# Greenhouse Gas Emissions

## Objective:

Reduce climate pollution and prepare for the effects of climate change on the environment, human health, and the economy

## Strategy:

Monitor county greenhouse gas emissions and use the information to guide future actions and investments to advance progress against emission reduction goals

## Why is this strategy important?

It is important to quantify the impact of county operations for multiple reasons, including:

- To guide future actions and investments to help reach community level emissions reduction goals
- To avoid unintended consequences -- for example, reducing transit service would help King County meet its operations GHG and energy use targets, but would negatively impact progress towards community level targets (and result in diverse other negative community impacts)
- To help illustrate the range of diverse "climate solutions"

While these estimates are coarser estimates than those made in community level and operational GHG emissions inventories, and do not necessarily follow established protocols, they demonstrate the magnitude of impact King County actions are having in supporting community level progress in reducing GHG emissions.

## How is our performance?

King County is monitoring greenhouse gas (GHG) emissions at multiple scales. This includes countywide, community level greenhouse gas emissions associated with all residents, businesses and governments (progress in reducing these sources is detailed in the climate change objective) and sources from government operations, including government building energy usage, fuel use in vehicles and buses, and emissions associated with government purchases. Please see Environmental Sustainability Strategy for Monitoring Energy Use for more information.

Data in this section documents and quantifies the community level reductions in greenhouse that results from county actions and services. This includes the county's role in providing transit, supporting recycling, reusing Loop wastewater biosolids, and developing renewable energy sources.

**King County Metro Transit operations result in a net beneficial impact on King County greenhouse gas emissions.**

King County Metro provides transit service to more than 100 million passengers annually, who traveled more than 543 million miles in 2011. In operating this extensive regional transit system, King County uses a large quantity of fuel - more than one million gallons of gasoline and more than 11 million gallons of diesel are used annually. Burning this fuel results in significant GHG emissions, approximately 135,000 metric tons of carbon dioxide equivalent (MTCO2e) per year. GHG emissions from bus diesel usage account for more than half of all energy related GHG emissions from King County government operations, and increased by approximately 5 percent between 2007 and 2011.

However, transit helps reduce community level GHG emissions by replacing private vehicle trips, reducing traffic congestion and supporting efficient land use and community design. King County transit estimates that King County transit service annually reduces community level emissions by more than twice the 135,000 MTCO2e emissions footprint of the transit vehicle fleet -- resulting in a net beneficial impact that results in fewer community level GHG emissions.

**Recycling in King County reduces greenhouse gas emissions equal to that of 280,000 passenger car emissions annually.**

The Solid Waste Division's Waste Prevention and Recycling Program uses education, incentives, pilot programs and partnerships to reduce the generation of waste and to increase recycling. In 2010, about 832,000 tons of recyclable and compostable materials were collected in King County, which is up two percent since 2009. Recycling helps reduce GHGs created by mining, farming or manufacturing new products. Using an Environmental Protection Agency model, recycling in King County is estimated to reduced GHG emissions by an estimated 1.62 million metric tons annually -- the equivalent of removing 280,000 passenger cars from the road.

**Wastewater Treatment Loop reduces greenhouse gas emissions.**

As it has for the past 40 years, King County produces Loop biosolids -- a natural soil amendment - from solids extracted during the wastewater treatment process. It is estimated that approximately 41,000 MTCO2e of GHG emissions are reduced annually through land application of Loop biosolids. These benefits accrue in 3 major ways:

- Some of the carbon added to soil stays there for a long time, which keeps some of the finite amount of carbon on earth out of the atmosphere and buries it in a huge carbon sink -- soil.
- Adding Loop to soil makes plants grow bigger faster which means more plants can take more carbon out of the atmosphere via photosynthesis. These plants not only store carbon in their tissues but eventually they'll drop leaves and branches on the soil surface, helping to store even more carbon in the soil.
- When gardeners and commercial growers use Loop they are usually using it instead of synthetic fertilizer. Synthetic fertilizer takes a tremendous amount of fossil fuel to manufacture. Using Loop helps us avoid the greenhouse gas emissions associated with synthetic fertilizers and instead supports a renewable, carbon-neutral energy source.

Renewable energy is used by King County and reduces greenhouse gas emissions.

King County has long been a leader in producing renewable energy -- in 2011 renewable energy production increased with the startup of the Cedar Hills Regional Landfill gas processing plant, run by BioEnergy Washington, to sell scrubbed biogas to Puget Sound Energy. In 2011 the County energy

portfolio reached approximately 23 percent renewable energy - and is expected to exceed its 50 percent target once the Cedar Hills facility and a West Point electricity co-generation project are fully operational.

King County uses much of the renewable energy it generates -- but also sells a significant amount of it to other partners and local utilities. According to the EPA, if the approximately 795,000 MMBTUs (2011) of King County renewable energy generation or use had been generated by an average non-baseload U.S. power source this would have resulted in approximately 161,000 MTCO2e of emissions(non-baseload power plants are those that are brought online as necessary to meet fluctuating demand).

## Moving forward

King County will continue to monitor its operational climate emissions as well as the emissions generated by the community. We will track more closely those community emissions that provide actionable insights for the various public, private, and civic organizations who are working collaboratively to reduce emissions. Increasingly, King County will use climate pollution information to identify what changes can be most effective, most efficient, and more equitable, so that we can target those opportunities for improvement that best align to our policy objectives.

For example, King County Parks and the Water and Land Resources Division continues to acquire, protect, restore and provide stewardship for natural lands that now include more than 26,000 acres. Forests on these lands store large quantities of carbon and as King County improves these lands, more and more carbon is stored on them. King County also plays a role in key areas such as green building, local agriculture, regional trails, and environmentally preferable purchasing and consumption.

## Related Links

**King County Metro Transit**

**Climate change, recycling and waste prevention-King County Solid Waste Division**

**Loop Biosolids-King County Wastewater Treatment Division**

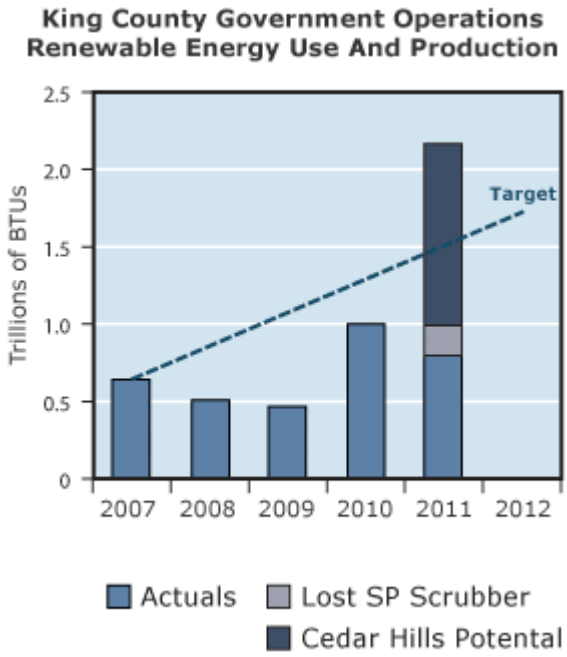
**King County Energy Plan Implementation**

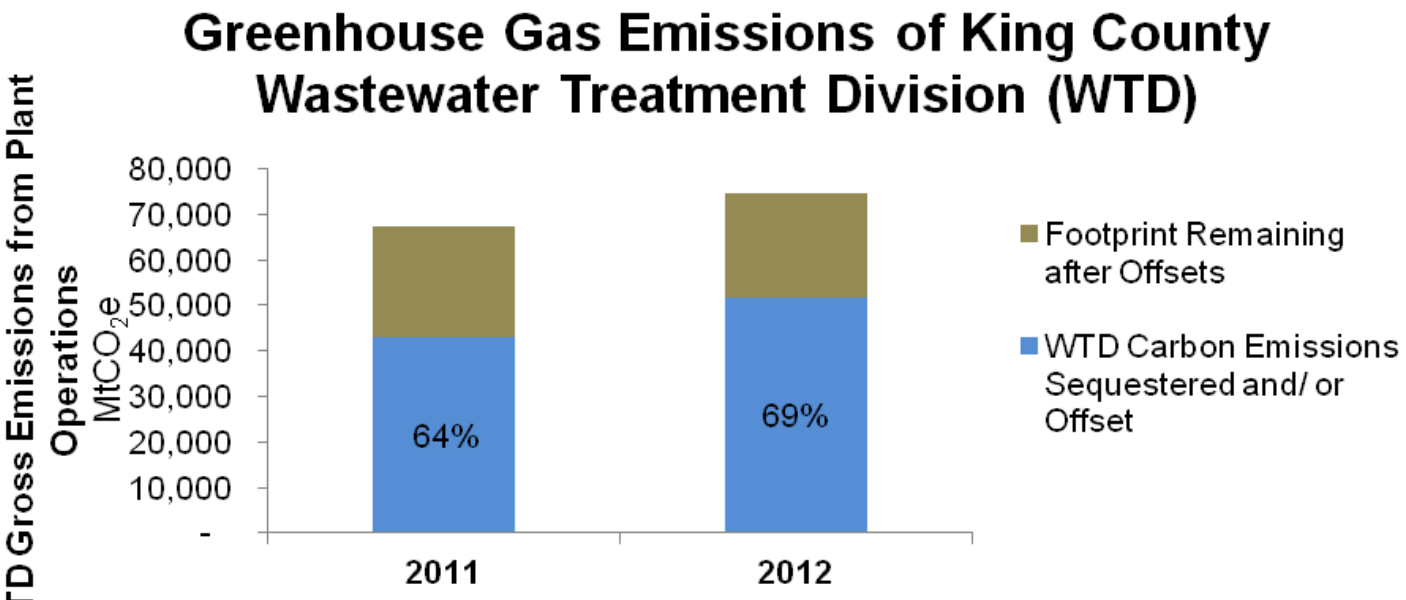
**Annual King County Sustainability Report**

**King County Climate Change Performance**

## Technical Notes

Data provided by King County Department of Natural Resources and Parks. For technical questions about the above estimates, contact climatechange@kingcounty.gov




Data provided by King County Wastewater Treatment Division
Emissions sequestered and/or offset does not include flared gas. $MtCO_2e$ refers to metric tons of carbon dioxide equivalent . Brightwater Treatment Plant began operations Sept. 2011