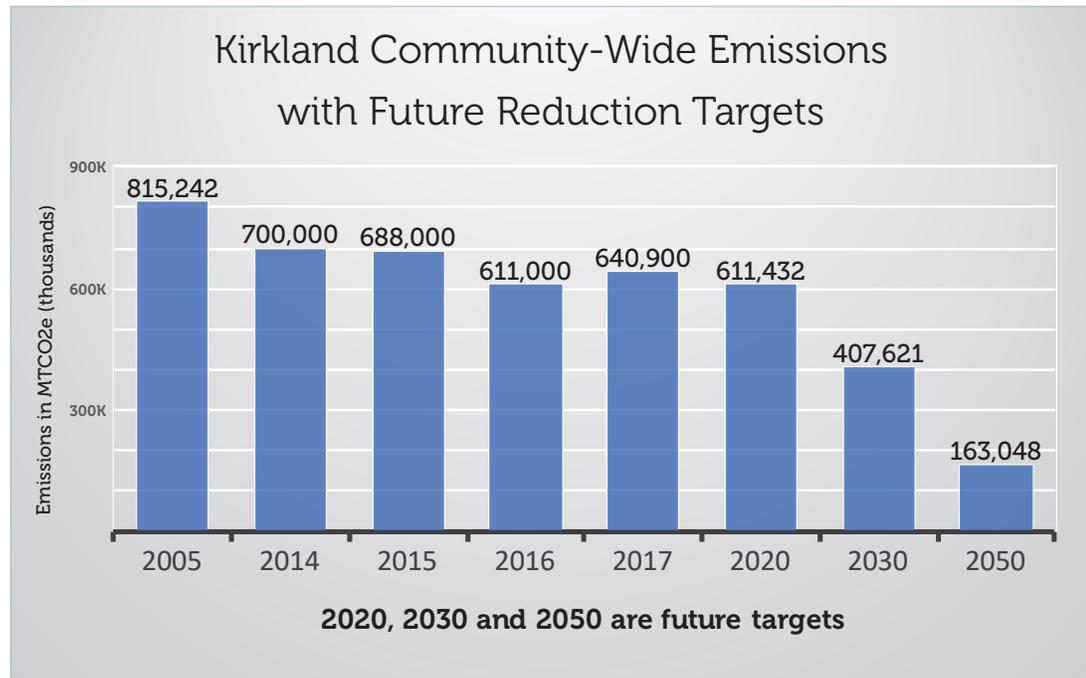
1. **Outdoor Lighting –** Emissions from electricity used for street lights and signals with data from PSE.
2. **Buildings and Stations –** Emissions from electricity and natural gas used for buildings with data being provided from PSE.
3. **City Fleet -** Emissions from vehicles (gas, diesel). The City's Fleet Division provides actual fuel consumed for all City vehicles.



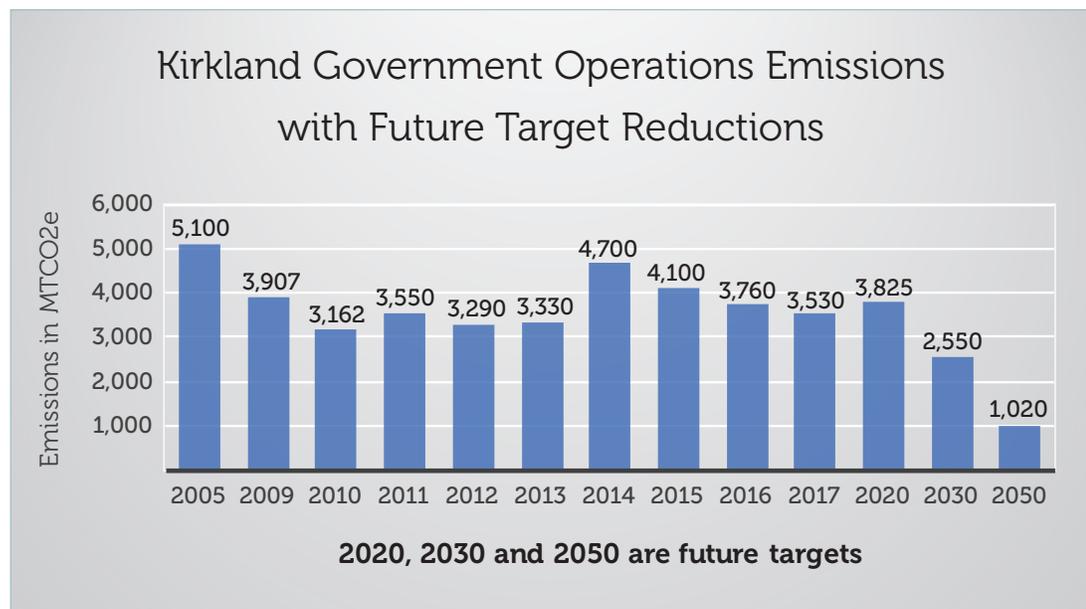


ARE WE ON TRACK TO MEET OUR 2020 GHG EMISSION REDUCTIONS TARGETS?

The Kirkland Community appears to be trending toward the 2020 goal of reducing GHG emissions to 611,432 MTCO_{2e}. However, the community's energy use, the number of vehicles traveling within Kirkland and the efficiency of those vehicles are much more challenging to influence. The K4C partnership that the City has with King County and other member cities and entities such as Puget Sound Energy and King County Metro can help us to effectively collaborate on reducing our community-wide GHG emissions.



As of 2017, the City of Kirkland's government operations have met the 2020 goal of reducing GHG emissions to 3,825 MTCO_{2e}. In the summer of 2019, the City's electricity use will be primarily provided by a renewable energy contract with Puget Sound Energy. Based on the eligible metered facilities that use electricity, it is projected that the City will further reduce its GHG emissions.



GHG BACKGROUND *(continued from page 1)*

In 2009, the Council adopted the Climate Protection Plan by Resolution R-4760 to achieve the GHG reduction targets set in 2007 and to require the following:

- » Update the greenhouse gas inventory for government operations annually.
- » Update the greenhouse gas inventory every three years for the community.
- » Compare the updated inventory with that of the base year and determine how close the City is to the target reductions.
- » Provide an annual Climate Protection Action Report to the City Council and the community.

In 2012, Kirkland helped found the King County Climate Change Collaborative (K4C), and signed an interlocal agreement to work in partnership with the K4C on local and regional climate change efforts.

In October 2014, the council authorized the mayor to sign Resolution (R-5077), Joint Letter of Commitments: Climate Change Actions in King County, which supports the Joint County – City Climate Commitments of the K4C Cities and aligns Kirkland's greenhouse gas emission reductions with that of King County and signatory cities. The new reduction targets use 2007 as the baseline year, retain the 2050 reduction target and add a midpoint goal in 2030.

RECOMMENDATIONS FOR ACHIEVING 2020, 2030 AND 2050 GHG EMISSION REDUCTION TARGETS

FOR COMMUNITY-WIDE EMISSIONS

- » Work in collaboration with K4C member cities to procure 90% renewable electricity from Puget Sound Energy by 2030 for all Kirkland residents and businesses
- » Work with K4C, King County Metro and other transit entities to electrify all mass transit travelling through Kirkland
- » Work in collaboration with K4C to establish a low carbon fuel standard for all vehicles in Washington state
- » Encourage businesses in Kirkland to promote ride sharing, encourage work from home and other alternative forms of transportation such as bike share programs, bicycling, walking, establishing onsite electric vehicle charging stations and continued promotion of and utilization of the Cross Kirkland Corridor
- » Expand 10-minute neighborhoods and incorporate sustainability principles into long range planning efforts
- » Plan effectively for Transit-Oriented Development around regional transit investments

FOR MUNICIPAL OPERATIONS EMISSIONS

- » **Procure renewable electricity** through PSE's Green Direct program for all municipal operations such as City operated street lights
- » **Establish a fleet policy** and implement purchase of all electric vehicles (unless not feasible for Fire, Police and Public Works heavy duty vehicles) starting in 2019 with a schedule to achieve all electric vehicles by 2030 or sooner
- » **Audit all City buildings for energy use reductions** with a priority on older facilities and especially those that use natural gas for heating, utilizing EPA's Portfolio Manager software or similar software. Implement measures to eliminate emissions from natural gas or other fossil fuels and reduce energy use for electricity to a minimum required for safety and comfort of occupants
- » **Update Commute Trip Reduction (CTR) ordinance** to encourage carpool, vanpool, transit use, bicycling, walking to work and working from home to help reduce congestion, fuel consumption and air pollution