KING COUNTY METRO TRANSIT

SUSTAINABILITY PLAN

APRIL 2014

King County METRO

We'll Get You There

Sustainability is an inherent part of Metro's business.

King County Metro Transit • 201 S Jackson St, Seattle WA 98104 KSC-TR-0400 • 206-477-5904 • www.kingcounty.gov/metro

I am pleased to present Metro's first Sustainability Plan. Consistent with the transit industry's best practices and King County policies, this plan sets specific sustainability goals and objectives for Metro employees. Sustainability is an inherent part of Metro's business. Getting people to and from places without the use of single-occupant vehicles is a core element of any community sustainability program and is critical for reducing greenhouse gas emissions associated with air pollution and climate change.

Metro promotes sustainability through its services, programs and operations and has a long history of environmental stewardship and innovation. For example, we developed the nation's first and largest public commuter van program and deployed the first fleet of articulated diesel-electric hybrid coaches. We also operate one of the largest emissions-free electric trolley systems in the nation and offer zero-emission electric vehicles in our metropool commuter program.

Metro places a high value on resource conservation and operational efficiencies, achieving LEED certification on all major building projects since 2007 and completing numerous energy-efficiency retrofits. These efforts reflect Metro's management approach—they are practical and cost-effective solutions to transportation and financial challenges that benefit the environment and the community we serve.

In 2009, we formalized our commitment to sustainability when I signed the American Public Transportation Association (APTA) Sustainability Commitment. This is a voluntary pledge to establish core internal processes and actions that set the basis for continuous improvement on environmental, social and economic sustainability. The pledge requires adherence to core sustainability principles and a commitment to increasingly ambitious sustainability goals and action items. Metro was awarded Gold-level recognition by APTA in 2013 for our successful completion of various goals and action items, becoming one of only eight transit agencies in the country to receive this designation.

Metro's Sustainability Plan builds upon our APTA commitment, Metro's Strategic Plan for Public Transportation, and King County policies and plans addressing energy conservation, climate change, waste reduction, green building and sustainable purchasing practices.

Guided by our plan, we'll be exploring cutting-edge technologies and long-term investments, but simple steps will also be critical to our success. Behavioral choices each of us can make every day—like sharing a ride, reporting a water leak, or shutting off the coach engine during layover—make a difference. It's up to each of us at Metro to strive for continuous progress toward our sustainability goals and deliver enhanced value to both our organization and our community.

Sincerely,

Kevin Desmond, General Manager
King County Metro Transit

SUSTAINABILITY AT METRO

King County Metro Transit is the largest public transportation provider in the Puget Sound region, with approximately 119 million annual boardings on buses, commuter vans, paratransit vehicles, and streetcars. The Metro fleet has more than 2,800 vehicles, including diesel and hybrid diesel-electric buses, electric trolleys, dial-a-ride-transit vans, door-to-door Access vans, and Rideshare vehicles. Metro is the largest division in King County government and provides affordable mobility to King County residents.

Regional and environmental context

Transportation accounts for nearly half of all greenhouse gas (GHG) emissions in Washington. To reduce these emissions, significant changes in how people live and travel are necessary. Metro plays a key role in this effort by providing transportation options that help reduce the number of single-occupant vehicles on the road.

Metro both *generates* GHG emissions from the operation of its vehicles and facilities, and *reduces* emissions by providing services that take cars off the road, reduce congestion, and support more efficient land use. Metro displaces roughly four times more GHG emissions than it generates—**a net displacement of approximately 600,000 metric tons of carbon dioxide equivalent (MTCO2e) each year.**

MTCO2e:
Carbon dioxide equivalent is a measure used to compare the emissions from various greenhouse gases based upon their global warming potential. For example, the global warming potential for methane over 100 years is 21. Thus, the emissions of one million metric tons of methane is equivalent to the emissions of 21 million metric tons of carbon dioxide.

Metro helps shift people from single-occupant vehicles to public transportation. We have supported transit-oriented development projects at park-and-ride lots and identified areas of population and employment growth as priority areas for increased transit service in our service guidelines. We are also working with local jurisdictions to encourage more transit- and pedestrian-friendly development, and participate actively in the Puget Sound Regional Council's Growing Transit Communities initiative that is working to locate housing, jobs and services close to transit.

SOUTH KIRKLAND TRANSIT-ORIENTED DEVELOPMENT
Metro Transit's new three-story garage on the Bellevue-Kirkland border opened in September 2013 with a neighboring mixed-use housing project scheduled for completion in 2014. Together, the garage and housing make up a transit-oriented development (TOD), successfully concentrating housing and a transit hub to reduce the need to drive or own a vehicle. The 242-unit housing development will include 61 affordable units for occupants, whose incomes are 30, 40 or 60 percent of the King County median income. The garage has seven electric vehicle spaces with charging stations and two rows of bike racks. The park-and-ride serves various Metro and Sound Transit routes.

A history of sustainable practices

Metro has an established track record as a leader in numerous categories of sustainability (featured in the light orange boxes throughout this report). This Sustainability Plan builds upon that history by providing clear priorities and improving coordination and accountability for sustainability initiatives among Metro sections. It also reinforces King County-mandated energy and GHG reduction targets along with other sustainability targets that apply to Metro operations.

WHY SUSTAINABILITY MATTERS

METRO'S MISSION: Provide the best possible public transportation services and improve regional mobility and quality of life in King County.

Sustainability is commonly defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." A sustainable organization must find a balance between the three key pillars of sustainability: environmental, economic and social. Figure 1 illustrates these distinct but overlapping "pillars."

A successful sustainability program establishes practices that are ecologically **bearable** in the long term, economically **viable**, and ethically and socially **equitable.** These practices can apply to selecting and operating equipment, setting criteria for purchasing decisions, managing resource consumption and more.

A multifaceted sustainability program that addresses all three pillars delivers value to the community on several levels. For Metro, these include:

- a healthier environment, with improved air quality and resource conservation
- stronger communities where transit offers all residents mobility
- contributions to financial sustainability through reduction of waste and conservation of resources
- benefits for employees—healthier work environments, enhanced education and training, and a more environmentally sustainable and financially stable place of employment.

Sustainability is central to Metro's mission to provide the best possible public transportation services and improve regional mobility and quality of life in King County. Advancing sustainability in all facets of business—including service planning, vehicle and fuel selection, facility operations, design and construction and customer service—ensures that Metro is well-positioned to adapt to future environmental, economic and social challenges.

While future sustainability plans will focus on all three pillars of sustainability, this plan focuses specifically on environmental sustainability in alignment with current King County plans and policies targeting resource conservation and with the American Public Transportation Association (APTA) Sustainability Commitment's focus on environmental metrics.

For more information on Metro's equity and social justice initiatives, visit www.kingcounty.gov/exec/equity.

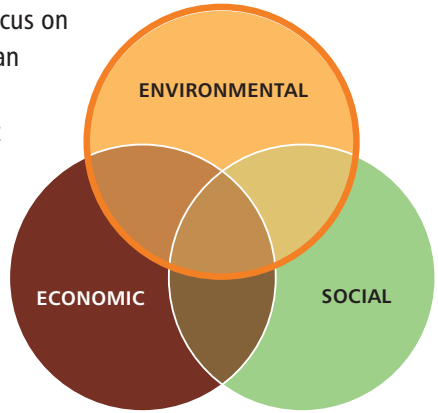


FIGURE 1
THE THREE "PILLARS" OF SUSTAINABILITY

Metro's the name but it's made up of individuals just like the people we serve. The efforts we make and improvements we strive for benefit us just as much as the people of King County. —George, VM

THE POLICY BASIS FOR SUSTAINABILITY

King County programs and policies

Metro's Sustainability Plan includes many of the targets in King County plans and policies. The 2010 King County Energy Plan and the 2012 King County Strategic Climate Action Plan set aggressive goals for resource conservation and emissions reductions, and identify Metro as a key player in helping the County reach these goals.

- **The King County 2010 Energy Plan** provides a detailed roadmap for implementing the energy-related portions of King County's Strategic Plan with continuous improvement in energy efficiency and increased use and production of renewable and GHG-neutral energy. The Energy Plan sets these targets:
  - ✳ Reduce energy use from buildings and facilities by 10 percent by 2012, and reduce energy use by County vehicles by 10 percent by 2015, as compared to a 2007 baseline.
  - ✳ Produce, use or procure renewable energy equal to 50 percent of total County energy requirements by 2012.

- **The 2012 Strategic Climate Action Plan (SCAP)** has five goals for climate change action and calls for a 50 percent reduction in GHG emissions from County operations by 2030, and at least an 80 percent countywide reduction in GHG emissions by 2050, compared to 2007.

Three of the SCAP goals apply directly to Metro:

- ✳ *Goal 1–Transportation & Land Use:* Reduce the need for driving and provide and encourage the use of sustainable transportation choices such as public transit, alternative technology vehicles, ridesharing, walking and bicycling; increase the efficiency of County vehicle fleets; and minimize GHG emissions. The Puget Sound Regional Council's Transportation 2040 plan projects that boardings on transit services in the region will double by 2040, and calls for Metro to achieve the following targets:
  - » Increase passenger boardings to 122 million by 2015, 137 million by 2020, and 214 million by 2040.
  - » Reduce the drive-alone rate by 10 percent below 2011 levels by 2015.
  - » Reduce energy use by County vehicles by 10 percent by 2015, compared to a 2007 baseline.
- ✳ *Goal 2–Energy:* Reduce energy use at County facilities by at least 10 percent by 2012, 15 percent by 2015, and 20 percent by 2020, compared to a 2007 baseline.
- ✳ *Goal 4–Consumption & Materials Management:* Reduce copy paper usage by 20 percent by 2013, compared to 2010, and purchase 100 percent recycled-content copy paper.

NORTH BASE GARAGE VENTILATION PROJECT

In 2013 Metro replaced bus garage ventilation fans and related equipment at North Base. The new equipment is projected to save approximately 2 million kWh per year, equivalent to over $116,000 in annual savings. Metro received over $450,000 in incentive payments from Seattle City Light for this energy efficiency project.

- **Additional King County plans and policies** referenced in this Sustainability Plan regarding waste reduction, green building, sustainable development, environmentally preferable purchasing and renewable energy are discussed in more detail in Appendix A.

Metro's strategic plan

Metro's 2011 - 2021 Strategic Plan for Public Transportation provides overall policy direction for the agency. The strategic plan sets a goal to "safeguard and enhance King County's natural resources and environment," and defines two objectives: 1) help reduce GHG emissions in the region, and 2) minimize Metro's environmental footprint. To help achieve these objectives, this plan highlights strategies to increase alternatives to single-occupant vehicle travel, adopt energy-efficient and low-emission technologies, and implement the King County Green Building and Sustainable Development Ordinance.

APTA sustainability commitment

A founding signatory to the APTA Sustainability Commitment, Metro is committed to adopting core processes to ensure that ongoing environmental, social, and economic sustainability practices are continually improved over time (see Appendix B). In 2013, Metro received gold-level recognition from APTA based on a review of sustainability indicator performance through 2011. Metro will continue to use the APTA Sustainability Commitment framework for measuring and reporting on environmental sustainability indicators.

Environmental sustainability management system

Metro's Environmental Sustainability Management System (ESMS) is a system of programs and procedures that help reduce the environmental impact of daily operations, make facilities safer and healthier places to work, and ensure continual improvement for meeting environmental goals. Metro initiated an ESMS at the South Base and Component Supply Center campus (SB/CSC) in 2011. This ESMS focuses on four aspects of operations that can have significant impacts on the environment:

- Chemicals: Reduce the environmental impacts of chemicals used
- Spill control: Prevent or reduce the environmental impact of spills
- Electricity: Reduce electricity consumption
- Natural gas: Reduce natural gas consumption

Metro's ESMS aligns with the 14001 standard of the International Organization for Standardization (ISO). The ISO 14001 standard uses a method of continual improvement called "plan-do-check-act." Metro plans to pursue ISO 14001 certification at SB/CSC and to expand the ESMS to additional facilities. This process will help reduce Metro's environmental footprint and achieve sustainability goals for Metro, King County and APTA.

ENVIRONMENTAL SUSTAINABILITY GOALS

Metro developed sustainability goals in five resource-conservation categories:

- Energy efficiency and conservation
- Climate pollution reduction
- Water conservation
- Waste management
- Ridership growth

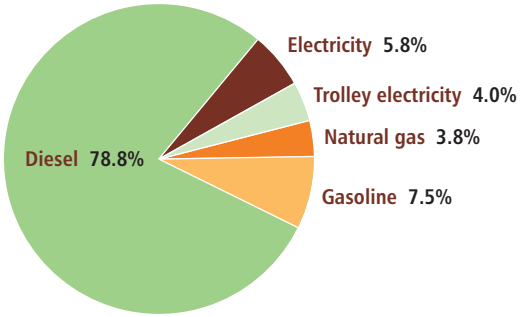
This plan sets targets for each goal with data normalized for passenger boardings, vehicle miles traveled, square footage of Metro buildings, etc. where applicable. All targets are compared to a 2009 baseline unless otherwise noted. A summary of baseline resource use and annual trends for each category is in Appendix C.

Energy efficiency and conservation

Metro uses more energy than any other King County division, accounting for more than 50 percent of King County's total energy use. Approximately 90 percent of Metro's energy (primarily in the form of diesel fuel) is used to power buses, trolleys, commuter vans and other transit vehicles, while the remaining 10 percent is used for heating, lighting, and equipment at transit bases and other facilities (see Figure 2).

FIGURE 2

METRO TRANSIT ENERGY USE



We have documented proof our hybrid bus improved fuel economy by 26% compared to the same diesel bus. Kim, VM

Increasing energy efficiency and taking steps to conserve energy are critical components of Metro's Sustainability Plan. Metro's energy use reduction targets are aligned with King County's 2010 Energy Plan and the 2012 SCAP. Metro took a proactive approach to energy conservation by developing a Facility Energy Reduction Plan in 2013 with specific energy efficiency and conservation strategies for Metro facilities and operations.

King County met the goal to produce, use or procure renewable energy equal to 50 percent of total County energy requirements by 2012, thanks in large part to the capture of methane gas from the County's Cedar Hills landfill and wastewater plants. However, Metro will continue to evaluate opportunities to transition to cleaner and renewable energy sources for both facilities and fleet vehicles.

GOAL: Reduce consumption of energy, including diesel fuel, gasoline, electricity and natural gas, and transition to cleaner and renewable energy sources.

	TARGET	2012 STATUS
FACILITY ENERGY USE	Reduce energy use from buildings and facilities by at least: • 10 percent by 2012 • 15 percent by 2015 • 20 percent by 2020	**–13%**
FLEET ENERGY USE	Reduce energy use from vehicle fleets by at least 10 percent by 2015	**–4%**[1]

[1] *Revenue fleet energy use only*

Variable frequency drive fan controls for Ryerson Base save energy by running motors at less than 100% output when full power isn't needed.

Title 24 reflective roof and prismatic light-gathering skylights at the South Base Maintenance building.

Metro's path to reduced energy use

- Implement recommendations in Metro's Facility Energy Reduction Plan
- Install energy-efficient lighting and equipment
- Integrate green building and sustainable development practices—along with utility-sponsored incentives—in capital project design, construction, maintenance and operation
- Educate and motivate employees on ways to reduce workplace energy use
- Implement operational strategies, such as anti-idling, to improve fuel efficiency of fleet vehicles
- Pursue opportunities for testing and innovation in energy-efficient fleet vehicles
- Address energy efficiency in service design
- Achieve ISO 14001 certification at South Base and the Component Supply Center

Climate pollution reduction

King County's Strategic Climate Action Plan establishes specific objectives, strategies and priority actions for reducing GHG emissions. It calls for an overall reduction of GHG emissions from both county government operations and community sources. Transportation is the single largest source of carbon emissions in King County. As the primary provider of public transportation in King County, Metro is well-positioned to help reduce community carbon emissions by displacing automobile trips through increased use of transit, vanpools, carpools, walking and bicycling.

Metro emits about 80 percent of King County government's fossil fuel-sourced greenhouse gases, far more than any other County division. Metro's fleet also produces emissions—including ozone, lead, atmospheric particulate matter, carbon monoxide, sulfur oxides, and nitrogen oxides—that are regulated as criteria air pollutants. These pollutants can harm both human health and the environment. For many years, Metro has taken steps to reduce criteria air pollutants through exhaust system retrofits, the use of ultra-low sulfur diesel fuel, and the replacement of older fleets with newer, cleaner and more-efficient vehicles.

METROPOOL VEHICLES

The metropool pilot program launched in 2011 with 20 all electric, zero emission Nissan LEAFs. The LEAF is a 100-percent electric, no-gas, no-tailpipe, no-emissions vehicle with an estimated driving range of 100 miles on a single charge and seating for five people. In 2012, metropool placed 20 Nissan LEAFs in operation. The number increased to 25 vehicles in 2013, saving more than 10,000 gallons of gasoline and over 200 metric tons of greenhouse gas emissions for the year. Employers in support of this project installed Level 2 (240 volt) charging stations that allow the metropool vehicle to be fully charged in approximately seven hours if the battery is completely empty.

Fuel conversion opportunities

Transit agencies around the country are using alternative fuels as a way to reduce GHG and criteria air pollutant emissions in the communities they serve while potentially reducing operating costs. Given the relatively clean sources and low cost of electricity in the Puget Sound Region, Metro's current fleet strategy targets the use of electric trolleys and diesel-electric hybrid buses. Metro will test an all-electric battery-powered bus in 2014. While incorporating other types of fuels into the Metro fleet would require long-term planning and budgeting for equipment and facility upgrades, Metro will continue to evaluate ongoing industry reviews of cost-effective technologies that can help achieve goals for conserving energy and reducing GHG emissions.

GOAL: Significantly reduce greenhouse gas and criteria air pollutant emissions and displace increasing percentages of community-generated GHG emissions from transportation.

	TARGET	2012 STATUS
GHG EMISSIONS	Reduce total GHG emissions by at least: • 15 percent by 2015 • 25 percent by 2020 • 50 percent by 2030	**– 2%**
GHG DISPLACEMENT	Increase total GHG emission displacement by at least 5 percent by 2015	**+2%**
CAP EMISSIONS[1]	Reduce motorbus fleet criteria air pollutant emissions by at least 10 percent by 2015	**– 35%**

[1]*CAP=Criteria air pollutant*

Metro's path to reduced emissions

- Phase in cleaner fuels, vehicles and technologies
- Pursue opportunities for alternative vehicle and fuel demonstration projects
- Increase the use of electric vehicles and trolleys
- Incorporate GHG emission tracking into Metro's accounting system
- Expand Rideshare program partnerships with community groups, employers and businesses
- Implement operational strategies to reduce emissions from fleet vehicles
- Conduct an employee engagement program for reducing individual carbon footprints

Bringing electric vehicles to the rideshare market has been an innovative, educational and fun journey. Over 130 Metro customers at employer sites including Amgen, Microsoft, Amazon, Zymogenetics, Seattle Children's Hospital and more, have readily adopted this new technology and love their all-electric, zero emissions commute to work!

–Cindy, Rideshare Operations

Water conservation

The utilities that provide Metro's water are supplied by streams and reservoirs in the Cascade Mountains and from groundwater connected to surface water sources. Water used for washing buses, irrigating transit base landscaping, flushing toilets and other domestic uses competes with fish, other wildlife and vegetation for this critical resource. Conservation practices allow more water to remain in our rivers, streams and aquifers, helping protect Puget Sound's ecosystem.

The King County Council has not mandated water reduction targets for County operations, as it has with energy and GHG emissions. However, Metro has taken steps to significantly reduce water use by reusing bus wash water, enhancing leak detection and repairs, improving washing practices in the Downtown Seattle Transit Tunnel, reducing landscape irrigation, and implementing additional conservation strategies. These proactive water conservation efforts have generated significant savings. Conservation strategies will continue to target water-saving opportunities for both vehicles and facilities. However, after making a large number of equipment and process upgrades in recent years, incremental savings are expected going forward.

GOAL: Reduce water consumption.

	TARGET	2012 STATUS
WATER USE	Reduce water use by 5 percent by 2015	**– 33%**

Both the neighbors and base staff share special feelings about the green space that was recently reconstructed on top of Metro's North Base bus parking garage. Over 80,000 sq ft of sod was reused for environmental restoration work at King County's Cedar Hills Landfill as part of this project, which was very rewarding.

—Mike, Design & Construction

NORTH BASE GARAGE PROJECT

The North Base bus parking garage has a green sod lid that consists of a two-acre recreation area for public use. The waterproof liner on the garage roof was replaced in 2012, resulting in the removal of nearly 3,000 tons of soil, all of which was reused (after amendments were added) to promote the growth of new turf grass.

Metro's path to reduced water use

- Employ water-conserving methods to clean transit facility grounds, shelters, and the Downtown Seattle Transit Tunnel
- Convert water-cooled compressors to air-cooled compressors
- Increase water reclamation and rainwater harvesting
- Landscape with low-water-use plants
- Detect leaks through onsite monitoring and review of water bills
- Track water usage systemwide with submetering at individual facilities
- Install low-flow washing equipment for non-revenue fleet vehicles and low-flow fixtures in Metro facilities

The solar compactors at the International District station really help with upkeep of the area and have made a big improvement for collecting more trash and reducing pollution.
—Alina, Power & Facilities

Waste management

Metro is a major producer and collector of solid waste. Metro's waste stream includes trash collected at bus shelters, transit centers, and other passenger facilities as well as trash generated in-house at transit bases and similar properties. Over one-third of the approximately 1,500 tons of waste collected by Metro each year gets diverted from the waste stream through recycling, composting or reuse. The remainder is sent to regional landfills for disposal.

The majority of Metro's unrecycled waste (approximately three-quarters) is generated by the public and deposited in waste bins at passenger facilities or left behind on Metro buses. Efforts to provide public recycling at passenger facilities have had mixed results. By contrast, Metro has been very successful diverting its own refuse from the waste stream by recycling or reusing 25 separate categories of materials, including scrap metals, paper and cardboard from parts shipping, hybrid-bus batteries, waste oil and antifreeze, and foam from passenger seating. This diversion has saved energy, preserved limited landfill capacity, and lowered waste hauling and disposal costs.

Metro also is committed to reducing paper waste from office operations. King County's Environmentally Preferable Product Procurement Policy and the 2012 SCAP set specific targets for reducing paper usage and require all County departments to purchase 100 percent recycled content copy paper. Increased paper usage by Metro sections in 2012 and 2013 (with associated cost increases) highlights an opportunity for enhanced employee education and engagement on paper reduction practices and benefits. A continued focus on reducing paper use will help conserve resources and cover any cost premiums associated with the purchase of 100 percent recycled content paper.

Ongoing efforts to reduce, reuse and recycle waste at Metro include increased compliance with the County's Environmentally Preferable Product Procurement Policy, establishing a baseline and process for systematically increasing construction and demolition diversion rates, and compliance of all applicable projects with the Green Building and Sustainable Development Ordinance. Due to the magnitude of efforts undertaken in recent years to reduce and reuse waste, incremental savings are anticipated moving forward.

"Cyclone waste" (i.e., lighter weight material such as paper transfers and plastic bottles) is collected for recycling by a vacuum system used to clean buses at transit bases.

Incorporating sustainable building and design

King County's Green Building and Sustainable Development Ordinance sets green building certification requirements to reduce waste and increase operational efficiency. The intent of this ordinance is to ensure that the planning, design,

SOLAR COMPACTING TRASH BINS

Power & Facilities maintains 122 compactors (97 for waste and 25 for recycle). These bins, installed in 2012, use solar-powered compaction that allows more trash to be stored in less space, eliminating three to four normal pickups before they must be emptied. Fewer vehicle trips to empty the bins results in reduced fuel consumption and associated greenhouse gas emissions.

construction, remodeling, renovation, maintenance and operation of any King County-owned capital project is consistent with the latest green building and sustainable development practices. Elements of the LEED certification program and the King County Sustainable Infrastructure Scorecard referred to in the ordinance address energy conservation, water conservation, waste reduction and more, aligning with Metro's Sustainability Program.

GOAL: Reduce and reuse material waste.

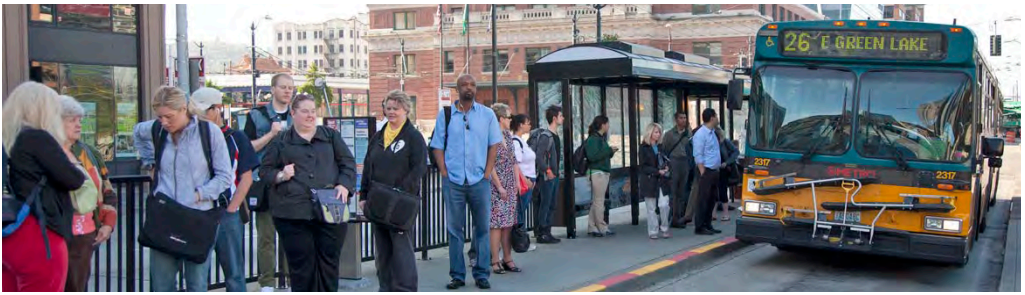
	TARGET	2012 STATUS
SOLID WASTE	Reduce solid waste disposal by at least 5 percent by 2015[1]	**– 37%**
MATERIAL REUSE AND RECYCLING	Increase diversion of solid waste from landfills through reuse and recycling by at least: • 7 percent by 2015 • 15 percent by 2020 • 30 percent by 2030[1]	**+22%**
CONSTRUCTION AND DEMOLITION WASTE	Increase the diversion rate for construction and demolition materials to: • 80 percent diversion rate by 2016 • 85 percent diversion rate by 2025	**NA[2]**
ENVIRONMENTALLY PREFERABLE PURCHASING	• Purchase 100 percent recycled content for all copy paper	**49% of copy paper purchased met requirement**

[1] *Compared to a 2003 baseline*
[2] *To be tracked beginning in 2014*

The LEED Gold certified Atlantic/Central Operations Base includes highly reflective roofing and paving, an exterior vegetated wall that provides shading for the west façade, native vegetation, low-flow water fixtures and natural daylighting.

Metro's path to waste reduction

- Expand reuse and recycling capacity at Metro facilities
- Explore ways to recycle waste from passenger facilities
- Educate employees about the paper reduction goals and purchasing requirements in the County's Environmentally Preferable Product Purchasing Policy
- Conduct a paper reduction campaign
- Collect sweeper waste for reclamation, reuse and composting
- Pursue opportunities to use recycled and reclaimed materials in Metro facilities and fleet vehicles
- Develop an employee suggestion program for waste reduction
- Require separation and reclamation of wood, metal, concrete, drywall, and other common construction materials for reuse or recycling
- Review purchasing and project bid specifications and practices for opportunities to reduce waste
- Comply with the King County Green Building and Sustainable Development Ordinance



Ridership growth

Improving public transportation service and making transit, ridesharing, cycling and walking the travel modes of choice in King County are central to Metro's vision—to provide safe, efficient and reliable public transportation that people find easy to use—and have long been top agency priorities. Metro nearly reached record-high ridership in 2013, delivering 118.6 million passenger trips. Metro operates the largest public vanpool program in the nation, which delivered more than 3.5 million passenger trips in 2013. The County's Commute Trip Reduction (CTR) program helped foster a 7.1 percent reduction in the countywide drive-alone rate between 2007 and 2011 at CTR-participating employers, resulting in 2.2 million fewer solo vehicle trips annually and an annual GHG reduction of more than 32,000 metric tons of carbon dioxide equivalent. Over 1,600 employers participate in an ORCA Business Account program providing either partially or fully subsidized transit passes to their employees. Pass programs are often coupled with other types of commute support, such as emergency taxi rides home, to eliminate barriers to public transportation.

The Puget Sound Regional Council's Transportation 2040 regional transportation plan estimates that twice as many people will inhabit the Puget Sound region in 2040 as in 2010, resulting in increased need for transit services. Expanding demand for bus, vanpool, carpool, bicycling and walking relative to private automobile use is central to Metro's mission and critical for accommodating anticipated growth while reducing regional climate impacts. As shown in Figure 3, overall drive-alone rates in King County decreased by four percent from 2007-2011, while the number of people commuting by transit, biking and walking increased.

Metro encourages its employees to take public transportation for both business and personal travel. King County gives all benefit-eligible employees ORCA cards and covers their fares on all regular bus and train service provided by Metro Transit, Sound Transit, Community Transit, Pierce Transit, Kitsap Transit, Everett Transit and the King County Water Taxi. Metro employees also have access to County fleet vehicles, including hybrid and electric vehicles, for work-related travel, and are encouraged to participate in annual promotions for alternatives to drive-alone commuting.

GOAL: Expand transit ridership and reduce vehicle miles traveled.

	TARGET	2012 STATUS
RIDERSHIP EXPANSION[1]	Increase passenger boardings to: • 127 million passenger boardings by 2015 • 142 million passenger boardings by 2020 • 225 million passenger boardings by 2040	**119 million boardings**
VEHICLE MILES TRAVELED[2]	Reduce vehicle miles traveled by 10 percent below 2011 levels by 2015	**NA[3]**
DRIVE-ALONE RATE[2]	Reduce the drive-alone commuting rate by 10 percent below 2011 levels by 2015	**NA[3]**

[1] Ridership goals revised in early 2014 to include Vanpool passenger boardings.
[2] For King County Commute Trip Reduction (CTR) program employers only
[3] Data is based on CTR surveys administered biannually. The next status update for these indicators will be provided in 2014.

Metro's purchase of a large number of hybrid buses demonstrated the viability of hybrids to transit agencies around the country. It also let bus manufacturers and hybrid developers move the technology to market. —Todd, VM

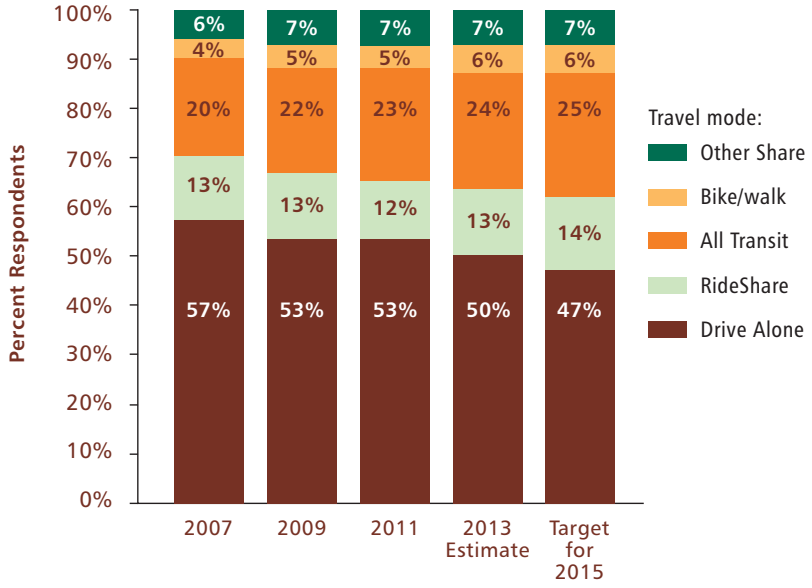
Metro's path to increased ridership

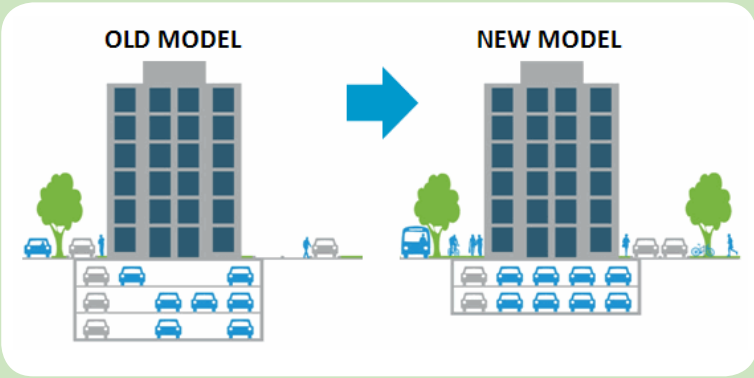
- Partner with employers to make public transportation products and services more affordable and convenient for employees
- Expand services to accommodate the region's growing population
- Pursue innovative investment and partnership opportunities with regional organizations
- Pursue partnerships for transit-oriented development projects
- Encourage employees to use public transit for both business and personal trips

FIGURE 3

KING COUNTY COMMUTE METHOD

(As measured by the Washington State Commute Trip Reduction Survey)





RIGHT SIZE PARKING PROJECT

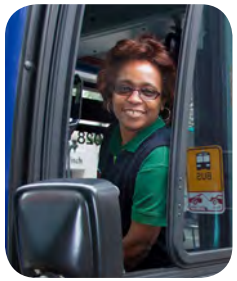
Parking policies tend to result in an oversupply of parking spaces that can limit a jurisdiction's ability to create compact, healthy communities and can provide a barrier to efficient and well-utilized transit service. To achieve a more balanced approach to parking in the region, Metro developed the Right Size Parking Calculator, which better estimates actual parking use and needs for multi-family developments.

The calculator uses a statistical model that estimates parking use by factoring elements of the building, its occupants, and its surroundings—particularly transit, parking pricing, and population and job concentrations.

In addition to this nationally recognized research, Metro is coordinating real-world demonstration projects—including development of flexible, market-based model parking codes and strategies to "unbundle" the costs of rent and parking—to help analysts, planners, developers, and community members determine how much parking is "just enough" when making economic, regulatory, and community decisions about development.

IMPLEMENTING THE PLAN

Metro's sustainability program spans every section of the organization, and all employees are responsible for helping Metro achieve the goals outlined in this plan. Implementation of the plan will focus on these three key strategies:



1. **Annual work plans:** Each Metro section is required to show in their annual work plans how existing or planned programs and activities align with the goals in this sustainability plan.
2. **Employee engagement:** Metro will encourage employee activism around sustainability goals and initiatives with a comprehensive employee education and outreach campaign. Sustainability programs yield the best results when embraced by employees at all levels, so this effort will focus on section-specific messaging and outreach plans.
3. **Monitoring and reporting:** Metro will produce an annual update on progress toward the goal for each of the sustainability indicators in this plan. This plan and the annual update will be posted online.

Metro is known for its broad range of innovative transit services, green practices, and visionary approach to meeting the transportation needs of the County's growing population. This plan will reinforce that reputation by clearly defining the agency's sustainability values along with measurable goals, targets and strategies for each resource-conservation category. To ensure that the plan responds to changing policies, goals and conditions in the future, it will be re-evaluated for relevancy and updated as needed.

Alternative Formats Available

206-477-3832 TTY Relay: 711

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King County METRO

We'll Get You There

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APPENDICES

Figures

Tables

APPENDIX A: POLICY CONTEXT FOR METRO'S SUSTAINABILITY PROGRAM

Metro's Sustainability Program responds to the following federal, state, regional and county mandates, and is aligned with the American Public Transportation Association Sustainability Commitment (outlined in additional detail in Appendix B).

Federal, state and regional regulations and policies

Metro complies with numerous state and federal environmental policies and regulations. "Moving Ahead for Progress in the 21st Century," or MAP-21, is federal legislation enacted in 2012 that supports functional, reliable and secure transportation systems in the United States. Reliable and secure systems are integral to sustainability and will impact Metro's mission to provide reliable and efficient transportation to the King County region. Metro also adheres to both the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA), which establish procedural requirements for evaluating the environmental impact of projects and policies.

The Washington legislature established requirements for reducing statewide greenhouse gas (GHG) emissions (RCW 70.235.020) and goals for reducing vehicle miles traveled (VMT; RCW 47.01.440). GHG emissions requirements are to limit emissions to 1990 levels by 2020, to 25 percent below 1990 levels by 2035, and to 50 percent below 1990 levels by 2050. VMT goals are to decrease annual per capita VMT by 18 percent by 2020, 30 percent by 2035, and 50 percent by 2050.

The Puget Sound Regional Council incorporated these provisions into the regional growth strategies, Vision 2040 and Transportation 2040. Transportation 2040 is an action plan for transportation in the central Puget Sound region for the next 30 years and projects a 50 percent increase in transit ridership by the year 2040. This plan addresses how the region should invest in transportation to accommodate rising travel demand, along with a strategy for reducing transportation's contribution to climate change and associated impacts.

King County policies and plans

King County policies and plans provide direction for reducing Metro's environmental footprint, with a strong emphasis on energy resources and GHG emissions. A summary of relevant plans and policies for Metro services and operations is provided on the following page.

TABLE A1: KING COUNTY SUSTAINABILITY TARGETS

POLICY DIRECTIVE	TARGETS APPLICABLE FOR METRO	MILESTONES
King County Energy Plan (2010)	Reduce normalized net energy use from buildings and facilities, by at least 10 percent by 2012 as compared to a 2007 baseline Achieve a 10 percent normalized net reduction in energy use by County vehicles by 2015 as compared to a 2007 baseline Produce, use or procure renewable energy equal to 50 percent of total County energy requirements by 2012	**2012** **2015**
King County Strategic Climate Action Plan (2012)	Reduce normalized net energy use from buildings and facilities as compared to a 2007 baseline by at least: • 10 percent by 2012 • 15 percent by 2015 • 20 percent by 2020 Achieve a 10 percent normalized net reduction in energy use by County vehicles by 2015 as compared to a 2007 baseline Reduce GHG emissions from government operations, compared to a 2007 baseline, by at least: • 15 percent by 2015 • 25 percent by 2020 • 50 percent by 2030 Reduce countywide GHG emissions by at least 80 percent below 2007 levels by 2050 Consistent with the Puget Sound Regional Council's Transportation 2040 regional transportation plan's projection that boardings on transit services in the region will double by 2040, Metro will strive to achieve the following targets: • 122 million passenger boardings by 2015 • 137 million passenger boardings by 2020 • 214 million passenger boardings by 2040	**2012** **2015** **2020** **2030** **2040** **2050**
King County 2012 Climate Motion (Section C)	Achieve a 10 percent reduction in drive-alone commuting by 2015 by expanding participation in the Washington State Commute Trip Reduction employer partnerships program.	**2015**

Table continued on next page

POLICY DIRECTIVE	TARGETS APPLICABLE FOR METRO	MILESTONES
King County Green Building and Sustainable Development Ordinance (2008)	For all King County-owned and County-financed projects: • All eligible new construction and major remodel and renovation projects are required to achieve the LEED Gold certification (LEED Platinum required as of August 1, 2014) • All capital projects that are not eligible or are limited in their ability to achieve LEED certification must incorporate cost-effective green building and sustainable development practices using a County-developed "scorecard" or checklist Updates adopted in late 2013 also call for an increase the diversion rate for construction and demolition materials to: • 80 percent diversion rate by 2016 • 85 percent diversion rate by 2025	**Ongoing**
King County Environmentally Preferable Product Procurement Policy (2011)	Sets specific goals related to waste reduction and recycled-content purchases, including: • Reduce paper usage in 2013 by 20 percent as compared to 2010 • Beginning on or before January 1, 2012 and continuing thereafter, departments shall buy 100 percent recycled paper for copy paper usage and purchase 100 percent recycled paper for other printing needs whenever practicable • Departments shall purchase environmentally preferable oils wherever practicable Sets requirements for the use of recycled paper for all imprinted letterhead paper and business cards, and requirements for publicizing the use of recycled content Sets requirements for departmental paper conservation strategies and flow-down requirements for contractors and consultants	**2012** **2013**

The plans and policies highlighted in Table A1 are most relevant for Metro's Sustainability Plan. Additional countywide policy directives are briefly summarized below.

- **King County Countywide Planning Policy EN-17:** Directs the County (and its cities) to establish a countywide GHG-reduction target that exceeds the statewide reduction requirement.
- **Executive Order on Global Warming Preparedness:** Supports requirements in the Executive Order on Renewable Energy and Related Economic Development by prompting investments in alternative fuels and more efficient use of energy.
- **King County Comprehensive Solid Waste Management Plan:** Presents strategies for managing King County's solid waste, including policies, recommendations, and goals for waste prevention and recycling.
- **King County 2010 Strategic Plan:** Calls for reductions in GHG emissions, preparation for climate change, and minimization of the County's operational environmental footprint through performance monitoring and investments in alternative fuel sources.
- **2009 King County Surface Water Design Manual:** Regulates proposed projects through a mixture of stormwater management requirements, performance standards, and design standards to mitigate the impacts of new development and redevelopment on natural and man-made drainage systems.
- **King County 2008 Comprehensive Plan:** Integrates transportation and environmental policies with goals and mitigation actions to reduce environmental impacts.

Metro's Strategic Plan for Public Transportation 2011-2021

Metro's Strategic Plan for Public Transportation is the primary policy guidance for Metro and defines Metro's mission: to provide the best possible public transportation services and improve regional mobility and quality of life in King County. Metro's strategic plan is based on the goals of the King County 2010 Strategic Plan and is consistent with both the King County 2008 Comprehensive Plan and the 2012 King County Strategic Climate Action Plan.

The environmental sustainability goal featured in Metro's Strategic Plan—to "Safeguard and enhance King County's natural resources and environment"—mirrors language in the County's 2010 Strategic Plan. Metro's strategic plan has two sustainability objectives: 1) help reduce GHG emissions in the region, and 2) minimize Metro's environmental footprint. Both objectives are aligned with the County's 2012 Strategic Climate Action Plan.

The first objective is consistent with the County's commitment to reduce GHG emissions by 80 percent between 2007 and 2050. Reduction of regional VMT and related GHG emissions is critical to meeting this objective. A key strategy is to increase transit mode share by offering an array of alternatives to single-occupant vehicle travel. The second objective is consistent with commitments to reduce energy consumption in Metro's buildings and vehicles from 2007 to 2020. Metro's strategic plan highlights strategies related to technology adoption and the incorporation of sustainable design, construction, operating and maintenance practices to help increase energy efficiency and meet these objectives.

APPENDIX B: APTA SUSTAINABILITY COMMITMENT

Metro is a founding signatory of the American Public Transportation Association Sustainability Commitment, which represents the transit industry's best sustainability practices. By signing on to this commitment, Metro pledged to establish core internal processes to improve the agency's environmental, social and economic sustainability. Specifically, Metro committed to adhere to Core Principles, set and achieve Action Items and Stretch Goals, and measure performance with Sustainability Indicators.

Signatories can apply for further recognition for their achievements on sustainability, and make further commitments, six months following the signing of the core commitment. APTA's recognition levels are defined as Bronze, Silver, Gold or Platinum. Signatories may choose to move up levels as they achieve goals related to action items, stretch goals and reduction targets for sustainability indicators.

TABLE B1: APTA SUSTAINABILITY COMMITMENT RECOGNITION LEVELS

Level	Core Principles	Action Items		Reductions per Indicator		Stretch Goals	
	Require	Require	Commit to	Require	Commit to	Require	Commit to
BRONZE	✓	5	+5		2 at 2%		
SILVER	✓	10	+10	2 at 2%	2 at 5% +2 at 2%		3
GOLD	✓	20	+20	2 at 5% 2 at 2%	2 at 10% 2 at 5% All others at 2%	3	+3
PLATINUM	✓	40		2 at 10% 2 at 5% All others at 2%	2 at 20% 2 at 10% All others at 5%	6	+3

Core principles

The core principles set the minimum actions that APTA members must take to demonstrate that they are serious about sustainability and are set up for success. Accordingly, Metro has committed to:

1. Making sustainability a part of Metro's strategic objectives,
2. Identifying a sustainability champion within the organization, coupled with the proper human and/or financial resources and mandates,
3. Establishing an outreach program on sustainability for all Metro staff, and
4. Undertaking a sustainability inventory of key sustainability indicators.

Action items

Action items refer to sustainability achievements made in the short- to medium-term (one to three years) in operation, maintenance and capital, products and services, and education and outreach in alignment with efforts to achieve economic, environmental and social sustainability objectives. Metro has accomplished over 40 specific Sustainability Action Items as reported to APTA for Gold-level recognition in the summer of 2013.

Stretch goals

Stretch goals refer to additional, longer-term programmatic and process goals (four to six years) that challenge organizations committed to Silver, Gold or Platinum status to make a significant difference in the way they function in view of meeting sustainability criteria. Metro identified the following programmatic and process goals and is committed to achieving each of these goals by 2015.

Metro's stretch goals

Completed

- ✔ Institute a sustainability program
- ✔ Prepare and approve a sustainability plan
- ✔ Systematize tracking and reporting of all sustainability metrics, including normalization criteria
- ✔ Prepare energy audits and develop specific energy management plans for the majority of large energy-intensive transit facilities, consistent with the King County 2010 Energy Plan

In progress

- ➠ Achieve ISO 14001 certification for South Base/Component Supply Center
- ➠ Achieve a 10 percent normalized net reduction in energy use by County vehicles by 2015, as compared to a 2007 baseline
- ➠ Reduce normalized net energy use from buildings and facilities, as compared to a 2007 baseline, by at least 10 percent by 2012 and 15 percent by 2015

Sustainability indicators

The APTA Sustainability Commitment identifies 11 key sustainability indicators to be monitored for ongoing annual performance. Each sustainability indicator is evaluated on a per-unit basis (i.e. normalized) in order to account for changes in transit-related resource use. The normalization metric selected for most indicators is unlinked passenger trips, also known as boardings. This metric is a simple surrogate for transit service usage—the higher the boardings per unit of resource used or waste generated, the more resource-efficient the system.

- **APTA Sustainability Indicators:**
  - ♦ Water usage per unlinked passenger trip
  - ♦ Criteria air pollutant emissions per vehicle mile traveled
  - ♦ GHG emissions per unlinked passenger trip
  - ♦ GHG savings (displacement) per passenger mile traveled
  - ♦ Facility energy use (electricity/natural gas in BTUs) per square foot of conditioned building space
  - ♦ Vehicle energy use (diesel/gasoline/electricity in BTUs) per vehicle mile traveled
  - ♦ Recycling levels/diversion rate per unlinked passenger trip
  - ♦ Solid waste per unlinked passenger trip
  - ♦ Operating expense per vehicle revenue mile
  - ♦ Unlinked passenger trips (boardings) per capita in service area of operation
  - ♦ Regional vehicle mile traveled per capita in service area of operation

- **Baseline and Target:** Metro selected 2009 as the APTA baseline for most indicators to reflect new facilities that opened and significant resource conservation efforts that began in 2010. The year 2003 was selected as the baseline for solid waste and recycling in recognition of Metro's long-term waste reduction and management efforts. Metro selected targets based primarily on relevant King County policies and/or Metro's strategy to comply with the APTA Sustainability Commitment.

- **Normalization:** Sustainability indicators were normalized to account for independent variables. Since these variables differ for each indicator, Metro used several different normalization factors. Most of the normalization factors used in Metro's analysis of sustainability indicators were developed by APTA's reporting metrics subcommittee.

GOLD-LEVEL RECOGNITION

Metro received Gold-level recognition from APTA in 2013 based on a review of sustainability indicator performance through the end of 2011. Metro met targets for reducing energy use, solid waste generation, CAP emissions and water consumption, as outlined in Table B2.

TABLE B2: APTA GOLD-LEVEL SUSTAINABILITY TARGETS AND 2011 METRO PERFORMANCE

Achievements and commitments	Indicator	APTA baseline	APTA target	2011 Metro performance	Normalization factor
				Achieved[1]	
Achievement for two indicators of 2% improvement from baseline	Facility energy use	2009	–2%	**–5%**	Square feet (conditioned space)
	Solid waste	2003	–2%	**–34%**	Unlinked passenger trips
Achievement for two indicators of 5% improvement from baseline	Water usage	2009	–5%	**–27%**	Unlinked passenger trips
	Criteria air pollutant Emissions	2009	–5%	**–13%**	Unlinked passenger trips
Commitment for two additional indicators of 5% improvement from baseline	GHG savings[2]	2009	+5%	+0.01%	Passenger miles traveled
	Diversion rate	2003	+5%	**+11%**	Unlinked passenger trips
Commitment for two more indicators of 10% improvement from baseline	GHG emissions	2009	–10%	+2%	Unlinked passenger trips
	Vehicle energy use	2009	–10%	+19%	Vehicle revenue miles
Commitment for all other indicators of 2% improvement from baseline	Operating expense	2009	–2%	+4%	Vehicle revenue miles
	Unlinked passenger Trips per capita	2009	+2%	–3%	Service area population
	Vehicle miles traveled per capita	2009	–2%	–1%	Service area population

[1]Normalized actual accomplishments achieved between the beginning of the monitoring period and the end of 2011. Numbers shown in bold met APTA Gold-level sustainability recognition levels; all indicator data verified and updated in 2013.

[2]Includes mode-shift displacement, congestion relief and land-use displacement.

APPENDIX C: METRO'S SUSTAINABILITY INVENTORY AND BASELINE

Metro completed an initial sustainability inventory in 2012. Baseline years established to measure annual progress to goal differ by the indicator and the reporting request. For example, King County requirements for reducing energy use at Metro facilities reference a 2007 baseline, while Metro's APTA sustainability commitment for this indicator references a 2009 baseline.

The baseline years selected for measuring progress with respect to the specific goals in Metro's Sustainability Plan are listed in Table C1. A summary of progress to date for each indicator is provided in Table C2 (page A10).

TABLE C1: BASELINE YEARS FOR METRO SUSTAINABILITY INDICATORS[1]

GOAL	INDICATOR	BASELINE YEAR
Energy Efficiency and Conservation	**Electricity** (kWh)[2]	2009
	Natural gas (therms)	2009
	Diesel (gallons)	2009
	Gasoline (gallons)	2009
Climate Pollution Reduction	**GHG emissions** (metric tons)	2009
	GHG displacement (metric tons)	2009
	CAP emissions (metric tons)	2009
Water Conservation	**Water** (gallons)	2009
Waste Management	**Paper purchases** (cases)	NA
	Solid waste (tons)	2003
	Diversion rate	2003
	C&D diversion rate	NA
Mode Share	**Passenger boardings**	NA
	VMT	2011
	Drive-alone rate	2011

[1]Baseline years for measuring progress toward specific goals in Metro's Sustainability Plan.

[2]Includes facility and fleet electricity use.

TABLE C2: METRO 2012 PERFORMANCE BY INDICATOR

GOAL	SUSTAINABILTIY INDICATOR[1]	UNIT	BASELINE	2012 COMPARISON	NORMALIZED CHANGE: 2012 vs. BASELINE[2]
Energy Efficiency and Conservation	Electricity - facilities	kWh	26,097,271	24,758,935	–13%
	Natural Gas - facilities	Therms	728,296	651,244	
	Electricity - fleet[3]	kWh	17,147,448	16,340,035	–4%
	Diesel - fleet	Gallons	11,554,280	11,602,751	
	Gasoline - fleet	Gallons	972,650	1,152,199	
Climate Pollution Reduction	GHG emissions	Metric tons	133,137	134,098	–2%
	GHG displacement	Metric tons	581,096	599,616	+2%
	CAP emissions (NOx & PM)	Metric tons	7,792	5,257	–35%
Water Conservation	Water	Gallons	34,885,224	24,215,752	–33%
Waste Management	Solid waste	Tons	1,743	1,348	–37%
	Diversion rate	% Recycling of total waste	22%	33%	+22%
	C&D diversion rate[4]	% Recycling of total C&D waste	NA	NA	NA
	100% PCR paper purchases	% of total	22%	49%	NA
Mode Share	Passenger boardings	NA	NA	119,124,666[7]	NA
	Vehicle miles traveled[5]	Miles per employee	9	NA	NA
	Drive-alone rate[6]	Percentage	53%	NA	NA

[1] *Water, waste, electricity and natural gas data obtained from the Metro Transit Utility Manager program. Diesel, gasoline, operating expense, transit boardings, and vehicles miles traveled data obtained from the National Transit Database and Metro staff, where applicable.*

[2] *Change measured based on normalized data, where applicable.*

[3] *Total includes kWh data for trolleybuses and metropool electric vehicle charging.*

[4] *To be tracked beginning in 2014.*

[5, 6] *Indicators refer to Commute Trip Reduction Program participants only. Data is based on Commute Trip Reduction Surveys administered biannually. The next status update for these indicators will be provided in 2014.*

[7] *Passenger boardings for all revenue fleets for which fuel use was calculated.*

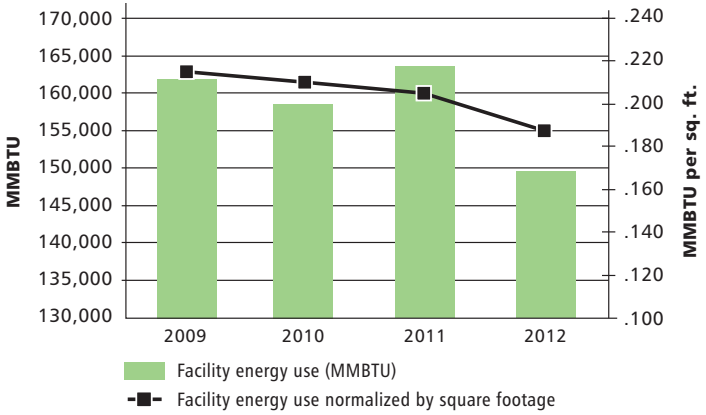
Sustainability indicators and normalization factors

Metro evaluates the sustainability indicators listed in Table C2 and progress to goal on an annual basis as part of Metro's sustainability program. Additional metrics related to operating expense and vehicle miles traveled by Metro fleet vehicles are also evaluated for annual reporting to APTA. An annual summary of performance is shown for each indicator back to 2009 (unless otherwise noted), with normalization factors included (where applicable).

Facility energy use

Metro facilities consume electricity for lighting, ventilation, cooling, equipment and plug loads, along with natural gas for heating, cooling, hot water and some equipment. By converting measurements for both electricity (kilowatt hours) and natural gas (therms) into British thermal units (BTUs), both energy types were quantified using a single measurement (million BTUs). Total facility energy use has decreased over time despite an increase in square footage of conditioned space (over 44,000 square feet of conditioned space was added from 2009-2012). Total facility energy use is normalized by square footage of conditioned space to account for increases or decreases in building spaces powered, heated and/or cooled by electricity and natural gas. Note: this analysis includes those accounts included in Metro's 2007 baseline (for reporting to King County), with a small amount of energy use in unconditioned spaces.

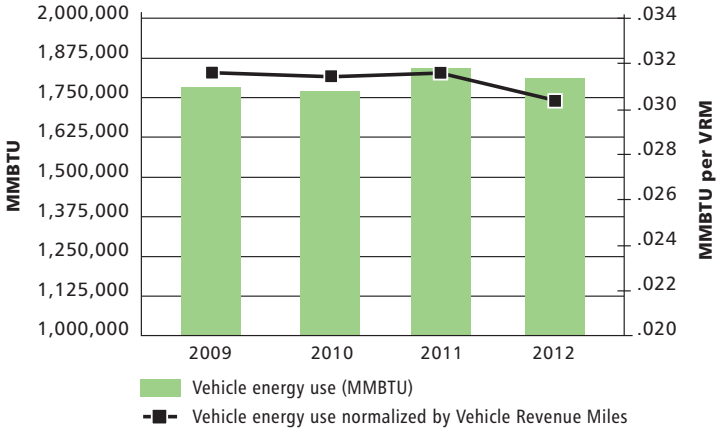
FIGURE C1: FACILITY ENERGY USE



Vehicle fuel consumption

Metro's fleet consists of more than 2,800 vehicles, including diesel and hybrid diesel-electric buses, electric trolleys, passenger vans, and electric cars. Vehicle energy use includes diesel, gasoline, and electricity usage for the following revenue fleets and is normalized by vehicle revenue miles: diesel motorbus, trolleybus, vanpool, Access, DART and RapidRide.

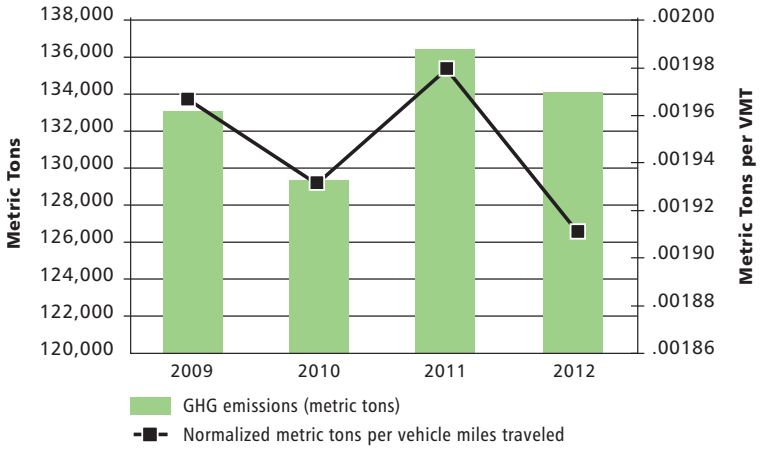
FIGURE C2: VEHICLE ENERGY USE



GHG emissions

GHG emissions data is derived from Metro's revenue fleet fuel consumption and facility energy use. Approximately 95 percent of Metro's GHG emissions are produced by buses and other fleet vehicles. GHG emissions are normalized by vehicle miles traveled to account for increases or decreases in service.

FIGURE C3: GHG EMISSIONS



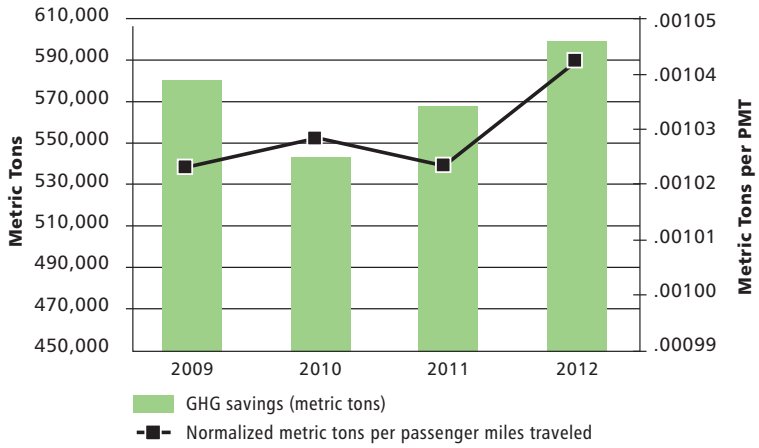
GHG displacement (savings)

Metro service displaces GHG emissions from other sources in three ways:

1. Reducing the number of trips that otherwise would have been taken by private automobiles (mode shift to transit)
2. Reducing traffic congestion (congestion relief)
3. Contributing to more efficient land use and better community design (land-use multiplier).

Metro estimates that these combined displacement benefits reduce or displace approximately 600,000 metric tons of carbon dioxide equivalent (MTCO2e) each year, offsetting community emissions by approximately four times the direct emissions footprint of transit vehicle operations. GHG displacement is normalized by passenger miles traveled.

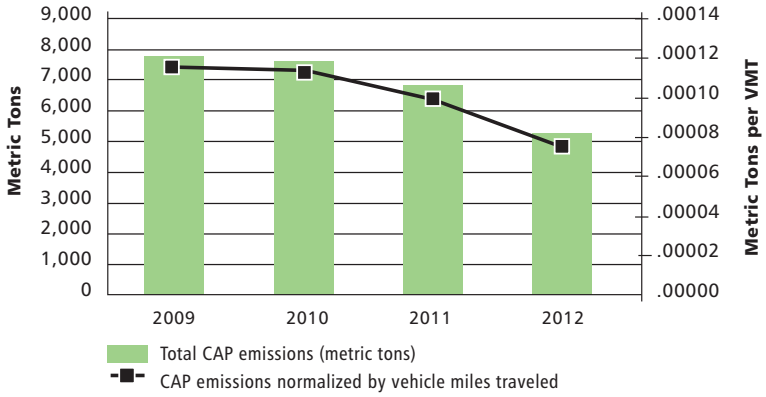
FIGURE C4: GHG SAVINGS



Criteria air pollutant emissions

Criteria air pollutant (CAP) emissions—specifically Particulate Matter and Nitrogen Oxides—are calculated for each diesel and hybrid bus fleet based on annual fleet miles traveled. The replacement of older diesel bus fleets with cleaner and more efficient diesel-electric hybrid bus fleets has decreased CAP emissions in recent years. CAP emissions are normalized by vehicle miles traveled.

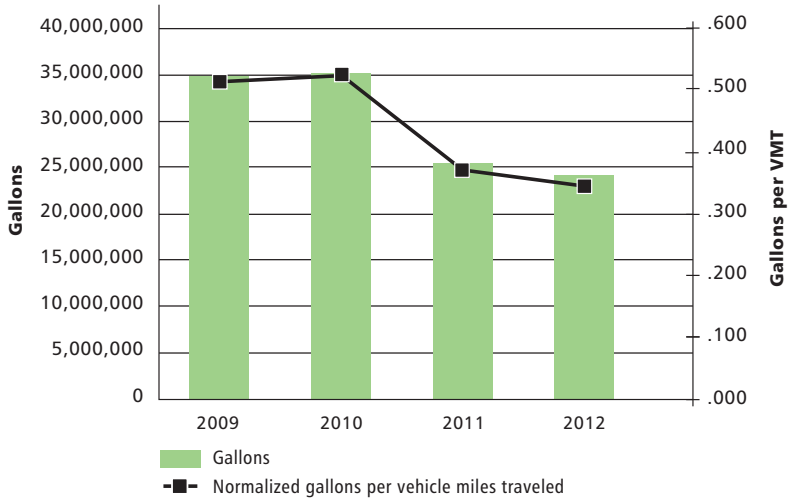
FIGURE C5: CAP EMISSIONS



Water usage

Metro uses water for a multitude of purposes including washing buses (the largest use of water), cleaning shelters, irrigating landscaping, flushing toilets and other domestic uses. Other incidental uses of water include cooling equipment (i.e. air compressors), cleaning sidewalks and floors, operating a skid pad for driver training, cleaning industrial wastewater and stormwater systems, preparing buildings for painting, and testing fire systems. Water use is normalized by the number of passenger boardings. Note: In 2010, one transit base had a water leak that significantly impacted overall water use for the year.

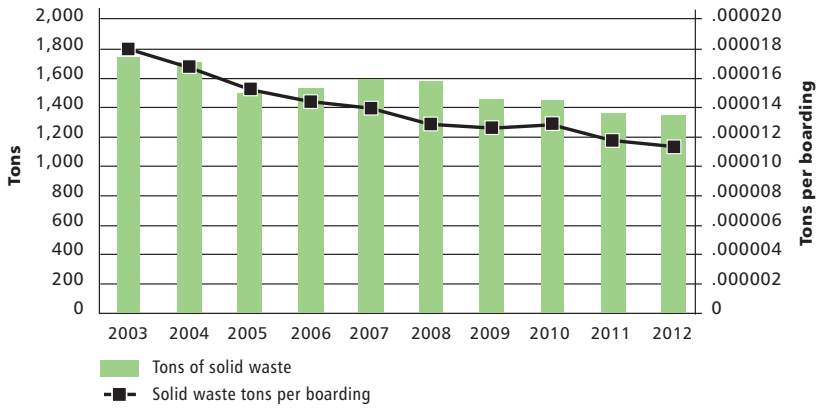
FIGURE C6: WATER USAGE



Solid waste

Metro has a long history of tracking and managing solid waste generated at both operating and passenger facilities. The year 2003 was selected as the baseline for this indicator to reflect this long-term focus on waste reduction. Approximately three-quarters of Metro's unrecycled waste is generated by the public and deposited in waste bins at passenger facilities or left behind on Metro buses. Solid waste disposal is normalized by the number of boardings to account for impacts from increased/decreased passenger boardings on Metro buses.

FIGURE C7: SOLID WASTE

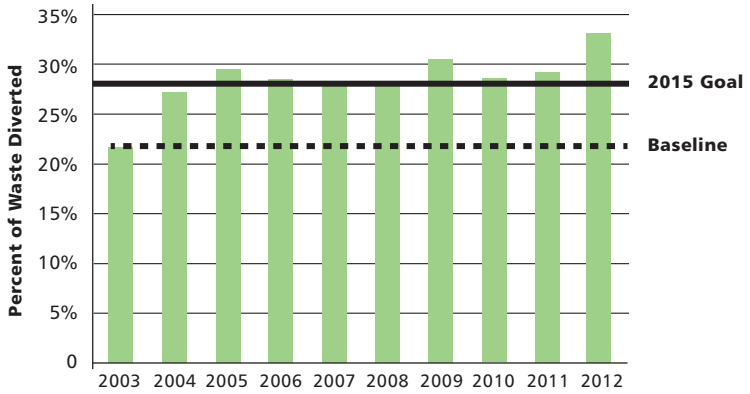


Diversion rate

Metro has collected data for many years on materials diverted from the waste stream, including seven recycling categories. 2003 serves as the baseline for this indicator. Data for recycling tonnage currently includes paper, cardboard, newspaper, glass, metal, plastic, wood, non-vehicular scrap metal, yard waste, batteries, foam and "cyclone waste." "Cyclone waste" refers to material collected by a vacuum system used to help clean out the inside of buses at Metro bases. The collected material consists of lighter-weight materials, such as paper transfers, timetables, newspapers, plastic bottles, and aluminum cans. Additional materials— such as coolant (which is reprocessed and reused), pallets (which get burned as hog fuel), and waste oil (which is used as a bunker fuel)—are reused or recycled at Metro facilities but are not included in this metric.

The diversion rate—i.e. how much material is diverted from disposal to recycling—is used as the key recycling metric for Metro's Sustainability Plan. Diversion rates are calculated directly from records of collected tonnages using the following formula: [tons of recycling collected / (tons of recycling collected + tons of solid waste collected)] x 100.

FIGURE C8: DIVERSION RATE



Construction and demolition diversion rate

Revisions for the King County Green Building and Sustainable Development Ordinance adopted in late 2013 call upon all County departments and divisions to achieve an 85 percent diversion rate for construction and demolition materials by 2025, with an 80 percent diversion rate achieved by 2016. This language will be included in requests for proposals, bids, contracts, etc. issued by Metro's Design & Construction section, and relevant data will be tracked, beginning in 2014.

Paper use

Copy paper use is evaluated both in terms of total cases purchased by Metro each year and the percentage of annual case purchases that contain 100 percent recycled content paper. Data is available for both metrics from the King County Office of Executive Services beginning in 2011, which serves as the baseline for this indicator. Although King County met the goal to reduce overall copy paper use by 20 percent by the end of 2013, Metro has identified ongoing opportunities to reduce paper use. Metro sections are looking at how to better capture all paper purchases and uses, and evaluate trends and opportunities for waste reduction. Paper use metrics are not normalized.

TABLE C3: METRO PAPER USE

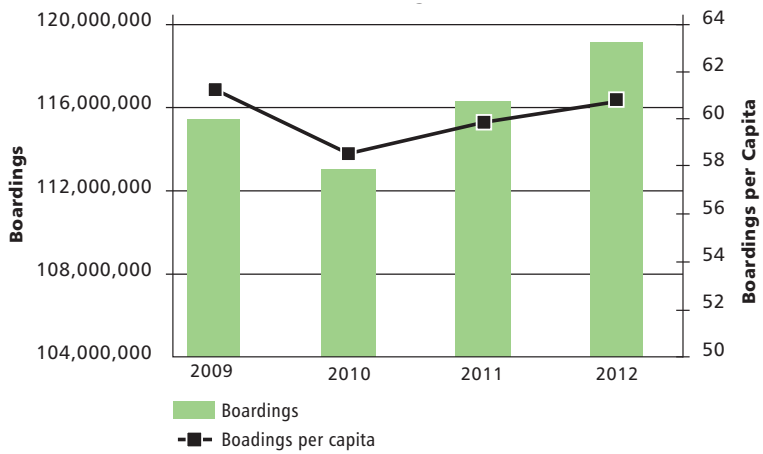
METRO PAPER USE	2011		2012		2012 vs. 2011
Copy Paper Type	# of Cases	% of Total Purchases	# of Cases	% of Total Purchases	# of Cases
30-40% recycled content	576	78%	455	51%	–2%
100% recycled content	166	22%	439	49%	165%
Total Copy Paper Usage*	742		894		20%

**Based on purchase data from Executive Services.*

Unlinked passenger trips (boardings)

Unlinked passenger trips (also known as boardings) refer to the total number of times passengers board public transportation vehicles. Passengers are counted every time they board vehicles, no matter how many vehicles they use to travel from their origin to their destination, and regardless of whether they pay a fare, use a pass or transfer, etc. Total boardings are measured in Metro's Sustainability Plan for diesel and hybrid buses, electric trolley buses, vanpool, Access and DART services. Boardings per capita are measured as an APTA sustainability indicator to provide a measure of service effectiveness (i.e., how many rides are being taken in the communities Metro serves?). This indicator captures efforts to improve efficiency by attracting passengers and increasing service productivity. This metric is also used as a normalization factor for evaluating other sustainability indicators.

FIGURE C9: BOARDINGS



Vehicle miles traveled—CTR program

Vehicle miles traveled by employees participating in the King County Commute Trip Reduction (CTR) program is measured as a Metro-specific sustainability indicator. This indicator is calculated by administering biennial employee surveys in facilities of 100 or more full-time employees (i.e. those required to have a CTR program in place by Washington legislation). Status updates for the VMT for CTR program participants will be provided every two years, or as CTR surveys are administered. Total Metro VMT (specifically for motorbuses, electric trolley buses, Access, DART and RideShare vehicles) is used as a normalization factor for other sustainability indicators.

Drive-alone rate

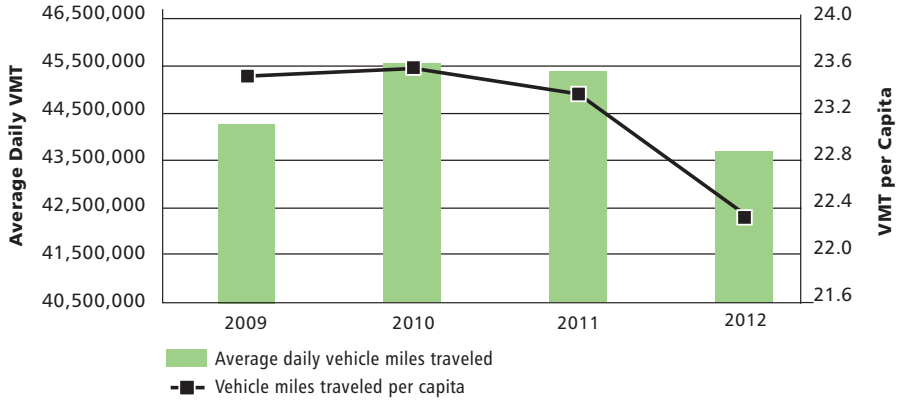
The drive-alone rate is defined as the ratio of individuals driving an automobile by themselves for their daily commute to the total number of employees. The drive-alone rate is calculated by administering biennial employee surveys at facilities with CTR programs in place. King County's CTR program, administered by Metro, helps reduce the countywide drive-alone rate by facilitating the use of alternatives to drive-alone commuting (carpools, vanpools, teleworking, bicycling, etc.). Status updates for the drive-alone rate for CTR program participants will be provided every two years or as CTR surveys are administered.

Additional APTA sustainability indicators

Vehicle miles traveled per capita

Daily vehicle miles traveled is a required sustainability indicator for APTA's Sustainability Commitment and measures the impact that Metro's transit service has on regional travel trends. The VMT indicator is normalized by service area population (i.e., King County, per capita) and measures Metro's effectiveness in getting people out of their cars, with associated environmental benefits.

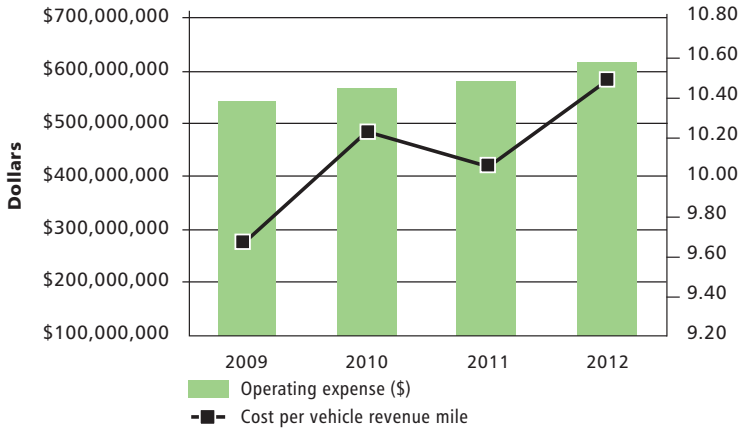
FIGURE C10: VMT PER CAPITA



Operating expense

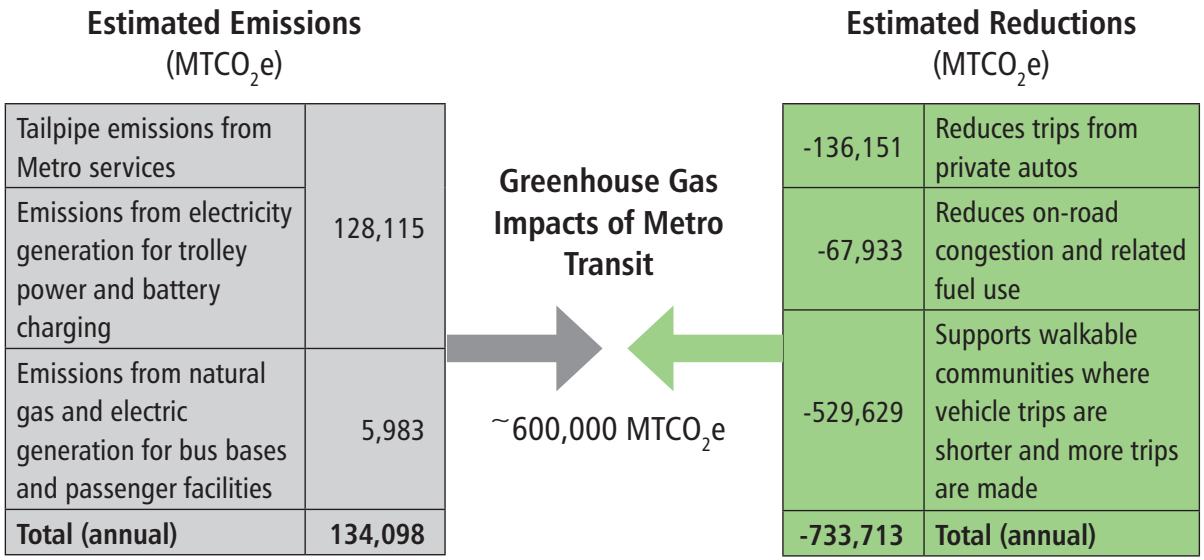
Although operating expenses—those associated with the operation of the agency and goods and services purchased for system operation—are largely determined by economic factors independent of Metro's sustainability program, this is a required sustainability indicator for APTA's Sustainability Commitment. Operating expense performance serves as an economic sustainability indicator. Metro's net operating expense is normalized by vehicle revenue miles for reporting to APTA.

FIGURE C11: OPERATING EXPENSE



APPENDIX D: GREENHOUSE GAS EMISSIONS AND DISPLACEMENT

FIGURE D1: 2012 NET REGIONAL GHG EMISSIONS AND DISPLACEMENT FROM TRANSIT



Metro both *generates* greenhouse gas (GHG) emissions from the operation of its vehicles and facilities, and reduces emissions by providing services that take cars off the road, reduce congestion, and support more efficient land use. Our agency has a significant and beneficial impact on the region's GHG emissions. Metro displaces roughly four times more GHG emissions than it generates—**a net displacement of approximately 600,000 metric tons of carbon dioxide equivalent (MTCO2e) each year (Figure D1).**

Emissions

Metro's primary sources of GHG emissions are the combustion of diesel and gasoline by transit buses and non-revenue fleet vehicles, electricity used by trolley buses, natural gas and electricity consumed in facilities, and the carbon embodied in the use and disposal of purchased goods and services, including construction. In 2012, Metro's combined revenue fleets generated approximately 128,000 MTCO2e, and fixed assets such as transit bases and passenger facilities contributed an additional 6,000 MTCO2e. Metro's GHG emissions from diesel fuel use account for more than half of all energy-related GHG emissions from King County operations.

Displacement

Metro's public transportation services displace GHG emissions in three ways: mode shift to transit, congestion relief, and land use multiplier.

Mode shift to transit: The average private vehicle emits about one pound of carbon dioxide (CO2) for every mile driven (Source: US Department of Transportation). When a private vehicle driver shifts to transit, savings of up to 4,800 pounds of CO2 emissions per private vehicle per year is possible (Source: APTA). In 2012, potential driving diverted by public transportation spared over 136,000 MTCO2e.

Congestion relief: Public transportation reduces the number of vehicles on the road, especially during commute times when traffic volumes are highest. Less congestion reduces GHG emissions from idling and stop-and-go traffic. According to the Texas Transportation Institute's (TTI) 2012 Annual Urban Mobility Report, peak period congestion occurs for six hours per day and costs the average auto commuter more than $1,050 per year. TTI estimates that congestion relief benefits from public transit saved Puget Sound area drivers 16 million hours in avoided travel time and $366 million in avoided fuel and time costs. In addition, TTI estimates that public transportation reduces annual gasoline consumption in the region by nearly 8 million gallons with GHG savings of approximately 71,000 MTCO2e (Source: TTI).

Land-use multiplier: The combination of higher density, mixed-use development and increased transit use contribute to significant reductions in transportation-related GHG emissions and energy consumption. Compact development enables residents to take shorter and fewer vehicle trips, with increased walking, biking, and other non-motorized trips. Transit supports compact land use by reducing the need for parking and roadway vehicle capacity, promoting bicycle and pedestrian travel, enabling dense development, facilitating the integration of multiple trips, and influencing reduced household vehicle ownership. A forthcoming report from the Transportation Cooperative Research Program based on data for 300 of the largest metropolitan areas estimates that for every ton of emissions reduced by transit through mode shift, an additional 3.9 MTCO2e are reduced by changes in land-use patterns. Locally, this amounts to over 529,000 MTCO2e savings, which is almost four times greater than Metro's combined emissions from vehicles and fixed assests.

APPENDIX E: GLOSSARY

Alternative fuels: Defined by the federal government as fuels derived from biodiesel, electricity, ethanol, hydrogen, methanol, natural gas, propane and ultra-low sulfur diesel.

The American Public Transportation Association (APTA): A national organization that works to strengthen and improve public transportation through advocacy, innovation and information sharing.

Climate change: Any significant change in the measures of climate lasting for an extended period of time. Climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer. Global warming refers to the recent and ongoing rise in global average temperature near Earth's surface and is caused mostly by increasing concentrations of greenhouse gases in the atmosphere. Global warming is causing climate patterns to change. However, global warming itself represents only one aspect of climate change. (Source: EPA)

Criteria air pollutant: Pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. The six most common air pollutants in the U.S. are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. The term "criteria air pollutants" derives from Clean Air Act regulations that require the EPA to describe the characteristics and potential health and welfare effects of these pollutants.

Energy conservation: Means using less energy and is usually associated with a behavioral change, like turning lights off or setting thermostats lower.

Energy efficiency: Refers to using energy more effectively, and is often a technological change. Energy efficiency measures the difference between how much energy is used to provide the same level of comfort, performance or convenience by the same type of product, building or vehicle.

Environmental Footprint: Also known as ecological footprint. It is the effect that an entity like Metro has on the environment. For example, the amount of natural resources consumed and the amount of emissions generated.

Environmental Sustainability Management System (ESMS): A system of programs and procedures that help reduce the environmental impact of daily operations, make facilities safer and healthier places to work and ensure continual improvement for meeting environmental goals.

Fossil fuel: A fuel (as coal, oil, or natural gas) formed in the earth from plant or animal remains. The burning of these fuels generates the greenhouse gas carbon dioxide.

Greenhouse gas (GHG): Gases that trap heat in the atmosphere are called greenhouse gases and include carbon dioxide, methane, nitrous oxide and water. Although greenhouse gases occur naturally in the atmosphere, elevated levels observed in recent decades have been related, at least in part, to human activities such as the burning of fossil fuels.

Hybrid bus: A hybrid electric bus combines a conventional internal combustion engine propulsion system with an electric propulsion system. This type of bus normally uses a diesel-electric powertrain and is also known as hybrid diesel-electric bus.

Leadership in Energy and Environmental Design (LEED): A voluntary, third party certification program and the nationally accepted benchmark for the design, construction and operation of high-performance green buildings. LEED was developed by the U.S. Green Building Council.

Puget Sound Regional Council (PSRC): The Metropolitan Planning Organization for the Puget Sound region that appropriates federal funds to the region's transit agencies. PSRC also conducts the comprehensive, long-range planning process for the region, including Transportation 2040.

Renewable energy: Any energy source that is replenished at least as fast as it is used. Standard examples are solar, wind, hydroelectric, and biomass products.

Sustainability: The ability to meet environmental, societal and economic needs of the present without compromising the ability of future generations to meet their own needs.

Transit oriented development (TOD): Development that creates mixed-use, higher density communities that encourage people to live, work and shop near transit services, and decrease their dependence on driving.

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