600 NE Grand Ave.
Portland, OR 97232-2736

Metro | *Agenda*

Meeting: Metro Council Work Session
Date: Tuesday, September 7, 2010
Time: 1 p.m.
Place: Council Chambers

CALL TO ORDER AND ROLL CALL

1 PM	**1.**	**DISCUSSION OF AGENDA FOR COUNCIL REGULAR MEETING, SEPTEMBER 9, 2010/ADMINISTRATIVE/CHIEF OPERATING OFFICER AND CITIZEN COMMUNICATION**	
1:15 PM	**2.**	**METRO SUSTAINABILITY PLAN FOR INTERNAL OPERATIONS – UPDATE/DISCUSSION**	**Dresler Chidsey**
2 PM	**3.**	**RECOMMENDATIONS TO MINORITIES, WOMEN AND EMERGING SMALL BUSINESSES (MWESB) PROGRAM – DIRECTION**	**Matthews Watkins**
2:45 PM	**4.**	**VISITOR VENUES UPDATE – INFORMATION**	**Dresler Blosser**
3:20 PM	**5.**	**COUNCIL BRIEFINGS/COMMUNICATION**	

ADJOURN

Agenda Item Number 2.0

METRO SUSTAINABILITY PLAN FOR INTERNAL OPERATIONS

Metro Council Work Session
Tuesday, Sept. 7, 2010
Metro Council Chambers

METRO COUNCIL

Work Session Worksheet

Presentation Date September 2, 2010 Time: 1:15 Length: 45 min

Presentation Title: Metro Sustainability Plan for internal operations

Service, Office, or Center: Sustainability Center

Presenters (include phone number/extension and alternative contact information):
Teri Dresler, General Manager of Visitor Venues, 503-731-7837
Molly Chidsey, Sustainability Coordinator x1690

ISSUE & BACKGROUND

In 2003, the Metro Council adopted a resolution that directed Metro to develop a sustainable business plan for internal government operations and set an ambitious target for those operations to be sustainable within one generation, by 2025. Five target areas were identified: greenhouse gas emissions, toxics, waste, water, and habitat.
The plan identifies environmental impacts of Metro's operations, sets a baseline from which progress can be measured over time, and creates a framework of the specific strategies and actions that need to be completed to meet Metro's internal sustainability goals.

Today's presentation will provide an overview of the sustainability plan and staff will ask for guidance from Council on how the plan should be formally adopted.

OPTIONS AVAILABLE

1. Adopt Sustainability Plan by Metro Council resolution.
2. Adopt Sustainability Plan through approval by the Chief Operating Office.
3. Other approval process.

IMPLICATIONS AND SUGGESTIONS

Formal approval of the Sustainability Plan is important to successful implementation of the plan. Council action would communicate additional support for the plan to that represented through approval at the senior management level.

QUESTION(S) PRESENTED FOR CONSIDERATION

What is Council's preference for Metro approval of the Sustainability Plan?

LEGISLATION WOULD BE REQUIRED FOR COUNCIL ACTION _X Yes __No
DRAFT IS ATTACHED ___Yes _X No

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Sustainabilty Plan

for Metro internal and business operations

August 2010

Metro | *People places. Open spaces.*

Metro | *People places. Open spaces.*

Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy and good transportation choices for people and businesses in our region. Voters have asked Metro to help with the challenges that cross those lines and affect the 25 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to protecting open space, caring for parks, planning for the best use of land, managing garbage disposal and increasing recycling. Metro oversees world-class facilities such as the Oregon Zoo, which contributes to conservation and education, and the Oregon Convention Center, which benefits the region's economy.

Metro representatives

Metro Council President – David Bragdon

Metro Councilors

Rod Park, District 1
Carlotta Collette, District 2
Carl Hosticka, District 3
Kathryn Harrington, District 4
Rex Burkholder, District 5
Robert Liberty, District 6

Auditor – Suzanne Flynn

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Metro
600 NE Grand Ave.
Portland, OR 97232-2736

503-797-1700

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EXECUTIVE SUMMARY

In 2003, Metro Council adopted a resolution that directed Metro to develop a sustainable business model for internal government operations, and set an ambitious target for those operations to be sustainable within one generation, by 2025. Five target areas were identified: greenhouse gas emissions, toxics, waste, water, and habitat. These goals were refined during the course of creating a sustainability plan for Metro operations. The planning horizon for these goals is 2025, with the exception of greenhouse gas emissions, for which a target is set for 2050.

- Greenhouse gas emissions: Reduce direct and indirect greenhouse gas emissions (CO_2e) 80 percent below 2008 levels by 2050.
- Toxics: Eliminate the use or emissions of persistent bioaccumulative toxics (PBT's) and other priority toxic and hazardous substances.
- Waste: Recover all waste for recycling or composting, and reduce overall generation of waste.
- Water: Reduce water use 50 percent below 2008 levels.
- Habitat: Metro's parks, trails and developed properties positively contribute to healthy, functioning urban ecosystems and watershed health. Metro's natural areas are healthy, functioning ecosystems.

Since the original goals were adopted in 2003, progress has been made toward greening Metro's operations. However, an analysis of performance in these five goal areas shows that much work has yet to be done. For example:

- Metro's operations generated 56,062 MT CO_2e in 2008, the equivalent of powering 5,000 homes. Largest emission sources are supply chain emissions and electricity consumption.
- More than 90 percent of the products in Metro's chemical inventory have a high hazard rating in one of three categories (environmental toxicity, human toxicity, and physical hazard).
- Recycling recovery ranges widely, from less than 10% recovery at some parks, to more than 70 percent recovery at the Oregon Zoo.
- Metro operations use more than 285 million gallons of water annually, roughly equivalent to the water usage of 9,300 Portland residents.
- Metro's effective impervious area is 96 percent of total impervious area, an area of roughly 110 acres. 2/3 of Metro developed properties do not use habitat-friendly development practices.

For each of Metro's five sustainability goal areas, a set of strategies and actions have been identified. These strategies and actions provide a framework for the work that needs to be done to reach the 2025 goal targets. The strategies and actions are meant to be applicable across Metro's operations, and are not prescriptive to particular facilities or sites.

Greenhouse gas emission reduction strategies focus on reducing emissions from Metro's largest emission sources: supply chain, electricity, and fuels. Program improvements are also needed to establish tracking for the many GHG emission sources, as well as a funding strategy for projects that will reduce emissions from operations.

Toxics reduction strategies include improvements to Metro's chemical inventory, then a systematic replacement of toxic products with less-toxic alternatives where available. Buyers need to be empowered to make better choices when making procurement decisions, and new ways to assess less-toxic alternatives as well as measuring progress developed.

Waste reduction strategies include a new focus on waste prevention, upstream from the "end of life" management of recyclable materials.

Water Conservation strategies focus on a greater understanding of water usage throughout Metro's operations, then systematically implementing water efficient options wherever possible.

Habitat enhancement strategies vary from site to site, so assessment of habitat and stormwater opportunities for each site is a priority, as is creation of new requirements for stormwater and habitat-friendly development practices in construction and maintenance of Metro sites.

Across all goals, several program elements are needed to manage Metro's sustainability efforts over time. These include: accountability for plan implementation, training for Metro employees, building funding and staff capacity to implement, creating policies and procedures necessary, updating goals and targets as needed and tracking progress of sustainability plan implementation and impact on goal areas.

INTRODUCTION

As a regional government committed to promoting sustainable communities, Metro has good reason to reduce the ecological footprint from its own operations and "walk the talk." Like many public agencies, the services that Metro provides to the region come at a cost to natural and community resources.

Metro formalized their commitment to sustainable operations in 1999 when a cross-agency environmental action team was formed. In 2003, a resolution was adopted by Metro Council that called for development of a sustainable business model for internal operations of the agency. This resolution included five environmental goals to be met by 2025 regarding greenhouse gas emissions, toxics, waste, water and habitat[1].

Since then, Metro has achieved some significant results in making its operations more sustainable. These include:

- The Oregon Convention Center is certified as a LEED Existing Building at the silver level, and also certified by Salmon Safe for its sustainable landscape and stormwater management practices.
- The Oregon Zoo pioneered on-site composting of animal waste, helping it to achieve a 72 percent recycling rate.
- The Metro Regional Center purchases 100 percent renewable power, contributing to the development of new renewable energy sources.
- The Metro Central Transfer Station adopted an Environmental Management System that provides accountability for implementation of sustainable operations.

While many projects were completed that support these five environmental goals, Metro lacks a clear vision or plan for achieving agency goals. This plan was amplified by recommendations made by the Metro Auditor in a 2009 report. The report concluded that Metro should: 1) set clear policies and goals for sustainability; 2) reduce organizational barriers to sustainability by clarifying responsibilities and roles internally for implementation and creating a funding structure to support sustainable operations; 3) create tools needed to implement a sustainable business model including a data management system and formalize greenhouse gas emission protocols; and 4) measure progress towards meeting the objectives and disseminate the results of efforts.[2] This plan addresses all four of these recommendations.

This sustainability plan is intended to guide Metro's sustainable operations efforts to the next level by guiding practices and projects to achieve Metro's long-term sustainability goals. The plan identifies environmental impacts of Metro's operations, sets a baseline from which progress can be

[1] Metro Council resolution 03-3338, "Establish a sustainable business model for Metro departments and facilities and to undertake related duties," 2003.

[2] "Sustainability Management: focus efforts and evaluate progress", 2009. Suzanne Flynn, Metro Auditor. http://www.oregonmetro.gov/index.cfm/go/by.web/id=32285/level=4.

measured over time, and creates a framework of the specific strategies and actions that need to be completed to meet the goals.

The scope of this plan is limited to Metro's internal operations. Metro oversees five very different types of operations: public event venues, the zoo, solid waste facilities, parks and natural areas and one office facility. Because of the diverse portfolio of operations, the sustainability plan was developed to be applicable to all operations, regardless of type. While implementation of the plan will vary from one facility to the next, the plan identifies the actions common to all.

It is important to note that this plan focuses on environmental impacts, not the full "triple bottom line" of sustainability. When updating the sustainability goals in the future, Metro should develop meaningful goals for integration of the social equity and economic prosperity aspects of sustainability. During implementation of this plan, Metro's actions will benefit not only the environment, but also the community and the economy. These multiple benefits are the hallmark of any sustainability effort, and are well suited to supporting Metro's sustainability value and reaching Metro's sustainability goals.

Metro sustainability value

We are leaders in demonstrating resource use and protection in a manner that enables people to meet current needs without compromising the needs of future generations, and while balancing the needs of the economy, environment and society.

Adopted by Metro Senior Leadership Team July 2010

PART 1: SUSTAINABILITY GOALS AND INDICATORS

Goal refinement and indicators

Metro's adopted sustainability goals were refined for the purposes of creating this plan to aid the development of specific and targeted strategies and actions. The table below summarizes the goals as refined, as well as the indicators selected for setting a baseline of performance and monitoring progress over time.

Goal as adopted in 2003	Refined goal	Indicators	Goal year
Zero net increase in carbon emissions	Reduce direct and indirect greenhouse gas emissions (CO_2e) 80 percent below 2008 levels by 2050.	▪ Greenhouse gas emission sources for Scopes I, II and II	2050[3]
Zero discharge of persistent, bioaccumulative, toxic chemicals	Eliminate the use or emissions of persistent bioaccumulative toxics (PBT's) and other priority toxic and hazardous substances.	▪ Percentage of chemical products used at Metro facilities that have ingredients with a "3" rating in MSDS inventory for health, environmental or physical hazard	2025
Zero waste disposed or incinerated	Recover all waste for recycling or composting, and reduce overall generation of waste.	▪ Waste generated by weight (garbage plus recycling) ▪ Percent recovered for recycling or compost (recycling rate)	2025
Fifty percent reduction in water usage	Reduce water use by 50 percent below 2008 levels.	▪ Gallons of water consumed from water utilities and on-site sources	2025
Zero net loss of biodiversity and productive, healthy habitat for forests and riparian areas	Metro's parks, trails and developed properties positively contribute to healthy, functioning urban ecosystems and watershed health. Metro's natural areas are healthy, functioning ecosystems. [4]	▪ Percentage effective impervious area (EIA) ▪ Number of habitat-friendly practices used on developed properties ▪ For natural areas, number of acres and restoration activity type by acre	2025

[3] While the time horizon for this plan and goals is 2025, long-term goals for reducing greenhouse gas emissions are typically set at 2050 in accordance with the most current climate science.

[4] Numerical targets for effective impervious area and use of habitat-friendly development practices will be determined by site-specific habitat and stormwater assessments.

Indicators of progress toward sustainability goals

The 15-year time horizon for this plan is both ambitious and aspirational. To track progress toward these goals, interim targets have been identified for each goal area. They consist of both numerical targets as well as goals for improving processes. Since each facility has different opportunities for improvement, these targets provide a framework for measuring progress Metro-wide, not absolute benchmarks for each facility. These interim targets should be recalibrated after facility audits and work plans are completed and opportunities have been identified.

GHGs: Reduce greenhouse gas emissions 80 percent below 2008 levels by 2050.

	SCOPES 1, 2 and 3 EMISSIONS (excluding Supply Chain) **Reduction targets (quantitative)**	SCOPE 3 SUPPLY CHAIN EMISSIONS **Process targets (qualitative)**
3 Years (2013)	• Arrest GHG emissions	• Develop a process to quantify Scope 3 emissions reductions and establish quantitative targets.
5 Years (2015)	• 15 percent reduction	• Advance efforts to reduce Scope 3 emissions based on current best practices and available tools and data.
10 Years (2020)	• 25 percent reduction	
15 Years (2025)	• 40 percent reduction	
40 Years (2050)	• 80 percent reduction	

Toxics: Eliminate the use or emissions of PBT's and other priority toxic and hazardous substances by 2025.

	Reduction targets (quantitative)	**Process targets (qualitative)**
3 Years (2013)	• 20 percent reduction in chemical products in use at Metro with a "3" rating in one or more hazard categories (health, environment or physical hazard)[5]	• Complete inventory with current ingredient information obtained for all chemical products in use, including quantity used. Include products used by contractors on Metro property. • Develop process to quantify use of less-toxic preferable products and establish interim targets.
5 Years (2015)	• 45percentreduction in the percentage of chemical products used at Metro facilities that have ingredients with a "3" rating in *at least one* category. • Products with a "3" rating in *all 3* hazard categories are no longer in use	• Advance efforts to reduce toxic emissions from durable goods and indirect emissions, and establish quantitative interim targets for reducing these emissions. Increase procurement of less-toxic preferable products.
10 Years (2020)	• No chemical products used at Metro facilities have ingredients with a "3" rating, including those used by contractors.	
15 Years (2025)	• All chemical products used at Metro facilities are designated preferable products, or earn a "1" rating in all 3 hazard categories.	

[5] Product hazard evaluation criteria were established to rate the potential health, environmental and physical hazard risks of chemical products in the inventory. See toxics baseline section and appendix for methodology.

Waste: Recover all waste for recycling or composting, and reduce overall generation of waste by 2025.

	Reduction targets (quantitative)	Process targets (qualitative)
3 Years (2013)	• Metro facilities recover 50 percent of waste for recycling or compost (average).	• Establish monthly waste and recycling reporting for all Metro locations.
5 Years (2015)	• Metro facilities recover 75 percent of waste for recycling or compost. • Increase recycling at parks to 25 percent recovery. • Reduce waste generated 10 percent from baseline.	• Develop long-term waste generation targets.
10 Years (2020)	• Metro facilities recover 90 percent of waste for recycling or compost.	• Advance efforts to reduce overall waste generation.
15 Years (2025)	• Metro facilities divert 100 percent of waste for recycling, compost or other sustainable waste treatment method (i.e. anaerobic digestion).	

Water: Use 50 percent less water from 2008 levels by 2025.

	Reduction targets (quantitative)	Process targets (qualitative)
3 Years (2013)	• 15 percent decrease in water consumption	• Establish water tracking and reporting system. Include all submeters.
5 Years (2015)	• 30 percent decrease	
10 Years (2020)	• 40 percent decrease	
15 Years (2025)	• 50 percent decrease	

Habitat: Metro's parks, trails and developed properties positively contribute to healthy, functioning urban ecosystems and watershed health. Metro's natural areas are healthy, functioning ecosystems.

	Reduction targets (quantitative)	Process targets (qualitative)
3 Years (2013)	• Arrest and begin to reduce effective total impervious area (EIA) on developed properties.	• Identify habitat and stormwater improvement opportunities on Metro developed properties through site assessments. Set numerical targets for effective impervious area (EIA) and increasing use of habitat-friendly development practices. • Establish quantitative interim targets for Metro's natural area properties.
5 Years (2015)	• Advance efforts to reduce EIA and increase use of habitat-friendly development practices on Metro's developed properties, quantitative targets to be developed based on site assessments.	
10 Years (2020)		
15 Years (2025)		

PART 2: SUSTAINABILITY IMPACTS AND BASELINE ANALYSIS

Impacts assessment

While Metro had a clearly articulated direction for action in the areas of greenhouse gas emissions, toxics, waste, water and habitat, the sustainability plan project team wanted to affirm that action in these areas would address the major impacts of Metro's operations. It completed an impacts assessment to provide a high-level qualitative summary of the unintended negative consequences of Metro's operations, and to identify gaps between those impacts and the adopted goals.

During a workshop in January 2010, representatives from all of Metro's functional areas identified impacts in terms of inputs (resources required for Metro's operations) and outputs (waste and other byproducts produced as a result of those operations). Outputs were categorized into three categories: environmental, economic and social.

Major impacts

- **Inputs**: The primary inputs of natural resources for Metro's operations include fossil fuels, water and material goods. Fossil fuels are used to provide building energy and to power vehicles from Metro's fleet as well as from visitors to Metro locations. Water is a key resource for many facilities, from the Zoo's exhibits, to irrigation at parks. Material goods include office supplies, food service items, promotional materials and building construction materials.
- **Outputs**: Major outputs can be grouped into three primary categories: greenhouse gas emissions, solid waste and water waste and runoff. All three of these outputs were investigated further in the quantitative baseline analysis.

Impacts not addressed by goals

While most of Metro's environmental impacts fit within one or more of the five sustainability goals, several key gaps were identified where a major impact was not addressed by the goals.

- Social aspects of sustainability efforts include negative impacts from traffic congestion, noise, equity regarding access to nature and social impacts from the procurement of goods and services.
- Economic aspects of sustainability efforts include lack of preference for using locally-made products, locally-grown food, or locally-based contractors.
- Environmental impacts of air toxics and stormwater run off are not specifically addressed by the goals. This includes toxic air pollutants such as diesel particulate emissions, sulfur dioxide and other byproducts from internal combustion engines. Additionally, water usage is addressed by the goals, but storm water runoff is not.

As a result of this assessment, this plan addresses diesel particulate air pollution in the toxics section, and stormwater runoff in the habitat section. Future updates to this plan should address the social and economic impacts of Metro's operations.

Baseline assessment: Introduction

Why create a baseline?

As the adage goes, what gets measured gets done. In order to measure progress toward meeting Metro's sustainability goals, a starting point is needed from which progress can be measured. For the purposes of creating this baseline, data was collected and analyzed to generate a baseline of performance in the five goal areas across all of Metro's facilities and locations.

2008: A snapshot in time

The furthest year back with the most complete data available was 2008. It is important to note that since the goals were adopted in 2003 but little measurement took place between then and 2008, this baseline will not account for operational improvements that resulted in environmental benefits during that time.

Methodology

Data on the following indicators was collected for each goal area:

- **Greenhouse gas emissions:** A comprehensive analysis of more than 75distinct data sets was completed for the GHG emissions inventory, including: building electricity and natural gas, fuel, fleet, supply chain purchases, St. Johns landfill, commute patterns, refrigerants, long-haul transport of waste and others. Emissions are reported in metric tons of carbon-dioxide equivalent (MT CO2e).
- **Toxics**: An inventory chemical products and corresponding material safety data sheets (MSDS) was completed, entered into a database hosted by OHSU's Chemical Risk Information System, and analyzed for health, environmental and physical hazards. Toxics use is reported in number of high-hazard chemicals in Metro's inventory.
- **Waste**: Waste and recycling collection data was obtained from haulers. Waste is reported in tons of overall waste generated, as well as the percentage of that waste diverted for recycling or composting. Waste composition information is also presented.
- **Water**: Water usage data was collected from water providing utilities, as well as from well water records. Water use is reported in CCF, or hundred cubic feet (equivalent to 748 gallons).
- **Habitat**: Several metrics were selected for measuring habitat health and enhancement of Metro's developed and natural properties. Effective impervious area (EIA) is used to measure the amount of stormwater runoff leaving a site; EIA is total impervious surface area minus any areas that that slow, reduce, infiltrate or cleanse stormwater runoff onsite. The number of habitat-friendly or low impact practices used on Metro properties (such as ecoroofs or rain gardens) number of acres, and number of acres where pre-restoration, restoration and long term maintenance activities are taking place round out the habitat metrics. These metrics were analyzed for as many locations for which data was available. Metro's operations were grouped into similar functional areas for the purpose of presenting the baseline data (see Table 1).

Table 1: Functional areas within Metro operations.

Metro operations functional areas	
Oregon Zoo	Includes more than 25 facilities and exhibits on the Zoo campus.
MERC venues	Portland Center for the Performing Arts (Keller Auditorium, Schnitzer Hall, Hatfield Hall) Expo Center and Oregon Convention Center.
Parks and natural areas	Oxbow and Blue Lake regional parks, Boreland Field Station/Native Plant Center, Glendoveer Golf Course, Pioneer Cemeteries, Cooper Mountain Nature Park, Mt. Talbert, Howell Mason, Smith and Bybee Wetlands, Chinook Landing, Sauvie Island and Gleason boat ramps and bond-acquired natural areas.
Solid waste facilities	Metro Central and South transfer stations, Central and South household hazardous waste facilities, MetroPaint and the closed St. Johns Landfill.
Metro Regional Center	Metro's sole office building.

More information available

A high-level summary of the baseline findings is provided in this plan for context and to provide a sense of scale for the actions proposed. For further reading, four detailed reports are available upon request:

- Sustainability Baseline Analysis (2010): baselines for waste, water and habitat, as well as a summary of Metro's toxics baseline. Completed by Brightworks.
- Greenhouse Gas Emissions Inventory Report (2010): complete analysis of greenhouse gas emissions from Metro operations. Completed by Metro.
- Status Report: Metro Chemical Inventory Hazard Evaluation and Management Tool Project (2010). Completed by OHSU Chemical Risk Information Service.
- Waste Composition Studies (2009): Analysis of the garbage from six Metro locations generated during October2008.Reports cover PCPA theaters, Expo Center, Blue Lake Park, Oxbow Park, Metro Regional Center and the Oregon Zoo. Completed by Sky Valley and Associates and City of Portland.

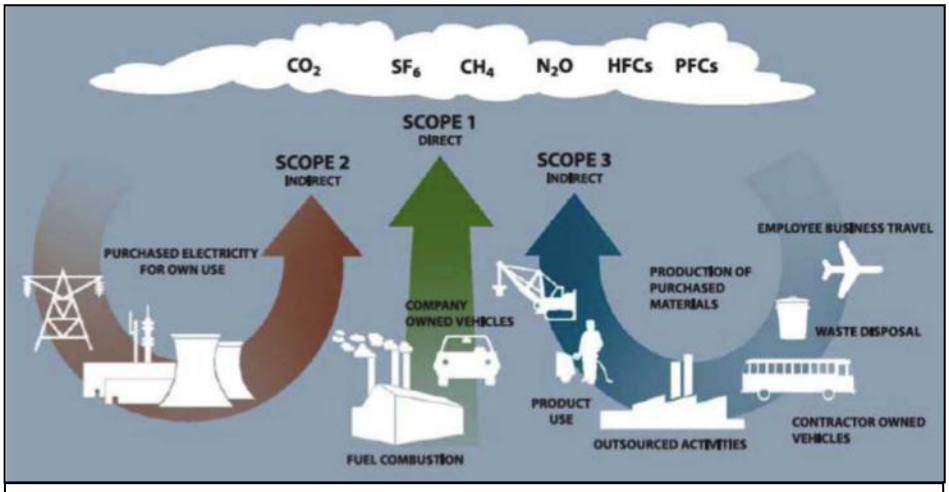
Baseline assessment: greenhouse gas emissions inventory

Greenhouse gas emissions inventory methodology

The inventory establishes a snapshot of greenhouse gas emission sources from Metro's internal operations in order to target investment and business practice decisions that have the greatest effect in meeting the greenhouse gas (GHG) emissions reduction goal and interim targets.

All three emission scopes are addressed in Metro's GHG inventory (see figure 2) which includes direct and indirect emissions from the agency's operations. Metro used Good Company's G3C calculator to complete this analysis. The calculator is based on widely-accepted GHG reporting protocols.[6]All emissions are reported in **metric tons of carbon-dioxide equivalent (MT CO_2e).**

Figure 2: Greenhouse gas emissions inventory scopes



In many GHG inventory protocols, emissions sources and activities are defined as either producing **direct** or **indirect** GHG emissions. Direct emissions are emissions from sources owned or controlled by a particular organization. Indirect emissions are emissions that result from the activities of an organization, but occur at sources owned or controlled by a separate entity. To distinguish direct from indirect emissions sources, three "scopes" are defined for traditional GHG accounting and reporting.

Scope 1: All direct GHG emissions occur from equipment and facilities owned and/or operated by Metro (excluding direct CO_2 emissions from biogenic sources, which are reported separately – See St. Johns Landfill section).

Scope 2: Indirect GHG emissions from the generation of purchased electricity, heat or steam consumed by Metro owned facilities.

Scope 3: All other indirect emission sources that result from Metro activities but occur from sources owned or controlled by another company or entity, including: business travel, embodied emission in material goods purchased, and services contracted, by Metro; emissions from landfilled solid waste; and emissions associated with Metro employee commute patterns.

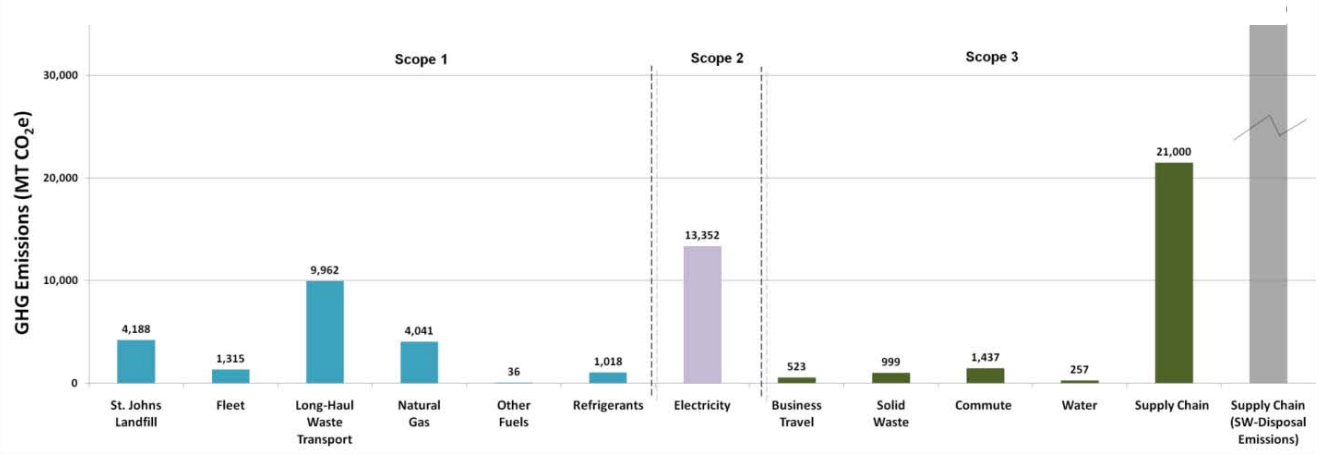
Source: World Resources Institute, The Greenhouse Gas Protocol, p. 25.

[6] The Local Government Operations (LGO) Protocol was developed as a collaboration of The Climate Registry (TCR) the California Air Resources Board (CARB) the California Climate Action Registry (CCAR, now the Climate Action Reserve) and ICLEI Local Governments for Sustainability. The LGO Protocol follows the same format as The Climate Registry's General Reporting Protocol (GRP).

GHG inventory results summary

Metro's total emissions equal 58,062 MT CO_2e(2008). Metro's emissions from vehicle fuel and building energy consumption account for 36,555 metric tons carbon dioxide equivalent (MT CO_2e) shown in Figure 3 as Scope 1 and Scope 2 emissions. Estimated Scope 3 emissions total 33,235 MT CO_2e, which accounts for the emissions from mission-critical operations and activities related to Metro operation, but outside of its direct control. See GHG inventory report for details of this analysis.

Figure 3: GHG emissions from Metro operations (2008)



Scopes I and II yield 33,912 MT CO2e. For sense of scale, this is equivalent[7] to:

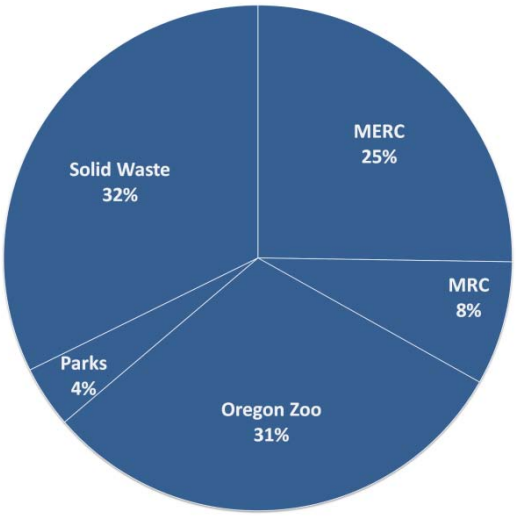
- Annual emissions from 6,484 passenger vehicles
- Annual emissions from the energy consumed by2,886 homes (US average)

Scope III emissions yield 24,215 MT CO2e. For sense of scale, this is equivalent to:

- Annual emissions from 4,630 passenger vehicles
- Annual emissions from the energy consumed by 2,061 homes (US average)

Figure 4 provides a breakdown of the total GHG emissions for calendar year 2008 by functional area. MERC, the Oregon Zoo and Solid Waste functional areas each account for roughly one-third of Metro's total 2008 emissions; and the Metro Regional Center (MRC) and Parks account for eight and four percent, respectively.

Figure 4: Agency-wide greenhouse gas emissions (2008) by functional area

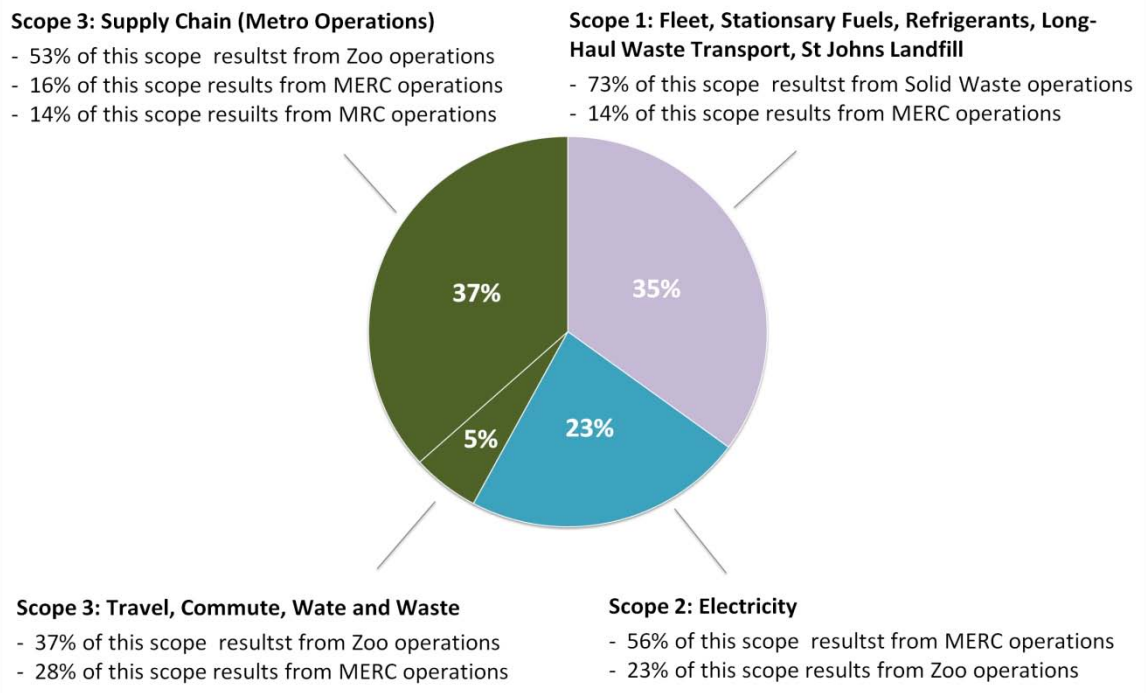


[7] Source: http://www.epa.gov/RDEE/energy-resources/calculator.html

Figure 5 includes a breakdown of GHG emissions for calendar year 2008 by emissions scope and distinguishes supply chain emissions within the total share of Scope 3 emissions. Roughly 73 percent of the total Scope 1 emissions (owned vehicle fuel use, natural gas consumption for building heat and refrigerants)come from Solid Waste operations, with MERC accounting for the next largest source at 14 percent. Scope 2 emissions (electricity) account for the second largest emissions source at 23 percent of Metro's total GHG emissions and 57 percent of all Scope 2 emissions result from MERC operations.

The Scope 3 emissions, Metro's largest emissions source, in Figure 4 are separated out into two general categories; (1) the purchase of potable water, solid waste disposal, employee commute and business travel and (2) supply chain emissions from purchased materials and services. Supply chain emissions make up the largest portion of Scope 3 emissions, the majority of which come from Zoo operations. The remaining Scope 3 emissions comprise five percent of Metro's total emissions, and similar to the supply chain emissions, the two largest sources result from operations at the Zoo and MERC functional areas.

Figure 5: Agency-wide greenhouse gas emissions (2008) by emissions scope



The results above demonstrate a substantial opportunity to reduce the GHG emissions and climate impact from Metro operations. Scope 1 (direct emissions) arise from sources over which Metro has direct control and which reflect the greatest opportunity for reductions. Scope 2 (indirect emissions) electricity emissions are substantial, primarily due to Metro visitor venues. These Scope 2 emissions also provide a significant opportunity for reductions despite being categorized as indirect, through changes in the amount of electricity Metro operations consume. Scope 3 (indirect emissions) are those which are shared with entities providing the product or service and present similar control challenges as Scope 2 emissions, although slightly more complicated strategies are

required to address Scope 3 emissions (for more detail see the Greenhouse gas emissions goal interpretation section in appendix).

Data quality and availability

The inventory attempts to estimate emissions from all of Metro's facilities but due to data limitations, a number of Metro's facilities are not included in the inventory. It is also important to note that complete data sets were not available for each facility that is included in the inventory. The **Metro GHG Emissions Baseline Inventory 2008** report includes a more detailed analysis of the existing data gaps and inventory methodology.

In addition to not including some facilities in the inventory, this analysis does not capture the transportation related impacts of visitors to Metro owned facilities and venues due to data and resource limitations. While Metro does not have direct control over how visitors choose to travel to Metro owned properties, Metro does play a significant role in regional transportation planning and has the capacity to promote alternative transportation modes at the majority of Metro's facilities, especially the visitor venues. It is recommended that future GHG analyses attempt to include these "visitor" impacts.

Case study: Green building and energy audits at PCPA theaters

Sustainability and energy efficiency are important issues in the world of performing arts. The number of performers and touring shows demanding environmentally sensitive policies from venues increases every year. There is also a national trend by public assembly venues to reduce, reuse and recycle as best as possible. To get ahead of this sustainable operations trend, PCPA completed a LEED-Existing Buildings study of two of their theater facilities: Antoinette Hatfield Hall (built in 1987) and Keller Auditorium (opened in 1917 and updated in 1968).The purpose was to determine whether it would be possible to achieve LEED Existing Building certification for either location.

Thorough studies at both of the venues created benchmarks for PCPA practices in energy efficiency, water consumption, cleaning practices, recycling and toxics use. In addition, a detailed energy audit was performed in partnership with the Energy Trust of Oregon. That study identified the state of the buildings' heating and cooling systems, energy use trends and opportunities for increased energy efficiency.

These studies have allowed PCPA to establish a baseline from which it can advance efforts to gain LEED EB certification. They also help PCPA to lay out a path for future efforts. Coupled with the energy audits, the focus on sustainability will allow PCPA to lower operational costs while offering clients and patrons a more environmentally conscious venue for live theater in Portland.

Baseline analysis: Toxics inventory

Toxics baseline methodology

An inventory of chemical products and corresponding material safety data sheets (MSDS) was completed to establish a baseline for toxics in use at Metro operations. This chemical product inventory was entered into an electronic database hosted by the Center for Research on Occupational and Environmental Toxicology at Oregon Health Sciences University called the Chemical Risk Information System. Metro sought toxicity analysis of the chemicals in the inventory and contracted with OHSU to develop the **Metro Chemical Inventory Hazard Evaluation and Management Tool**. This web-based system was designed to help ensure compliance with the OSHA Hazard Communication Standard and to provide health, environmental and physical hazards analysis of the chemical products in use at Metro.

Using this tool, Metro evaluated the potential health, environmental and physical hazard risks of chemical products in the inventory using product hazard evaluation criteria. Each product ingredient in the inventory was assigned a 1, 2 or 3 rating for health, environmental and physical hazards (a rating of 1 indicates low hazard, and a rating of 3 indicates high hazard). An overall rating in these three areas was then given to the product. A description of the methodology for assigning the rankings in each category for a product is included in the appendix.

Using this scale, a baseline was established of the number of chemical products used at Metro facilities that have ingredients with a 3 designation (worst) for health, environmental, or physical hazard.

Metro Chemical Inventory Hazard Evaluation and Management Tool

What products are in the inventory at your Metro facility? Check the database.

http://www.ohsu.edu/croet-cris/metro/metro.cfm

Contact the Sustainability Program for login and password.

Toxics baseline summary

There are currently 3,638 products in the Metro chemical product inventory. Of these, 58 percent have a 3 rating in one of the categories, 37 percent have a number 3 rating in at least two categories and 10 percent have a 3 rating in each of the three hazard categories. Overall, 10 percent of the products in the inventory have the worst hazard rating across all three hazard categories.

Metro's chemical inventory contains more high-hazard rankings for human health toxicity than the other two hazard categories (environmental toxicity and physical hazard). More high-hazard chemicals are found in the Zoo's chemical inventory than most other Metro locations, which is likely due to the unique nature of their operations (i.e. creation of outdoor exhibits) (see figure 6).

Figure 6: Location of products in Metro inventory with high hazard rating in all categories (health, environmental and physical) (2008)

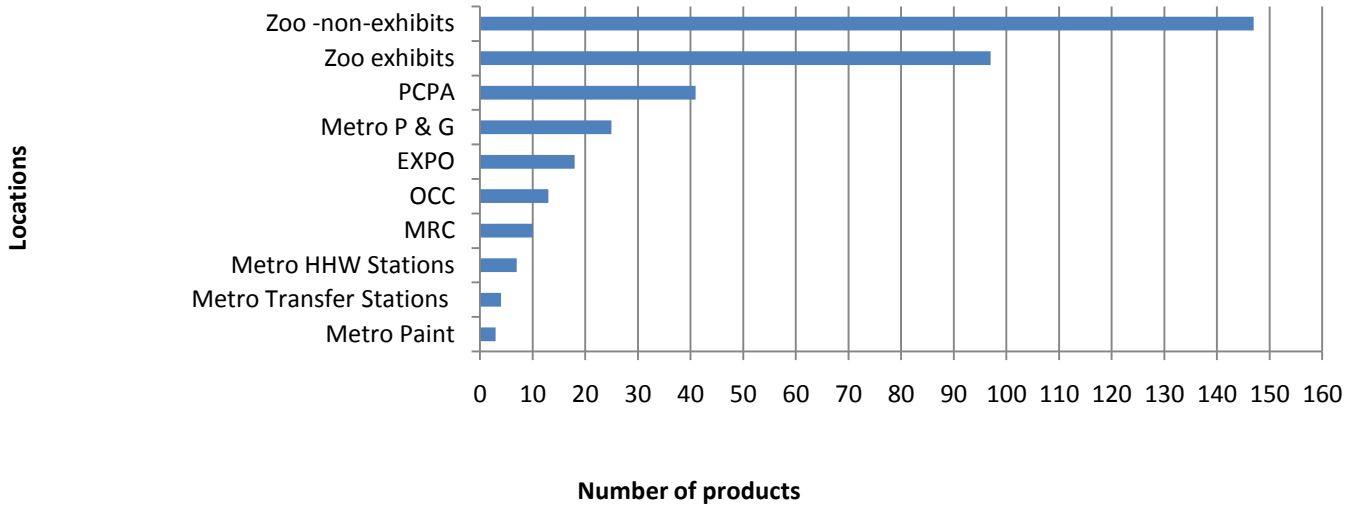
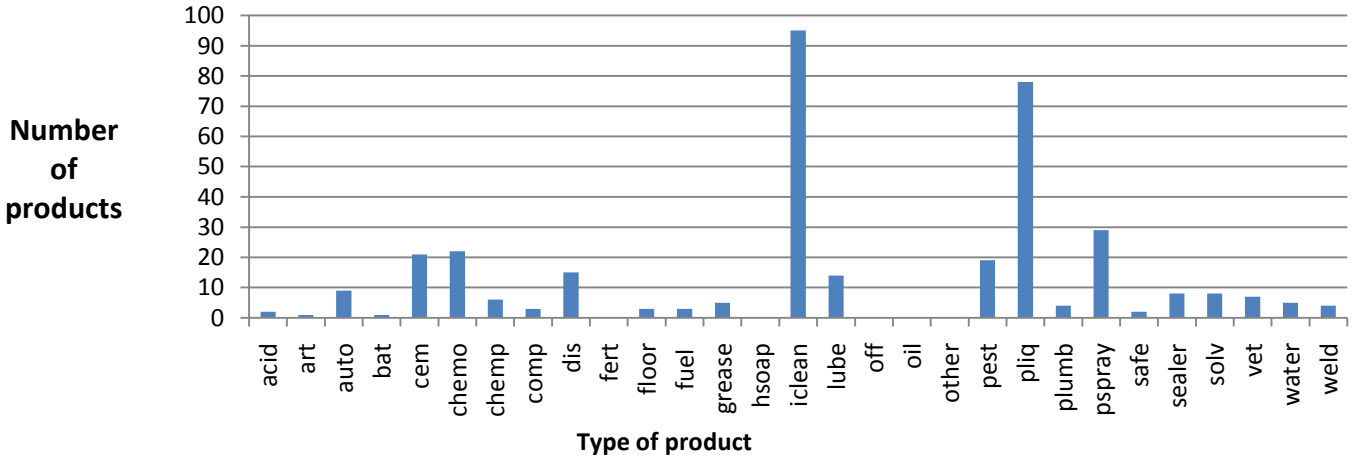


Figure 7: Product Types in Metro inventory with a high hazard rating in all categories (health, environmental, and physical) (2008)



Cleaning products and paints are the product categories with the most products in the inventory with a 3 ranking. For a list of all use type categories, see appendix.

In addition to showing number and distribution of products in the inventory with a 3 rating, Metro identified specific health hazards of the inventory.

- **Carcinogens**: Metro's chemical inventory contains 51 confirmed or probable carcinogens.
- **Developmental toxins**: Eleven developmental toxins are present in the inventory.
- **Persistent Bioaccumulative Toxics (PBT's):** 61 percent of the chemicals in the inventory are persistent, 17 percent are bioaccumulative and 39 percent are toxic. (A PBT chemical is persistent, bioaccumulative and toxic.)

Data quality and availability

- Product data is old or incomplete. Data is based on MSDSs (Material Safety Data Sheets) and 15 percent of the products in the inventory do not have sufficient data on the MSDS to allow a health, environmental, or physical rating. Many of the MSDSs are older; 58 percent pre-date the year 2000. Lastly, herbicides and pesticides used by Metro contractors are not included in this inventory.
- The database does not include the percentage of the ingredients in the product, nor does it address the amount of that product used in Metro's operations. Less than half of the ingredients listed on the MSDSs currently in the database include information on ingredient percentage, and no information was obtained on the quantities of products used during the product study.
- Database does not include durable goods that may contain toxics. These include fluorescent lamps (mercury) computers (brominated flame retardants) and furniture (formaldehyde).

Case study: Sustainable development of Graham Oaks Nature Park

Metro's newest park, Graham Oaks Nature Park in Wilsonville, includes many elements of sustainable site design.

The pervious pavement in the parking lot manages stormwater and removes pollutants. The solar panels on the restroom feed into the City of Wilsonville's electric grid and the stonework at the plazas and overlooks is Columbia River Gorge basalt stone.

The structures and hardscapes at the park include: a parking lot with pervious pavement and stormwater swales planted with native trees, shrubs, grasses and wildflowers to improve water quality; a pedestrian bridge that crosses Arrowhead Creek reused from another Wilsonville park site; low impact, environmentally appropriate and locally produced materials, such as the restroom (a pre-fab kit from Roseburg) and the ecoroof on the picnic shelter (from Baker City); a restroom painted with recycled MetroPaint; and a picnic shelter topped with an ecoroof to be planted in late summer 2010.

The plants used to restore the site's oak woodland habitat are native plants, trees and shrubs grown at Metro's Native Plant Center, where the wildflowers seeds were also sowed. The native ornamental plantings along walkways were also grown at Metro's Native Plant Center. Interpretative messaging and signage educates visitors on the historical, cultural, natural and sustainable practices of Graham Oaks and help tell the story of the site. Benches are detailed with hand forged metal oak trees, and local artist Mauricio Saldana has sculpted a 6,000 pound acorn as one percent of total project cost is used for the arts.

Baseline analysis: Waste generation and recycling

Waste baseline methodology

To create a baseline of waste generation and recycling, data from waste haulers that service Metro locations was used. This data includes the estimated weight of solid waste picked up from each location, as well as the percentage of that waste that is diverted for recovery (recycling or compost). In addition, waste composition was determined through waste sorts conducted at six Metro locations.

Waste baseline summary

Metro facilities and operations generated about 2,600 tons of waste in 2009. Of this, about half is diverted for recycling and compost, resulting in about 1,200 tons of garbage disposed in landfills annually. Waste generation and recycling varies significantly by facility and functional area. The Oregon Zoo, Oregon Convention Center, Expo and MetroPaint combined generate 94 percent of Metro's total identified annual waste generation (Figure 8). MERC facilities contribute 25 percent of Metro's waste each year (Expo accounts for 12 percent and Oregon Convention Center accounts 13 percent of the total waste). The Oregon Zoo is the largest generator of waste (about 53 percent of the total waste generated) but it also has the highest recycling rate of Metro's locations.

MetroPaint is also a significant waste contributor (381 tons per year). MetroPaint does not currently track recycling from its operations, mainly because the market for recycling used steel and plastic paint cans has disappeared.

Figure 8: Percentage of total weight of waste generated by facility (2009). PCPA is undercounted due to lack of data.

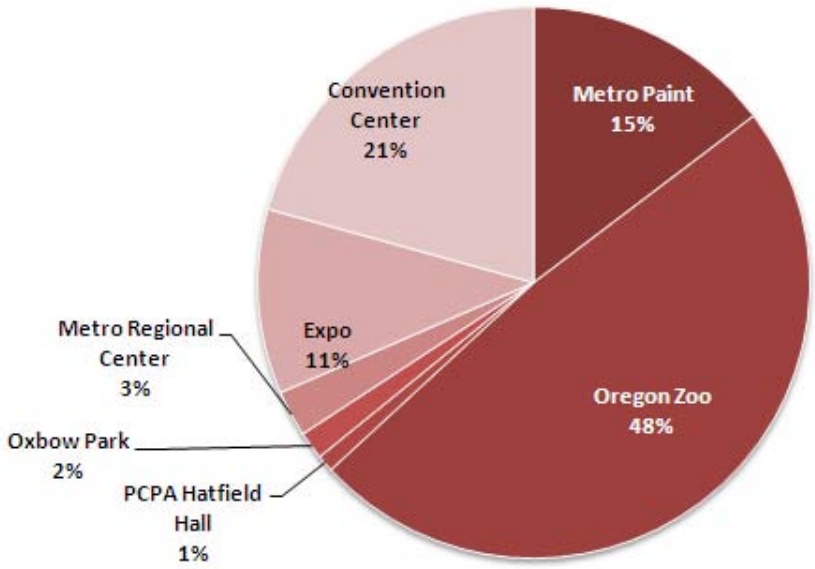


Table 1: Waste recovered for recycling and composting at Metro facilities.

	2006	2007	2008	2009
Zoo	67%	69%	69%	72%
Metro Paint	NDA	NDA	29%	0%
Oxbow Park	NDA	19%	NDA	8%
Oregon Convention Center	31%	56%	48%	56%
Expo	5%	10%	13%	17%
PCPA Antoinette Hatfield Hall/Admin	NDA	38%	NDA	39%
Metro Regional Center	NDA	58%	62%	64%

NDA - No data available.

Recycling rates vary widely across Metro's facilities (see Table 1). The top recyclers in 2009 were the Oregon Zoo (72 percent) Metro Regional Center (64 percent) and the Oregon Convention Center (56 percent). Each of Metro's functional areas (see page 12) has a different waste profile (Table 2). Waste composition was determined through waste audits conducted by Sky Valley and Associates in collaboration with the City of Portland Recycle at Work program. This analysis showed that as of 2008, there were still significant opportunities for diverting materials from Metro's own waste stream to recycling or composting.

Table 2: Waste composition by facility (2008 sample).

Waste Characterization by Facility (2008)	Zoo	OCC	Hatfield	Expo	Regional Center	Blue Lake	Oxbow	Average
Food & food soiled paper	21%	30%	41%	30%	30%	32%	39%	32%
Garbage	9%	13%	16%	18%	12%	9%	8%	12%
Miscellaneous	1%	3%	4%	4%	30%	14%	10%	9%
Food wrapped in plastic	6%	8%	12%	11%	4%	8%	12%	9%
Recyclable paper	0%	17%	0%	10%	7%	7%	5%	7%
Animal waste	41%	0%	0%	0%	0%	0%	0%	6%
Yard waste	1%	14%	1%	2%	1%	9%	5%	5%
Other plastic	2%	2%	7%	2%	7%	4%	4%	4%
Plastic Containers	2%	4%	3%	4%	3%	4%	4%	4%
Metal	1%	2%	2%	4%	2%	5%	5%	3%
Glass containers	0%	2%	1%	3%	1%	6%	6%	3%
Scrap paper	4%	0%	13%	0%	0%	0%	0%	2%
OTHER*	10%	7%	1%	2%	13%	2%	3%	5%

** OTHER includes wood, textiles, carpet, small electronics, and batteries.*

Note: the MRC Miscellaneous category includes 116 pounds of diapers from the Metro Kids daycare, as well as 106 pounds of strobe lights (likely the result of an illegal dump onto Metro property).

Data quality and availability

- Metro facilities outside of Portland lack waste data. Waste and recycling data is inconsistently reported, or not reported at all, for Metro's locations outside of the city of Portland (hauler franchise areas).
- Available recycling data does not include materials recycled outside of the waste hauling contracts, such as electronics or furniture.
- Waste composition data is limited. Waste sort data should be repeated with some regularity to determine opportunities for improving waste prevention, reduction and recycling.

Baseline assessment: Water consumption

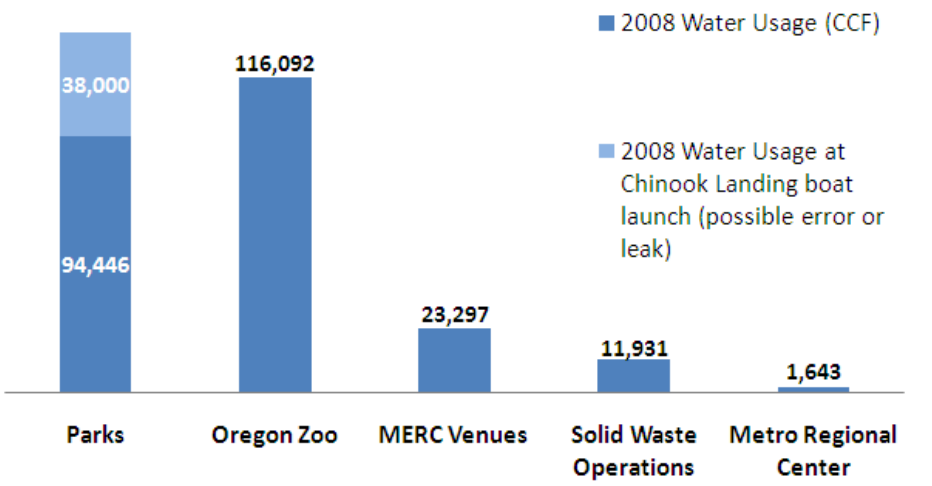
Water baseline methodology

Water usage data was collected from water providing utilities, as well as from well water usage records. Water use is reported in CCF, or hundred cubic feet (equivalent to 748 gallons).

Water baseline summary

Metro's properties collectively consume 285 million gallons per year. This analysis indicates where Metro's primary water uses are, and provides insight into Metro's greatest opportunities for reducing water usage.

Figure 9: CCF of water used by functional area, 2008



The Oregon Zoo is Metro's largest water user, and represents about 40 percent of Metro's total annual water usage. Estimates for water usage at the Oregon Zoo indicate that further study is required; data on two-thirds of the zoo's water use remains unknown.

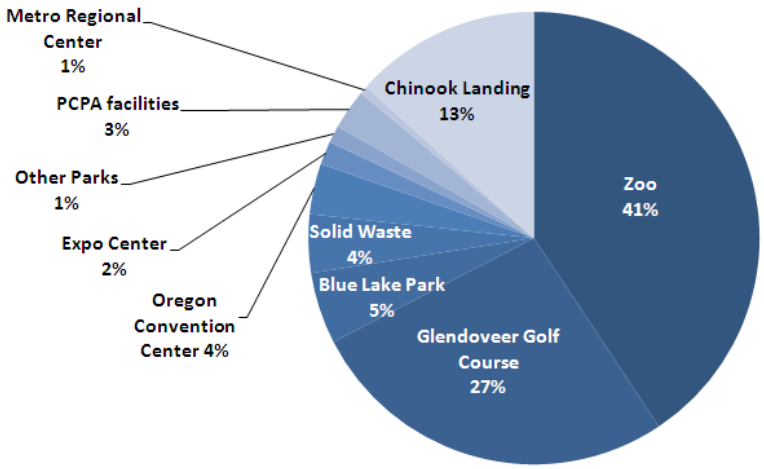
Glendoveer Golf Course is the top water user of Metro's park facilities, and is Metro's second largest water user overall, judging from estimates of water usage from two onsite wells used to irrigate the golf course.

Both of these areas present significant opportunities for reducing water usage through improving water efficiency at the Zoo and at the Glendoveer Golf Course (Figure 10).

Data quality and availability

- **Reading records from water submeters are rarely kept.** While water usage data is available at the meter level from the water utilities, detailed information about where water is used within the facility or location is raraly available. This is especially true for the Zoo.

Figure 10: Relative water usage by facility (2008)



- Chinook Landing boat launch water records are suspiciously high. Records from the City of Fairview showedvery high water usage in 2008 that indicate a faulty water meter or possibly an unnoticed leak. This anomaly is being investigated by the Parks and Environmental Services department.

- Water usage data not available for the Native Plant Center. This facility draws small amounts of water directly from the Tualatin River to irrigate native plant seedlings at this Metro operation in Tualatin.

Case study: Reducing water use at the Zoo

Since exhibits are estimated to account for about 20 percent of the Oregon Zoo's water usage, Zoo staff is looking for way to make that use more efficient.[8] In an effort to keep the pool in the Zoo's Humboldt penguin exhibit clean, approximately 3 gallons of water are skimmed off the pool every minute. In addition, the entire 25,000 gallon pool is dumped into the sanitary sewer every week. Over the course of the year, this effort to maintain a clean environment for the penguins results in the use of millions of gallons of water. As the fourth largest water user in the City of Portland, finding ways to reduce the Zoo's water usage was integrated into the proposed projects to complete under the voter-approved Zoo bond measure.

The first of the projects to address water usage at the Zoo will provide a new filtration system for the penguin exhibit. This upgrade will allow the Zoo to cleanse and re-circulate much of the water in the penguin exhibit, bringing the water usage for this exhibit down to approximately 200,000 gallons per year, reducing annual water usage at the penguin exhibit by about 80 percent.

[8] Estimated water usage at the Zoo, from Oregon Zoo Stormwater Master Plan, 2009.

Baseline analysis: Habitat and stormwater

Habitat baseline methodology

Habitat health and function are impact areas identified within Metro's sustainability goals and are central to its mission. For this baseline, developed properties were distinguished from natural areas with respect to the appropriate metrics. An analysis of stormwater treatment is included in this baseline analysis because it is closely related to habitat health and function. For example, sustainable site design reduces stormwater's impact on water quality and the health of rivers, streams and riparian areas by detaining, treating and/or infiltrating stormwater on-site. This supports native plants, recharges aquifers and prevents erosion and habitat destruction. A list of habitat-friendly practices developed by Metro includes best practices such as rain gardens, swales, stormwater planters, rainwater harvesting, porous pavement, native landscaping, green streets, sustainable site design and green roofs.

What are habitat-friendly development practices?

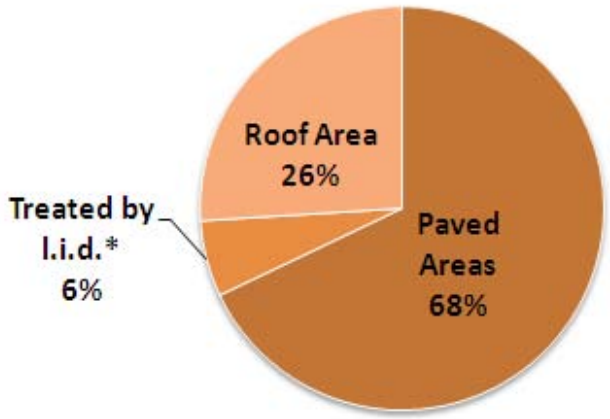
Some examples of habitat-friendly development practices (or low-impact development – l.i.d.), as defined by Metro's Nature in Neighborhoods program, are:

- Pervious pavement and porous concrete
- Ecoroofs
- Rain gardens
- Tree planting
- Use of native plants
- Bioswales and flow-through planters

See appendix for full list.

For each developed property, data was collected to determine the amount of impervious area on-site (hardscapes that include roofs, parking lots and sidewalks) (Figure 11). Data was also collected to identify the square footage of impervious areas treated by habitat-friendly development practices (also known as low-impact development, or LID) and to determine the number of habitat-friendly, or LID practices in use. The data was used to calculate Metro's overall effective impervious area (EIA) which is a measure of impervious areas not treated by LIDs and instead drain directly to a sewer or receiving waterway. The higher the amount of EIA, the more significant the property's negative impact on water quality and wildlife habitat. For natural areas, the available data used in this baseline analysis includes the total number of classified acres and the number of acres undergoing a variety of restoration activities. This data provides a snapshot of

Figure 11: Impervious Surface Type Summary (2008)



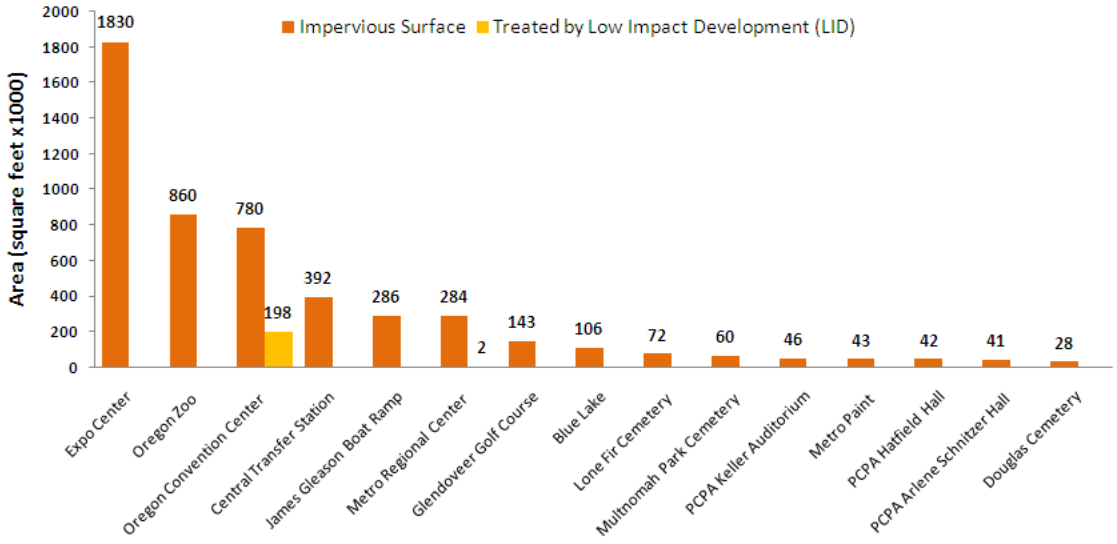
Metro's habitat management and restoration activities which in turn provides an indication of the general health and function of those ecosystems. For example, habitat on acres classified as "Refinement and Long-term maintenance" are subjected to restoration activities related to the long-term shaping and maintenance of the site as it moves towards its desired future condition (a healthy, functioning ecosystem) and to the ongoing care of natural areas required to ensure the preservation of the habitat and water quality protection functions.

Habitat baseline summary

Metro's total effective impervious area (EIA) represents 96 percent of its total impervious area. This means the vast majority of hardscapes drain directly to sewers and streams instead of being treated on-site. The total EIA across all Metro properties is **equivalent to 110 acres**. This contributes negatively to habitat quality and water quality issues and creates stormwater management challenges throughout the region.

Some Metro properties were not be included in the effective impervious area analysis because all stormwater is captured, infiltrated or treated on site via habitat-friendly practices or retention ponds. These properties includeMetro South Transfer Station, Cooper Mountain Nature Park, Mt. Talbert Nature Park, Smith and Bybee Wetland and Chinook Landing boat launch on the Columbia River. Nearly all of Metro's urban developed properties have an EIA of 100 percent. The notable exception is the Oregon Convention Center, which has an EIA of 75 percent. Metro Regional Center has an EIA of 99 percent due to a small 2,500-foot ecoroof (Figure 12).

Figure 12: Impervious surfaces and area treated by low-impact development for Metro properties with stormwater runoff impacts



Overall, two thirds of Metro developed properties have no habitat-friendly practices in place. The number of habitat-friendly practices used on-site is a good indication of a property's commitment to using innovative, multi-beneficial design solutions during construction, retrofit and remodel projects.Thus, determining where these practices are used and how many are utilized is useful for determining where illustrative examples, lessons learned and the most effective implementation opportunities might be. The largest number of habitat-friendly practices used at any one Metro property is at Cooper Mountain Nature Park, where five practices are in place.

Data quality and availability

- Habitat indicators need further development. The habitat metrics included for this plan are intended to serve as a general trend indicator or "snapshot" of Metro's progress towards and contribution to the region's ecological health. There are a number of indicators that will either be collected during site assessments (such as percentage of native landscaping) and/or developed over time (such as development of site conservation plans) that will provide a more robust picture of habitat health and enhancement on Metro properties.

Case study: Rain garden at Oregon Convention Center

The landscape of the Oregon Convention Center expansion is designed to educate the community and its visitors about water quality. In addition to the native plants, minimized lawn area and efficient irrigation technology, a rain garden was integrated into the facility's design. It serves to filter and cool the extensive stormwater that runs off the large roof and site surface area. The rain garden provides an aesthetic, urban demonstration project for the handling of storm water. This signature feature is a solution to the need for disconnected downspouts from the city's combined sewer system, collecting and cleansing storm water before its release into the Willamette River.

The 318-foot long channel simulates a mountain stream with basalt columns and wetland plants. Terraced cobbled sedimentation basins slow the water, allowing sediments to filter out and increasing time for infiltration. The rain garden collects and treats water from 5.5 acres of roof area. Runoff from the loading dock area is also collected then passed through an oil-water separator before the water flows into another 205-foot vegetated swale. This filtered water enters the rain garden at the lowest detention basin.

The Oregon Convention Center saves $15,600 on its stormwater bill annually because of the stormwater that would otherwise need to be treated by the municipal stormwater system.

PART 3: STRATEGIES AND ACTIONS

For each of Metro's five sustainability goal areas, a set of strategies and actions have been identified. These strategies and actions provide a framework for the work that needs to be done to reach the 2025 goal targets. The strategies and actions are meant to be applicable across Metro's operations, and are not prescriptive to particular facilities or sites.

Methodology

Action planning teams were formed for each of the five goals. Teams included representation from each of Metro's major functional areas, and an outside participant or reviewer for each team. Each of these teams confirmed the strategies that Metro needs to employ in order to meet the goal, and identified actions that should be completed to implement each strategy. Each team developed the strategies and associated actions within the frameworks of several guiding principles appropriate for the goal area and in tune with the baseline findings of largest impact areas.

Strategies
The means for accomplishing goals

Actions
The specific tasks or steps that are taken to implement a strategy

The actions were then prioritized by team members according to two criteria: **feasibility** and **effectiveness** at meeting the goal. Based on this assessment, the team ranked each action as high priority (both highly feasible and highly effective) medium priority (either highly feasible or effective) or low priority (low feasibility, low effectiveness).In addition, the team flagged a subset of these as actions that are essential to the foundation of this plan and should be completed (or initiated, in some cases) in the first three years after the plan is adopted.

Action types

In addition to priority, the actions are categorized by the type of action. There are seven action types in this Sustainability Plan:

1. **Assessment**: Actions to conduct more detailed analysis that is needed to inform future work, such as an energy audit at a facility.
2. **Tracking**: Actions to initiate or improve tracking of various sustainability data that are needed to report progress over time on selected indicators.
3. **Programmatic**: Actions related to development of new programs or expanding existing programs.
4. **Procurement**: Actions directly related to the procurement of goods or services.
5. **Operational/Policy**: Actions that call for a change in internal operations, policy, or procedures.
6. **Funding**: Actions related to funding internal sustainability projects.
7. **Education**: Actions to educate Metro employees, and in some cases, Metro's customers.

Strategies and actions: Greenhouse gas emission reduction

Metro owns and operates a diverse portfolio of facilities that will require specialized strategies to mitigate the climate impacts of Metro's operations. While Metro's greenhouse gas emissions account for a small share of the total regional emissions -- roughly one-tenth of a percent of the total 31 MMT CO_2e associated with the Metro region -- this reduction target provides an opportunity for Metro, as a public agency, to lead by example in taking an aggressive emissions reduction strategy.

In order to successfully meet the operations reduction goal, Metro will need to examine all areas of operation to identify emission-reduction opportunities.

Installation of solar array at Metro's Cooper Mountain Nature Park, 2009.

Guiding principles for greenhouse gas emission reduction

- **Reduce energy demand first.** Metro should work to increase energy efficiency of its facilities to the fullest extent feasible as a top priority for reducing GHG emissions. Purchase and/or on-site generation of renewable energy should be a second priority. Procurement of carbon offsets should not be considered until these avenues have been fully pursued, and then only if the offsets meet certain criteria.
- **Address emissions from all three scopes.** Metro should be comprehensive and address all of Metro's greenhouse gas emission sources: energy, transport, and materials. In other words, address all Scope I, II and III emissions.
- **Use most current climate science to guide actions.** The findings from the IPCC (Intergovernmental Panel on Climate Change) outline what is needed in terms of the scale of emission reductions needed to avoid catastrophic climate change (change beyond the point that we can't adapt).

Greenhouse gas reduction strategies and actions

Greenhouse gas emissions			
Strategy	**Actions**	**Action type**	**Priority**
Strategy 1: Reduce GHG emissions from building operations, maintenance, and siting through energy efficiency and resource conservation.	1.1 Audit buildings for energy efficiency opportunities and develop recommendations for an energy efficiency plan specific to each site. Audit type should be appropriate to the building type (i.e. ASHRAE Level 2 audit for buildings over 10,000 square feet.)	Assessment	High 
	1.2 Implement energy efficiency plans and develop supporting policies for each site audited. Examples of implementation steps could include: • Lighting retrofits and upgrades • Establish energy efficiency guidelines/requirements for existing buildings and new construction. • Building retro-commissioning (to test effectiveness of building systems) where appropriate • Building weatherization (insulation, sealing, etc.) • Equipment upgrades (boilers, HVAC, hot water heaters, refrigerators, etc.)	Operations	High 
	1.3 Identify and evaluate options for reducing GHG emissions from the St. Johns landfill, particularly the flaring of methane and resulting carbon dioxide emissions. Include options for methane management after Metro's contract with Ash Grove Cement expires in 2012.	Operations	High
	1.4 Increase on-site generation of renewable energy at Metro locations. Assess locations for opportunities in partnership with Energy Trust. Implement according to greatest opportunities (i.e. solar, small wind turbines).	Procurement Operations	High
	1.5 Increase purchase of renewable power directly from electrical utilities (Portland General Electric and Pacific Power.)	Procurement Operations	Medium
Strategy 2: Reduce consumption of carbon-intensive fuels, including emissions related to business travel, fleet vehicles, and other fuel-consuming equipment.	2.1 Implement green fleet program to reduce fuel usage by Metro's fleet. Program elements should include: • Decrease overall number of fleet vehicles; • Use of Fleet management software which tracks fleet usage; • Use of car-sharing to supplement fleet needs where possible; and • Fleet purchasing policy with procurement hierarchy, increased use of alternative fuel vehicles and purchase of electric vehicles and charging stations.	Operations Policy	Medium

	2.2 Reduce emissions from the consumption of carbon-intensive fuel related to business operations by adopting sustainable fuel use standards. Standards should include: • Provisions for back-up generators, heavy equipment, off-road vehicles and other equipment; • Idle reduction policy for fleet and contractors; • Diesel emission standards for off-road equipment based on EPA's Tier system, and retrofit or replace equipment to meet those standards; and • Fuel efficiency standards for fleet vehicles and increased use of alternative fuels where available.	Policy	Medium
	2.3 Identify and evaluate options for reducing GHG emissions from the long-haul trucking of solid waste to the Columbia Ridge Landfill in Gilliam County, OR. Strategies could include alternative fuels or transportation methods, reducing the amount of waste requiring disposal and potential for alternative waste treatment options that would not require as much transport."	Operations	Medium
	2.4 Create climate-friendly business travel guidelines for Metro employees, including best practices hierarchy of business travel choices. Include workday travel to and from meetings. Include eco-driving awareness and tips for fleet drivers.	Education	Low
	2.5 Establish public electric vehicle charging stations at Metro locations.	Operations	Low
Strategy 3: Reduce GHG emissions related to the supply chain and service providers Metro purchases through contracts and procurement.	3.1 Include GHG reduction / energy efficiency criteria in all vendor and facility service and equipment contracts. • Include GHG-reduction preferences/criteria into procurement specifications of bids and RFP's, or add to boiler plate language for contracts. • Include requirement to purchase Energy Star certified equipment wherever available.).	Procurement	High
	3.2 Develop and adopt sustainable food procurement standards that reduce GHG emissions from food production, transport and service. To include: • Increases purchase of certified organic food; • Increased purchase of local food; and • Sustainable food service ware options including durable dishware and prohibiting disposal of compostable service ware in a landfill.	Procurement	Medium

Strategy 4: Improve internal business practices to support ongoing monitoring and tracking of GHG emissions sources.	4.1 Establish process for ongoing tracking of all GHG-related data sources in Metro's internal operations for tracking of GHG emissions. To include: • Identify data sets needed for ongoing GHG tracking and reporting, including all data gaps identified in the GHG inventory completed in 2010.Integrate tracking into normal business practices. • Coordinate ongoing tracking needs with all business operations departments, including but not limited to: Accounting, Procurement, Operations/Facility Managers, Contractors, Fleet management, Information Services. • Use utility tracking software for electricity, natural gas and water, waste. • Establish ongoing working relationship with all utility providers, via account representative if available including: establish regular reporting of utility use data, regular updates of utility-specific GHG emission factors.	Tracking	High 
	4.2 Identify tools necessary for Metro operations to quantify the GHG reduction potential of facility improvements or upgrades. *(Related to Metro's GHG Tools and Procedures Manual, in development by Research Center.)*	Assessment	High
	4.3 Conduct annual employee commute survey for all Metro employees (including non-benefits eligible employees) that records travel modes and miles traveled (goes beyond the TriMet Passport program required survey).	Assessment	Medium
Strategy 5: Create a funding strategy and appropriate staffing for greenhouse gas reduction efforts.	5.1 Develop and implement funding mechanism for projects that reduce GHG emissions, including new and existing capital. Explore ways to generate funding, such as: • Set aside avoided costs / savings from energy efficiency investments to pay for future projects; • Use energy incentive program payments (i.e. ETO rebates) to "pay it forward" for future projects. • Develop return on investment (ROI) criteria for energy-efficiency projects and integrate into project proposals. Build relationships with outside funders like Energy Trust of Oregon and other energy incentive programs.	Funding	High 
	5.2 Require selection of energy efficient options for all projects (new and existing capital). Establish opportunity review as a pre-planning requirement. Include requirement to purchase Energy Star certified equipment wherever available.	Funding	High

	5.3 Hire an energy manager to develop and implement a comprehensive energy efficiency program for all Metro/MERC facilities. Scope of work could include: • Build relationships with utility providers; • Set up ongoing tracking of energy use data; • Fundraising; or • Project planning assistance. Could be implemented as part of the capital projects division like MERC uses. Funding for position could emulate City of Portland and Multnomah County positions.	Program	Medium
Strategy 6: Support and encourage employee opportunities to reduce GHG emissions through behavior changes related to their Metro work day, as well as opportunities for visitors to reduce their emissions.	6.1 Provide basic education to Metro employees on climate change, greenhouse gas emissions and what they can do to help reduce GHG emissions at work (i.e. workplace energy conservation).	Education	Medium
	6.2 Reduce emissions from Metro employees commuting to and from Metro work sites. To include: • Expand commute option programs to all locations, and extend to non benefits-eligible employees.(i.e. compressed work week, transit pass, bike/walk incentives). • Strengthen telecommuting policy to reduce employee commute emissions.(i.e. MERC use of Citrix to improve employees ability to work from home) • Identify a Transportation Coordinator at each Metro work site.	Program	Medium
	6.3 Provide options for attendees of public meetings hosted at the Metro Regional Center to reduce their greenhouse gas emissions associated with travel to and from the meeting (i.e. use web-based meeting tools, public transit options, install AV equipment to enable virtual/remote meetings).	Operations	Low
	6.4 Increase parking fees at Metro locations as a way to discourage staff and visitor travel by car.	Policy	Low
	6.5 Develop methods to reduce emissions impacts related to transportation of patrons and customers visiting Metro venues. (i.e. Offer incentives such as a discounted entry fee for taking public transit to the event.)	Operations	Low

Strategies and actions: Toxics reduction

As a government agency with a focus on reducing toxic materials from the region's solid waste stream, toxics reduction is a key concept for not only community programs, but to internal operations. The wide variety of consumable products in use at Metro's locations poses a unique challenge.

Many products and materials used in government operations contain toxic substances of concern. Exposures to toxic chemicals are linked to a wide array of human health consequences.

Improving Metro's inventory of products (both consumable and durable goods) is necessary for success. These strategies and actions outline a process for systematically identifying and replacing hazardous products used in Metro operations with less-toxic alternatives, and starting with the most toxic products first.

Household hazardous waste collected from Metro region residents.

Guiding principles for toxics reduction

- **Precautionary principle.** Action should be taken to prevent harm even in the absence of scientifically rigorous proof of harm. In the context of Metro's operations this means that actions should be taken to change, halt or phase-out practices and products that are associated with significant concerns about toxic impacts, often long before these concerns are addressed by regulatory restrictions.
- **Consider hazard, not just risk.** Hazard is the inherent property of a chemical, whereas risk is a calculation of the potential for harm based on concentration, routes of exposure, and other factors. In contrast to a risk assessment approach, which involves complex and often incomplete or inaccurate calculations, a hazard-based approach selects products of concern based on their intrinsic ability to cause harm to health or the environment. This approach is consistent with the precautionary principle.
- **Take a life cycle approach.** Products can have impacts on human health and the environment across their lifecycle, including manufacture, use, storage and disposal. Metro should consider the impacts of hazardous materials not only during storage, and use and disposal at Metro facilities, but also those that result from the manufacture of products.

Toxics reduction strategies and actions

Toxics reduction			
Strategy	**Actions**	**Action type**	**Priority**
Strategy 1: Complete and bring up-to-date Metro's comprehensive chemical product and materials inventory, including consumable and durable products, as well as other toxics.	1.1 Establish process for ongoing tracking and inventory of chemicals and products that contain toxics in use at Metro. To include: • Schedule of regular inventory and database update of chemicals in-use, to repeat at least every three years. Include both Metro and MERC material safety data sheets (MSDS) as well as for products used at Metro facilities by contractors; divide MSDS database into In-use and Old MSDS's (to be archived); create standardized procedure and forms for adding products into the database. • Identify people responsible for keeping MSDS inventory up to date and train them on how to maintain and add to the inventory. • Link to new Safety Policy and Hazard Communication Program (Risk Management).	Tracking Program	High 
	1.2 Conduct high-level assessment of durable products commonly used at Metro that contain toxics; use list to inform future purchases of less-toxic alternatives (i.e. fluorescent lamps)	Assessment	Medium
Strategy 2: Take action to reduce and/or eliminate the most toxic products and materials first.	2.1 Identify the most toxic products in Metro's inventory and target them for replacement with less-toxic alternatives. To include: • Replacement of products that score a 3 (most toxic) in MSDS chemical inventory if substitutions are available; • Prioritize replacement of heavy metals and other PBT's, including those attributable to durable goods; • Prioritize product categories with high quantities of toxic ingredients in inventory (i.e. cleaning products and paints).	Operations Procurement	High 
	2.2 Reduce use of herbicides and pesticides in all Metro operations. Create and implement an IPM (Integrated Pest Management) policy to reduce use of herbicides and pesticides on all Metro properties. Policy should address the unique needs of different property types, including developed property landscapes and natural area restoration needs. Program should phase out high risk pesticides as indicated by Salmon Safe. Begin tracking and of all herbicides and pesticides used by Metro staff and contractors.	Policy Tracking	High 

	2.3 Adopt diesel particulate matter (PM) reduction strategies for internal operations and on Metro property. Include idle reduction policy and require use of diesel PM control technology for all diesel-burning equipment.	Operations Policy	Medium
Strategy 3: Identify and implement methods for procurement of less-toxic goods and materials through purchasing policies and procedures.	3.1 Reduce purchase of toxic products by requiring or requesting least-toxic options from contractors and suppliers in bids and RFP's. Integrate least-toxic criteria into boilerplate procurement language and other procurement practices. Create an "X-List" of ingredients or materials that Metro will no longer purchase due to their toxicity.	Procurement	High 
	3.2 Increase purchase of sustainable products by adopting least-toxic product standards. Formally adopt third-party certified eco-labels where available (i.e. Green Seal standard for cleaning products) and develop product-specific policies where such eco-labels are not available (i.e. low-mercury lighting).Standards should include performance criteria. Where standards are not available, point buyers to compiled lists of least-toxic products (i.e. City of San Francisco's toxics reduction procurement guide[9].)	Procurement Policy	High
	3.3 Develop methods to allow price premium for procurement of less-toxic goods and services where the less-toxic option costs more than conventional options.	Procurement	Low
Strategy 4: Educate, train, and provide tools for product users and buyers about how to choose less-toxic options based on standards and criteria.	4.1 Provide education and tools to buyers on how to purchase least-toxic products. Focus first on biggest purchasers of "toxics", and then broaden to include department procurement coordinators (DPC's) and P-Card users. Use a "train the trainer" approach by enlisting green teams, safety committees and some supervisors to educate Metro employees on selecting least-toxic products. Track trainings completed annually.	Education	High
Strategy 5: Develop toxics reduction program assessment metrics to measure progress over time.	5.1 Integrate contracts and procurement records into the chemical inventory.	Tracking	Low
	5.2 Track the quantity of less-toxic products Metro uses (i.e. third-party certified cleaning products) as well as the amount of toxics reduced over time as less-toxic alternatives are phased-in.	Tracking	Low
	5.3 Develop methods for monitoring P-Card purchases that	Tracking	Medium

[9] SF Approved List of Green Products & Services, City of San Francisco. www.sfenvironment.org/sfapproved.

	allow more detail of what is purchased. Managers should review receipts and encourage buyers to purchase less-toxic products. Model after MERC P-Card review process.	Procurement	
	5.4 Develop a method for measuring the life cycle impacts of Metro chemical and toxics purchases.	Tracking Procurement	Low
Strategy 6: Develop a cross-organization least-toxic alternatives assessment team and process.	6.1 Develop a cross-organization least-toxic alternatives assessment team and process. Identify team composition, specific charge, scope, authority and resources.	Operations Procurement	Medium

Strategies and actions: Waste reduction

Metro has had a commitment to recycling in government operations since 1991, when an Executive Order established a comprehensive waste program and recycling program for Metro departments and facilities (Executive Order No. 47.) Since then, Metro's recycling programs at its facilities have served as a model for similar facilities across the nation. The Oregon Zoo and the Oregon Convention Center are notable examples.

Metro provides reusable mugs for public meetings.

However, there are still opportunities for diverting recoverable material from the waste stream (such as organic waste) and for waste prevention upstream. The greatest challenge is due to the nature of operating public facilities and having to deal with the waste that is brought in by customers.

While waste disposal is a problem, the impacts of producing the goods that eventually become waste are many times larger than the environmental impacts of the waste itself. When it comes to waste reduction, the more sustainable practice is not just to keep stuff out of the landfill, but to use less stuff in the first place. By adopting waste prevention practices for waste streams that Metro controls (i.e. purchased goods) Metro will be most likely to meet waste reduction targets.

Guiding principles for waste reduction

- **Meet business recycling requirements.** Since Metro requires commercial facilities in the region to meet basic recycling program criteria, all Metro facilities should model this behavior and follow the best practices for recycling prescribed in that program.
- **Prevent waste before it starts.** Integrate techniques of waste prevention into Metro operations, focusing efforts on preventing waste upstream where it is generated. For example, durable, reusable, and refillable products all prevent waste.
- **Take a life cycle approach.** Consider the waste impacts of the full life cycle of products when making purchasing decisions, which includes the waste generated before or after a product is used by Metro.

Waste reduction strategies and actions

Waste reduction			
Strategy	**Actions**	**Action type**	**Priority**
Strategy 1: Utilize procurement process to prevent generation of waste.	1.1 Create procurement policies and procedures that support waste prevention and reduction. Examples include: Producer take-back as a procurement tool. i.e. require suppliers/vendors to take back packaging; Request that products be packaged in recyclable packaging, or no packaging at all; Establish a preference for durable, reusable, repairable products in procurement procedures. Provide training for buyers on how to use procurement tools to reduce and prevent waste from materials and services.	Procurement	High 
	1.2 Reduce food service ware and organics waste by adopting sustainable catering standards for public meetings hosted by Metro (both internal and public).For client-based catering and banquet services at visitor venues, continue to develop and offer options that reduce waste.	Operations Policy	Low
	1.3 Utilize life-cycle analysis as a procurement selection tool.	Procurement	Low
Strategy 2: Expand materials reuse opportunities.	2.1 Create centralized surplus and material reuse process for supplies, furniture and equipment. Update existing Metro surplus property disposition policy that prioritizes internal reuse first, then donation, then sale (MERC has a similar policy).	Operations Policy	Medium
	2.2 Promote and improve access to Metro's reuse bulletin board on the Intramet.[10]	Operations	Low
Strategy 3: Improve and expand recycling programs at Metro facilities and properties.	3.1 Meet business recycling requirements at all Metro facilities.[11]Follow best practices such as pairing waste bins with recycling bins and using two-sort systems in public areas of all Metro locations.	Operations	High 
	3.2 Increase organics collection at all Metro facilities where services are available.	Operations	High
	3.3 Integrate principles of Resource Management[12] into next waste and recycling contract for Metro facilities, to engage the hauler more in helping Metro to meet waste prevention	Procurement	Medium

[10] http://imet.metro-region.org/index.cfm/go/by.web/id/3688&type_id=3
[11] Metro Business Recycling Requirements, adopted in 2008. http://www.recycleatwork.com/whatsrequired.
[12] EPA website, *What is Resource Management?* http://www.epa.gov/wastes/partnerships/wastewise/wrr/rm.htm

	and recycling goals, and to clarify tracking and reporting requirements. Include preference for increased local processing of recovered materials.		
	3.4 Add recycling collection for other materials found in the waste stream not currently recycled (i.e., rigid plastics, other hard-to-recycle materials) where recycling markets are available.	Operations	Medium
	3.5 Identify a "recycling liaison" at each Metro park (PES) location to coordinate recycling improvement efforts.	Program	Low
Strategy 4: Educate employees on waste prevention and recycling and provide incentives for improvement.	4.1 Train Metro employees on waste prevention techniques and how to recycle where they work. Post recycling instructions on Intramet.	Education	Medium
	4.2 Establish gain-sharing agreements for increasing diversion rate or reducing waste at Metro facilities as a way to provide incentive to employees (Example: OCC gain-sharing agreement).	Program	Medium
Strategy 5: Educate visitors, exhibitors and show promoters about waste prevention and recycling options.	5.1 Create clear and recognizable signage on recycling in public areas at all Metro locations. Use coordinated messages/words/colors for recycling program consistent across all Metro locations (build on messages that work for OCC and Zoo or other public facilities such as Portland airport) and tailor to each site's recycling program offered. Signs at public locations should be in multiple languages and tailored to the visitors' needs at that site.	Operations	Medium
	5.2 Develop and offer waste prevention incentives for show promoters at MERC venues where possible.	Customers	Low
Strategy 6: Identify tools needed to reduce dependency on materials (such as paper) to prevent waste.	6.1 Implement a paper reduction strategy for Metro operations that fosters a transition to a paperless Metro workplace. To include: training for Metro employees on how to use paperless office tools, such as SharePoint and Wikis; options to reduce paper needed for retention of public records.	Operations Policy	High
	6.2 Upgrade AV equipment and meeting rooms to enable paperless and virtual public meetings.	Operations Policy	Medium
	6.4 Prevent paper towel waste in Metro restrooms, especially those with high traffic through use of high-efficiency hand dryers. Unique site needs should be considered (i.e. noise for restrooms near a quiet theater).	Operations	Medium

Strategy 7: Improve tracking and reporting on waste generation and recycling from haulers, as well as internal tracking materials use by department.	7.1 Track waste generation and recycling data for all Metro locations. Create an electronic reporting system to track waste generation and recycling from all Metro locations. Identify staff time needed to input data into a waste/recycling tracking system. Tracking should include all materials recovered for recycling, compost, reuse or refurbishment.	Tracking	High 
	7.2 Track paper use by department or facility; set a goal for reducing paper consumption and track progress.	Tracking	Medium
	7.3 Make it easy for staff to find reports on tracking waste generation so that they can see their impact in the big picture.	Education	Low

Strategies and actions: Water conservation

While the Metro region currently has a plentiful supply of fresh water, water conservation is necessary to ensure a sustainable public water supply and healthy habitat for fish and other wildlife that depends on high water quality and quantity. The influx of new residents predicted to come to the Metro area over the coming decades, combined with advancing changes in climate, will make water conservation more important than ever.

Fortunately, Metro's largest water user, the Oregon Zoo, has plans to upgrade many of its exhibits through a bond program, which will greatly increase the water efficiency of Zoo exhibits. However, much work is yet to be done to improve water efficiency and reduce water usage overall at Metro's other facilities and parks.

Guiding principles for water conservation

- **Prevent water use; eliminate where possible.** Like waste prevention, taking a preventive approach to water use is a good place to start. Examples include eliminating irrigation in areas that do not really need it.
- **Use less water by making use more efficient.** Older facilities like Metro's generally have opportunities for improving water efficiency when making replacements or repairs to building systems. Always specify water-efficient products.
- **Reuse or harvest water when efficiencies have been completed.** Water reuse is a lower priority, due to the fact that water is least available in the form of rainwater when it is most needed for irrigation.

Water conservation strategies and actions

Water conservation			
Strategy	**Actions**	**Action type**	**Priority**
Strategy 1: Assess and prioritize water conservation opportunities on all Metro properties.	1.1 Audit water usage at all Metro locations that have not had a recent water audit to and develop recommendations for water conservation strategies specific to each site. Irrigation systems should be included in audits.	Assessment	 High
Strategy 2: Reduce water usage through improvements to water use prevention and water efficiency, stating with biggest water users.	2.1 Ensure implementation of water conservation projects identified in the Zoo Master Plan (to be completed in 2011).	Operations	High 
	2.2 Integrate sustainable operations and water conservation requirements into operations contract for Glendoveer Golf Course.	Operations	High 
	2.3 Reduce irrigation and watering needs at Metro properties. Determine how much irrigation is necessary, then create an efficient irrigation schedule and eliminate irrigation in areas where not needed. Upgrade irrigation systems to include "smart" sensors to detect soil moisture or weather to reduce watering. Reduce or eliminate hand watering at Metro properties.	Operations	High
	2.4 Retrofit existing buildings' water fixtures and equipment to high-efficiency where highest opportunity areas are found in water audits. Actions could include retrofitting commercial kitchen equipment, bathroom fixtures, truck wash sprayers, etc.	Operations	High
	2.5 Create requirement that all water fixture and equipment purchases be water efficient. Water efficiency to be defined by current best practices. Create standards for new construction and renovations that references a standard for water-efficient fixtures.	Policy Procurement	 High
	2.6 Implement water efficiency best management practices (BMP's) at public wash stations (truck wash at solid waste transfer stations, boat sewage pump station at Chinook Landing boat ramp).Install equipment upgrades to reduce water use. Develop disincentives to overuse of water such as time limits or charge for use.	Operations	Medium
Strategy 3: Reuse water at Metro	3.1 Reduce well water usage at Blue Lake Park by investigating the possibility to redirect water from flushing	Operations Policy	Medium

facilities where feasible and opportunity is significant.	Portland's Columbia Wellfield away from the Columbia River and to Blue Lake for reuse.		
	3.2 Investigate opportunities for gray water reuse and implement where highest opportunities exist (i.e. cleaning Zoo exhibits).	Operations	Low
	3.3 Reduce and reuse water from building environmental systems when those systems are improved or replaced (i.e. air conditioning condensate, cooling tower water, eliminate "single-pass" cooling in HVAC systems).	Operations	Low
Strategy 4: Establish an ongoing tracking and reporting system for all water usage at Metro properties.	4.1 Create ongoing tracking system for all water uses at Metro locations. Include on-site water sources such as wells. Utilize submeters to track detailed water usage; create a regular reading and recording schedule.	Tracking	High 
	4.2 Connect water billing with maintenance staff to close the loop with information and educate water users about consumption.	Tracking Education	Medium
Strategy 5: Educate and train Metro employees, facility managers and public visitors on water conservation.	5.1 Create water conservation training for employees responsible for most water use, including parks operations, animal keepers, transfer station operations and building maintenance.	Education	High
	5.2 Educate truck wash users at waste transfer stations on water conservation. Install signage.	Education	Low
	5.3 Integrate rainwater harvesting where possible as a demonstration in new construction at Metro parks.	Education	Low
Strategy 6: Create a funding strategy for water conservation projects.	6.1 Create funding mechanisms for water conservation projects, including new and existing capital. Evaluate water-related projects in advance of Renewal and Replacement schedule and leverage R&R funds to implement. Establish return on investment (ROI) standards for water conservation projects that would enable them to be prioritized and selected for funding.	Funding	High

Strategies and actions: Habitat enhancement

Metro recognizes that protecting and improving fish and wildlife habitat and ecosystem health are critical elements of an effective, sustainable business model and internal operations plan. This portion of the plan provides guidance and recommendations for integrating habitat-friendly principles, approaches and practices into the development, management and maintenance of Metro's spectrum of built and natural properties. As these habitat strategies and actions are implemented over time, Metro's properties will contribute to restoration and enhancement of vital ecosystem services, water quality improvements, protection and improvement of wildlife habitat and enhancement of human health and well-being.

13Landscape plants that produce berries provide an important food source for birds.

Metro's Habitat sustainability strategies address two key areas: increasing habitat quality and ecological function on Metro-owned and operated properties (healthy habitat) and minimizing the negative development footprint on these properties via use of habitat-friendly and low impact development practices (walking the talk).

Guiding principles for habitat enhancement on developed properties

- **Model use of habitat-friendly development practices.** Lead in implementing and modeling innovative, sustainable, habitat-friendly planning, design, building, operations and maintenance practices across a spectrum of natural and built properties.
- **Prioritize design and development practices that provide multiple benefits.** Implement solutions that serve multiple functions and provide multiple benefits. For example, when completing a project such as a roof replacement, installing an ecoroof will extend the life of the roof, provide pollinator and wildlife habitat, reduce stormwater runoff and help regulate building temperature.
- **Balance development, human needs and the health of natural systems.** Protecting, restoring, and managing habitat and ecosystem function at all scales is a priority. This means Metro's operation, maintenance, and development activities should always seek to improve ecosystem functions and avoid impacts to wildlife habitat. If impacts do occur, they should be minimized to the greatest extent possible.

Habitat enhancement strategies and actions

Habitat enhancement			
Strategy	**Actions**	**Action type**	**Priority**
Strategy 1: Assess and prioritize habitat and stormwater improvement opportunities on all Metro properties.	1.1 Conduct habitat and stormwater site assessments at all Metro properties, especially developed properties. Use assessments to develop habitat and stormwater improvement site plans. Stormwater improvement plans should complement Metro's Total Maximum Daily Load (TMDL) plan and connect to other stormwater program efforts (i.e. City of Portland's Grey to Green Program).	Assessment	High 
Strategy 2: Take action to improve habitat value, ecological function and reduce stormwater runoff from all Metro properties.	2.1 Implement habitat improvement site plans for Metro properties, including developed sites.	Operations	High
	2.2 Implement stormwater improvement site plans for all properties, using low-impact development (LID) strategies that reduce runoff and then treat stormwater on-site.	Operations	High
	2.3 Reduce use of herbicides and pesticides in all Metro operations. Create and implement an IPM (Integrated Pest Management) policy to reduce use of herbicides and pesticides on all Metro properties. Policy should address the unique needs of different property types, including developed property landscapes and natural area restoration needs. Program should phase out high risk pesticides as indicated by Salmon Safe. Begin tracking and of all herbicides and pesticides used by Metro staff and contractors.	Policy	Medium [13]
Strategy 3: Create requirements for using habitat-friendly development practices in construction projects for new and/or existing buildings and properties	3.1 Create habitat and stormwater requirements for all projects (new and existing capital).Establish opportunity review as a pre-planning requirement. Require use of habitat project checklist and multi-disciplinary teams to evaluate habitat impact and opportunities.	Program Policy Funding	High
	3.2 Develop and implement funding mechanism for projects that reduce GHG emissions, including new and existing capital. Include funding for maintenance of habitat-friendly development projects and monitoring habitat improvements over time.	Funding	Medium

[13] The creation of an IPM policy is ranked as a high-priority action for toxics reduction, but didn't rank as high as a habitat protection action. However, since there are multiple benefits to reducing pesticides, the action appears in both sections.

Strategy 4: Educate Metro employees on habitat-friendly development practices, especially property and project managers.	4.1 Create a list of habitat-friendly development practices and sustainable stormwater BMP's (best management practices) for property managers, and train them on how to use it.	Education	High
	4.2 Implement green building and nature-friendly projects in high traffic and/or highly visible areas to serve as demonstration projects for visitors and employees (i.e. MRC plazas). Projects should showcase innovative features, provide active and/or passive learning opportunities and highlight partnerships.	Education	Medium
	4.3 Identify a "habitat site steward" at each site.	Program	Low
Strategy 5: Track habitat and stormwater improvements on Metro properties.	5.1 Establish effective reporting and monitoring system for improvements to habitat and stormwater at Metro locations. Include reductions in impervious surface area, number of low impact developments installed and natural area metric updates as developed by Natural Areas Program.	Tracking	High 

Strategies and actions: Sustainability management

To successfully implement this plan, several program elements are needed to manage the effort over time. Sustainability management generally refers to the process required to implement an organizational sustainability effort over time. Typical elements of a sustainability management system include:

- Plan: Identify and prioritize projects
- Implement: Implement projects and support systems needed
- Monitor: Check progress of the projects
- Review: Evaluate project effectiveness and overall initiative to inform future efforts[14]

The following strategies and actions cut across all five of Metro's sustainability goals and are necessary to implement this plan.

These actions are all high priority.

Sustainability management strategies and actions

Sustainability management			
Strategy	**Actions**	**Action type**	**Priority**
Strategy 1: Integrate accountability into implementation of sustainability plan.	1.1 Create and adopt an implementation process for the Sustainability Plan. Include method to identify, prioritize and develop plans for projects in the Sustainability Plan. Identify roles and responsibilities of those tasked with implementation of the sustainability plan. Create site-specific work plans for implementation. Update annually.	Program	High 
	1.2 Integrate sustainability goals and desired outcomes into PACe and other performance measures for Metro employees, starting with managers. Not intended to measure performance on absolute numbers, but qualitative effort.	Program	High
	1.3 Conduct annual program evaluation with program stakeholders to evaluate what works well and what needs to be improved. Include check in on barriers and opportunities.	Program	High 
Strategy 2: Create a comprehensive	2.1 Provide basic sustainability training to all Metro employees. See Clackamas County training course "Going Beyond Green: Advancing Sustainability at Clackamas County" for example. Encourage peer-to-peer learning on	Education	High 

[14] The Step-by-Step Guide to Sustainability Planning: How to Create and Implement Sustainability Plans in any Business or Organization. Hitchcock, Willard, 2008.

sustainability training program for Metro employees.	Sustainability through discussion such as "Sustainable Systems at Work" course from the Northwest Earth Institute.		
	2.2 Coordinate provision of subject-specific trainings identified throughout sustainability plan. Partner with Metro Learning Center.	Education	High
Strategy 3: Build funding and staff capacity to implement sustainability plan.	3.1 Create comprehensive funding strategy for sustainability projects. To include: • Sustainability requirements for new capital assets; • Establish opportunity review as a pre-planning requirement and leverage replacement funding to implement; • Develop new fund for sustainability projects that require additional funding beyond existing budgets.	Operations Policy	High 
	3.2 Identify and address staff capacity needed to coordinate site-specific sustainability activities. Build capacity where needs have been identified.	Program	High 
Strategy 4: Create policies and procedures to support sustainability plan and goals.	4.1 Develop and adopt a sustainable procurement policy as directed in Metro Code, "Sustainable Procurement Program".	Procurement Policy	High 
	4.2 Adopt a Metro-wide green building policy to set standards based on the LEED standard for new construction and operations of existing buildings. Include sustainable site management standards for Metro's developed parks and green spaces (i.e. Salmon Safe certification).	Policy	High 
Strategy 5: Update sustainability goals and interim targets on a regular basis.	5.1 Update sustainability goals, including interim targets. Recalibrate goals in 2015 after audits and site plans have been completed.	Program	High
	5.2 Create new sustainability goals to address sustainability gaps of social equity and economic aspects of Metro's operations.	Program	High
Strategy 6: Track progress of sustainability plan implementation and impact on goal areas.	6.1 Develop an ongoing tracking and monitoring system for all five goal areas. System to be electronic or web-based and include data from all Metro locations. Identify and train "knowledge workers" who will input data to the system.	Tracking Program	High 
	6.2 Report annually on performance and progress in five goal areas, and on sustainability projects completed each year.	Tracking Program	High

PART 4: IMPLEMENTATION PROCESS

Creating an implementation process for this Sustainability Plan is critical to the success of the plan. This section provides additional detail on the Sustainability Management action 1.1.

Roles and responsibilities

Since Metro has decentralized operations management, clarification of roles and responsibilities of those involved with implementing this plan is an important first step. The following groups all have a role to play, and their responsibilities need to be clearly identified.

Direct role	Indirect role
Metro-wide Sustainability Committee	Directors
Green Teams at Convention Center, Metro Regional Center, Zoo and Solid Waste	COO, Deputy COO and General Manager of Venues
Operations and property managers	Metro Council
Project managers	Metro Learning Center
Sustainability Program	Finance and Regulatory Services
Sustainable Procurement Program (Procurement Services)	Metro Employees
Data collectors	Employee unions
	Human Resources

Development of site-specific work plans

Since this plan is intended to be broadly applicable across Metro's diverse operational portfolio, site-specific work plans need to be developed for how this Sustainability Plan will be implemented at each location. These work plans are intended to be tailored to a location's unique needs, services, opportunities and barriers. Work plans should be updated on an annual basis, in concert with the budget process.

Prioritizing projects for funding proposals

In a constrained fiscal environment, Metro will have to make decisions annually about which projects to fund. The following prioritization criteria to be used for project selection.

Prioritization criteria for project selection
Strong impacts on Metro's sustainability goals
Provides a strong foundation for future sustainable operations work.
Leverages dollars elsewhere (outside Metro) or dollars already allocated (such as CIP)
Presents a strong return on investment (financial payback)
Reduce maintenance costs over time
Strong public visibility and/or public education opportunity.
Supports region's economy (i.e. creates local jobs, support local businesses)

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Sustainability plan project team

Tom Bugas	Jim Caldwell	Penny Erickson	Corie Harlan	Scott Paskill
Doug Strickler	Rich Thompson	Brittin Witzenburg	Jim Quinn	

Sustainability plan steering committee

Teri Dresler	Matt Korot	Mike Brown	Paul Ehinger	Karen Totaro
Chris Bailey	Lori Kramer	Stephanie Soden	Jim Desmond	Kathryn Sofich

Goal action planning teams

GHG's Team: Nuin-Tara Key (Facilitator) Richard Thompson, Tom Bugas, Brittin Witzenburg, Doug Strickler, Mark Perkins, Ellen Leitner, Rob Smoot and Michele Crim (City of Portland).

Toxics Team: Jim Quinn (Facilitator) Lisa Heigh, Ivan Ratcliff, Mike Amodeo, Seth Miller, Ryan Thorpe, Clyde Keebaugh, Jim Benson and Andrew Judkins.

Waste Team: Will Elder (Facilitator) Michael Weatherman, Abby Stevens, Jim Caldwell, Scott Paskill and Rosalynn Greene (Clackamas County).

Water Team: Kathryn Sofich (Facilitator) Lee Campbell, Lydia Neill, Penny Erickson, Thomas Thornton and Rich Barrows (City of Portland Water Bureau)

Habitat Team: Corie Harlan (Facilitator) Gail Shaloum, Rod Wojtanik, Katy Weil, Hillary Wilton, Matt Uchtman, Linda Richardson and Henry Stevens (Portland Bureau of Environmental Services).

Greenhouse gas emission inventory

Nuin-Tara Key, Metro Climate Project Specialist, Project Manager

Metro Chemicals Inventory Hazard Evaluation and Management Tool

Lisa Heigh, Metro Toxics Reduction Planner, Project Manager

Greg Higgins, Ph.D. Director, Chemical Risk Information Service, Center for Research on Occupational and Environmental Toxicology at OHSU

Consulting team:

Brightworks: Assistance with sustainability impacts assessment and baseline analysis for water, waste and habitat.

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Project manager:

Molly Chidsey, Metro Sustainability Coordinator

APPENDICES

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Appendix D	Toxics baseline: Product health, environmental and physical hazard ratings
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Appendix F	Habitat-friendly development practices, Metro Nature In Neighborhoods Program
Appendix G	Essential actions for years 1-3 (2011-2014)
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Appendix A

Metro operations Included in Sustainability Plan

Parks and Environmental Services

- Metro Regional Center (including operation of Metro departments based there)
- Solid Waste Operations
    - Metro Central Transfer Station
    - Metro South Transfer Station
    - Metro Central and South Household Hazardous Waste Facilities
    - St. Johns Landfill
    - MetroPaint
- Regional parks (including Blue Lake, Oxbow and Smith and Bybee Lakes)
- Glendoveer Golf Course
- Pioneer Cemeteries

Visitor Venues

- Oregon Zoo
- Oregon Convention Center
- Portland Center for the Performing Arts
    - Keller Auditorium
    - Arlene Schnitzer Concert Hall
    - Antoinette Hatfield Hall
- Expo Center

Sustainability Center

- Parks Planning
- Land Conservation
- Boreland Field Station and Native Plant Center

Appendix B

Summary of impacts: Inputs and outputs, major and minor impacts

Parks & Natural Areas	**INPUTS**	**Energy**	**Materials**	**Contractors**	**Stakeholders**	**Community**
	MAJOR	Visitor transit, maintenance vehicles	Herbicides, garbage bags, promotional materials, gloves/gear, building materials	Herbicide application	Visitors, neighbors	Lack of mass transit, unequal access to sites
	MINOR	Residential rentals	Soil amendment materials, paint, gravel, asphalt	Timber management	Renters	Vandalism
	OUTPUTS	**Products/Services**		**Waste**		
	MAJOR	Land conversion		Food waste, visitor waste, invasive plants, oil/water pollution from marine facilities		
	MINOR	Agricultural leases, fertilizer runoff		Stormwater runoff, building construction debris, remnant restoration materials		

MERC Venues	**INPUTS**	**Energy**	**Materials**	**Contractors**	**Stakeholders**	**Community**
	MAJOR	Building energy use, event energy use, visitor transportation, parking	Food service supplies, cleaning materials, office supplies, building supplies	Food service, janitorial	Staff, general public, presenters, promoters, ticket buyers	Transit
	MINOR	Energy use from equipment, fleet, machinery	Equipment, fleet, machinery, air filters	Security, herbicide and landscape management	Public agencies	Moving events city to city
	OUTPUTS	**Products/Services**		**Waste**		
	MAJOR	Nature of events (promote unsustainable lifestyles) facility land usage (largely developed)		Food waste, materials brought to venues by presenters, paper towels, wastewater, solid waste, greenhouse gases, stormwater runoff		
	MINOR	Greenhouse gases		Air filters		

Solid Waste Facilities	**INPUTS**	**Energy**	**Materials**	**Contractors**	**Stakeholders**	**Community**
	MAJOR	Electricity, HVAC	Uniforms/personal protection equipment (PPE) packaging (i.e. drums) paint cans/ingredients, absorbents	Waste transport	Customers, regional private solid waste facilities	Neighborhoods around facilities
	MINOR	Space heating, lighting	Lubricants, solvents, cleaners, office paper and products, computers, vehicles (rolling stock) light bulbs, herbicides. landfill equipment	Transfer station operator, hazardous waste disposal, landscaping	Manufacturers (product stewardship) paint users	Air pollution from vehicles, traffic, dust from transfer sites, noise
	OUTPUTS	**Products/Services**		**Waste**		
	MAJOR	Greenhouse gas release (methane flaring) waste transfer, large facility footprint		Hazardous waste from public disposal, solid waste from public, air pollution, stormwater		
	MINOR	Paint use by customers		Empty paint cans, used PPE, cleanup water, truck water discharge		

Oregon Zoo	**INPUTS**	**Energy**	**Materials**	**Contractors**	**Stakeholders**	**Community**
	MAJOR	Exhibits, buildings, lighting, general equipment	Food, water, janitorial supplies, building materials	Construction, food concessions	Guests, staff	Neighborhood congestion from traffic
	MINOR	Pumps, vehicles, train	Paper products		Contractors	Parking issues
	OUTPUTS	**Products/Services**		**Waste**		
	MAJOR	Visitor transportation, greenhouse gases, congestion on Highway 26, neighborhood congestion from overflow parking		Animal [carnivore] waste, food waste, landscape debris, trash, wastewater, sewage, stormwater, packaging, methane from animals		
	MINOR	Additional waste production, car accidents		Recycling		

Appendix C

Greenhouse gas emissions from Metro's supply chain: Future development of targets and metrics for measuring improvements

By including all Scope 1, 2 and 3 emission sources in the agency baseline Metro integrated a holistic and more accurate approach to accounting for the total emissions associated with Metro's mission-critical business activities. The use of additional high-quality public-domain tools to estimate Scope 3 emissions puts Metro at the forefront of GHG accounting by moving beyond the mandatory reporting, or bare-minimum, boundaries that define the typical GHG inventory. However, this new approach also presents a number of challenges regarding the ongoing tracking and monitoring of Scope 3 reductions. In order to address these challenges without compromising the accuracy or approach of the inventory process, the GHG reduction goal and interim targets are organized under a different framework than the other four sustainability plan goal areas.

In order to clearly understand the current monitoring and tracking limitations associated with Scope 3 emissions, specifically regarding the embodied emissions in purchased goods and services (hereinafter referred to as Supply Chain) it is important to first understand Economic Input-Output-Life-Cycle Assessment (EIO-LCA) and second to understand the limitations of the available EIO-LCA tools and datasets. Current EIO-LCA tools provide GHG emissions data per dollar of product purchased for all sectors of the U.S. economy. The models are based on averages of the U.S. economy as a whole and do not differentiate between types of purchases such as virgin paper vs. 100 percent post consumer recycled content. Therefore, the models do not provide accounting options for product substitution emissions reduction strategies, which is most likely where the majority of Metro's Supply Chain GHG reductions would come from.

The current EIO-LCA models do however capture two Supply Chain GHG reduction strategies; first, emissions reductions associated with shifting procurement from a high emissions intensive category to a less emissions intensive category are captured. For example, shifting food procurement from meat to fruits and vegetables will lead to a demonstrable GHG reduction in Scope 3 emissions. However, there are very few options where Metro can shift procurement of goods in this way given the nature of Metro's responsibilities. The second type of emissions that are captured with the current EIO-LCA models are changes in national emissions intensities associated with the production of goods and services that may result from climate change legislature (e.g. cap and trade legislature). However, Metro has no direct control over these potential emissions reductions and cannot rely solely on this strategy for reducing GHG emissions from its mission-critical business activities.

Given the current limitations with quantifying Supply Chain emissions the following goal and interim targets that address "sub-goal" separately have been developed. Metro's overarching, long-term greenhouse gas emissions reduction goal in-line with existing Metro resolutions, current climate science findings and state and regional GHG reduction efforts. What distinguishes the GHG reduction goal from the other Sustainability Plan areas are the two separate scope goals; a quantitative reduction goal for Scopes 1 and 2 and a second qualitative reduction goal for scope 3.

Based on the current climate science it is evident that we cannot mitigate our current climate impacts without an aggressive greenhouse gas emissions-reduction strategy. Therefore, the current goal, which only calls for arresting operations emissions, is not meaningful enough and could be confusing when compared with the statewide climate goals recognized in Metro Resolution 08-3981.15. The current goal is also at odds with Metro Resolution 09-4080, which recognizes the 350 parts per million (ppm) goal to be in accordance with Metro's agency mission.[16] Reaching the 350 ppm goal requires a reduction in total gross emissions, not just arresting current emission levels. Metro's operations emissions reductions goal should specifically be aligned with State-wide and internal resolution goals.

The other issue to take into consideration regarding the current greenhouse gas emissions goal is that the current goal language implies that Metro will measure both sources and sinks of emissions ("net" emissions). However, established tools and methodologies for calculating sequestered emissions are not currently available and in some cases are cautioned for finer scales than the national or international level, due to complex double counting issues. In addition, there is the potential that framing the agency's GHG reduction goal with a net emissions lens will lead to less aggressive reduction approach; therefore the revised goal and baseline inventory only consider gross emissions. It should be noted however, this goal language does not preclude further analysis or consideration of the climate benefits of Metro's open and natural spaces and habitat restoration programs, but focuses the emissions reduction strategy on gross emissions only. Consistent with this approach, Metro's guiding GHG reduction strategy will place first priority on efficiency projects that reduce energy demand and greenhouse gas emissions, then renewable energy purchase and on-site generation, and last, the purchasing of carbon offsets.

The emissions reduction goal includes both direct and indirect emissions and therefore directs Metro to take responsibility for those emissions that we have indirect, but tangible responsibility over – specifically those emissions resulting from the materials and services Metro consumes and contracts. Metro is using recent Environmental Protection Agency (EPA) research to inform this facet of our baseline analysis and will continue to improve our methodology as new tools and protocols become available. Metro recognizes that there are not currently tools or protocols available that can provide precise and universally accepted estimates of all indirect emissions (Scope 3) however Metro as a public agency has an opportunity to lead by example and take responsibility for the emissions resulting from all aspects of internal operations.

[15] The State of Oregon's 2007 greenhouse gas reductions targets call for arresting the growth of greenhouse gas emissions by 2010, reducing emissions to at least 10 percent below 1990 levels by 2020, and reducing emissions to at least 75 percent below 1990 levels by 2050.

[16] The current level of carbon dioxide in our atmosphere stands at 389 parts per million and rising however, 350 represents the carbon concentration level climate scientists have determined as the minimum GHG reduction goal needed to reach climate stabilization at a roughly 2^{o} Celsius increase.

Appendix D

Toxics baseline: Product health, environmental and physical hazard ratings

The individual chemical constituent ratings are based on well accepted, peer-reviewed data from the reference sources noted below. These ratings describe the relative hazard level of the constituents on a scale from 1 to 3, with 1 representing lower hazard, 2 representing intermediate hazard and 3 representing a higher hazard level. Health ratings are based on criteria including the constituent's acute toxicity, irritant properties and potential to cause cancer or produce developmental or reproductive toxicity. Environmental ratings are based on the constituent's toxicity to aquatic organisms and other indicator species, persistence and tendency to accumulate in the environment and potential to damage the ozone layer. Physical hazard ratings consider the constituent's flammability risk level and potential for reactivity. The procedures used to develop ratings from these data are described in the Scoring Criteria Tables developed for this program at http://www.ohsu.edu/cris/documents/criteria.pdf.

Since queries made to these data sources use the Chemical Abstract Service (CAS) number, only those constituents that have CAS numbers displayed on the MSDS are assigned a rating. The following ratings and entries can appear in the search results for each individual constituent.

Rating definition	
1	Lower rating for health, environmental or physical hazard
2	Intermediate rating for health, environmental or physical hazard
3	Higher rating for health, environmental or physical hazard
No CAS#s	No Chemical Abstracts Service number is available for the constituent in question, so it cannot be accessed in the various database sources to generate a rating
ND No Data	Indicates that the specific CAS# in question is not included in the database(s) searched and the constituent cannot be rated
NR Not Rated	Indicates that the CAS# in question is included in the database(s) searched, but does not bring up any data upon which to base a rating

The ratings are based primarily on data from the European Union list of harmonized chemical classifications (referred to as the Annex I list). This list, which uses a series of risk phrases to classify relative hazard levels, was accessed on December 2008 and can be found at: http://www.ohsu.edu/cris/documents/annex.pdf.

Appendix E

Toxics inventory product categories

ACID	Acids
ART	Art supplies
AUTO	Automotive, auto-specific chemicals, cleaners, waxes, body fillers, etc.
BAT	Batteries
CEM	Cements, adhesives, glues and resins
CHEMO	Chemicals, other
CHEMP	Chemicals, photographic
COMP	Compressed gases
DIS	Disinfectants
FERT	Fertilizers and landscaping products
FLOOR	Floor cleaning products and finishes
FUEL	Fuels
GREASE	Grease
HSOAP	Hand soaps and lotions
ICLEAN	Industrial cleaners and soaps
LUBE	Lubricants
OFF	Office supplies
OIL	Oils
OTHER	Other, "inert" materials including grinding wheels, saw blades, etc.
PEST	Pesticides and herbicides
PLIQ	Paints and coatings, liquid
PLUMB	Plumbing supplies
PSPRAY	Paints and coatings, spray
SAFE	Safety supplies
SEALER	Sealers, caulking, silicone sealers
SOLV	Solvents
VET	Veterinary products
WATER	Water testing chemicals
WELD	Welding supplies and metals

http://www.ohsu.edu/cris/documents/search.pdf

Appendix F

Habitat-friendly development practices, Metro Nature In Neighborhoods Program

http://www.metro-region.org/index.cfm/go/by.web/id=13745

Part (a): Design and construction practices to minimize hydrologic impacts
1. Amend disturbed soils to original or higher level of porosity to regain infiltration and stormwater storage capacity.
2. Use pervious paving materials for residential driveways, parking lots, walkways, and within centers of cul-de-sacs.
3. Incorporate stormwater management in road right-of-ways.
4. Landscape with rain gardens to provide on-lot detention, filtering of rainwater, and groundwater recharge.
5. Use green roofs for runoff reduction, energy savings, improved air quality, and enhanced aesthetics.
6. Disconnect downspouts from roofs and direct the flow to vegetated infiltration/filtration areas such as rain gardens.
7. Retain rooftop runoff in a rain barrel for later on-lot use in lawn and garden watering.
8. Use multi-functional open drainage systems in lieu of more conventional curb-and-gutter systems.
9. Use bioretention cells as rain gardens in landscaped parking lot islands to reduce runoff volume and filter pollutants.
10. Apply a treatment train approach to provide multiple opportunities for storm water treatment and reduce the possibility of system failure.
11. Reduce sidewalk width and grade them such that they drain to the front yard of a residential lot or retention area.
12. Reduce impervious impacts of residential driveways by narrowing widths and moving access to the rear of the site.
13. Use shared driveways.
14. Reduce width of residential streets, depending on traffic and parking needs.
15. Reduce street length, primarily in residential areas, by encouraging clustering and using curvilinear designs.
16. Reduce cul-de-sac radii and use pervious vegetated islands in center to minimize impervious effects, and allow them to be utilized for truck maneuvering/loading to reduce need for wide loading areas on site.
17. Eliminate redundant non-ADA sidewalks within a site (i.e., sidewalk to all entryways and/or to truck loading areas may be unnecessary for industrial developments).
18. Minimize car spaces and stall dimensions, reduce parking ratios, and use shared parking facilities and structured parking.
19. Minimize the number of stream crossings and place crossing perpendicular to stream channel if possible.
20. Allow narrow street right-of-ways through stream corridors whenever possible to reduce adverse impacts of transportation corridors.
Part (b): Design and construction practices to minimize impacts on wildlife corridors and fish passage
1. Carefully integrate fencing into the landscape to guide animals toward animal crossings under, over, or around transportation corridors.
2. Use bridge crossings rather than culverts wherever possible.
3. If culverts are utilized, install slab, arch or box type culverts, preferably using bottomless designs that more closely mimic stream bottom habitat.
4. Design stream crossings for fish passage with shelves and other design features to facilitate terrestrial wildlife passage.
5. Extend vegetative cover through the wildlife crossing in the migratory route, along with sheltering areas.
Part (c): Miscellaneous other habitat-friendly design and construction practices
1. Use native plants throughout the development (not just in HCA).
2. Locate landscaping (required by other sections of the code) adjacent to HCA.
3. Reduce light-spill off into HCAs from development.
4. Preserve and maintain existing trees and tree canopy coverage, and plant trees, where appropriate, to maximize future tree canopy coverage.

Appendix G

Essential actions for years 1-3 (2011-2014)

Resources needed

$	Low cost
$$	Moderate cost
$$$	Significant cost

GREENHOUSE GAS REDUCTION

1.1	Audit buildings for energy efficiency opportunities and develop recommendations for an energy efficiency plan specific to each site. Audit type should be appropriate to the building type (i.e. ASHRAE[17] Level 2 audit for buildings over 10,000 square feet.)	**$**
1.2	Implement energy efficiency plans and develop supporting policies for each site audited.	**$$$**
4.1	Establish process for ongoing tracking of all GHG-related data sources in Metro's internal operations for tracking of GHG emissions.	**$**

TOXICS REDUCTION

1.1	Establish process for ongoing tracking and inventory of chemicals and products that contain toxics in use at Metro.	**$**
2.1	Identify the most toxic products in Metro's inventory and target them for replacement with less-toxic alternatives.	**$**
2.2	Reduce use of herbicides and pesticides in all Metro operations. Create and implement an IPM (Integrated Pest Management) policy to reduce use of herbicides and pesticides on all Metro properties.	**$**
3.1	Reduce purchase of toxic products by requiring or requesting least-toxic options from contractors and suppliers in bids and RFP's.	**$$**

WASTE REDUCTION

1.1	Create procurement policies and procedures that support waste prevention and reduction.	**$**
3.1	Meet Business Recycling Requirements at all Metro facilities.[18]	**$**
7.1	Track waste generation and recycling data for all Metro locations with an electronic reporting system to track waste generation and recycling from all Metro locations.	**$**

[18] Metro Business Recycling Requirements, adopted in 2008. http://www.recycleatwork.com/whatsrequired.

WATER CONSERVATION

1.1	Audit water usage at all Metro locations that have not had a recent water audit to and develop recommendations for water conservation strategies specific to each site.	**$**
2.1	Ensure implementation of water conservation projects identified in the Zoo Master Plan (to be completed in 2011).	**$$$**
2.4	Create requirement that all water fixture and equipment purchases be water efficient.	**$$**
4.1	Create ongoing tracking system for all water uses at Metro locations. Include on-site water sources such as wells. Utilize submeters to track detailed water usage; create a regular reading and recording schedule.	**$**

HABITAT ENHANCEMENT

1.1	Conduct habitat and stormwater site assessments at all Metro properties, especially developed properties. Use assessments to develop habitat and stormwater improvement site plans.	**$**
5.1	Establish effective reporting and monitoring system for improvements to habitat and stormwater at Metro locations.	**$**

SUSTAINABILITY MANAGEMENT

1.1	Create and adopt an implementation process for the Sustainability Plan.	**–**
1.3	Conduct annual program evaluation with program stakeholders to evaluate what works well and what needs to be improved.	**–**
2.1	Provide basic sustainability training to all Metro employees.	**$**
3.1	Create comprehensive funding strategy for sustainability projects.	**–**
3.2	Identify and address staff capacity needed to coordinate site-specific sustainability activities. Build capacity where needs have been identified.	**$$**
4.1	Develop and adopt a sustainable procurement policy as directed in Metro Code, “Sustainable Procurement Program”.	**$**
4.2	Adopt a Metro-wide green building policy to set standards based on the LEED standard for new construction and operations of existing buildings. Include sustainable site management standards for Metro’s developed parks and green spaces.	**–**
6.1	Develop an ongoing tracking and monitoring system for all five goal areas.	**$$**

Appendix H

Glossary of terms

ASHRAE: American Society of Heating, refrigerating and Air-Conditioning Engineers. ASHRAE writes voluntary consensus-based standards including energy auditing standards for commercial building systems.

Ecosystem services: Essential goods and services of direct or indirect benefit to humans that are produced by ecosystem processes involving the interaction of living elements, such as vegetation and soil organisms and non-living elements, such as bedrock, water and air. (Sustainable Sites, 2009)

EPA Tier system: EPA's federal Clean Air Nonroad Diesel Rule is part of a national program to reduce emissions from nonroad diesel engines, with the goal to decrease pollution from diesel engines by more than 90 percent. http://www.epa.gov/nonroad-diesel.

Greenhouse gas: Six gasses recognized as contributors to global climate change, including carbon dioxide (CO_2) methane (CH_4) nitrous oxide (N_2O) sulfur hexafluoride (SF_6) perfluorocarbons (PFC's) and hydrofluorocarbons (HCFC's).

Habitat-friendly development: Also known as low impact development, is an ecologically friendly approach to building and site development and stormwater management where a developed site mimics natural systems and their functions in order to remain a functioning part of an ecosystem.

PBT: Persistent, Bioaccumulative and Toxic Chemical

Precautionary principle: When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.

Salmon Safe: An independent 501(c)3 nonprofit based in Portland Oregon with a mission to transform land management practices so Pacific salmon can thrive in West Coast watersheds.

Sustainability: "Sustainability" means using, developing and protecting resources in a manner that enables people to meet current needs and provides that future generations can also meet future needs, from the joint perspective of environmental, economic and community objectives. Definition adopted by Metro Council 2008.

Contact information

Molly Chidsey
Sustainability Coordinator
Metro
503-797-1690
molly.chidsey@oregonmetro.gov

www.oregon**metro.gov**

GHG Emissions Baseline Inventory, 2008

for Metro internal and business operations

August 2010

Metro | *People places. Open spaces.*

About Metro

Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy and good transportation choices for people and businesses in our region. Voters have asked Metro to help with the challenges that cross those lines and affect the 25 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to protecting open space, caring for parks, planning for the best use of land, managing garbage disposal and increasing recycling. Metro oversees world-class facilities such as the Oregon Zoo, which contributes to conservation and education, and the Oregon Convention Center, which benefits the region's economy

Metro representatives

Metro Council President – David Bragdon

Metro Councilors – Rod Park, District 1; Carlotta Collette, District 2; Carl Hosticka, District 3; Kathryn Harrington, District 4; Rex Burkholder, District 5; Robert Liberty, District 6.

Auditor – Suzanne Flynn

Metro
600 NE Grand Ave.
Portland, OR 97232
503-797-1800

www.oregon**metro.gov**

TABLE OF CONTENTS

Acknowledgements

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Sustainability Plan Project Team:

Tom Bugas	Jim Caldwell	Penny Erickson	Corie Harlan	Scott Paskill
Jim Quinn	Doug Strickler	Rich Thompson	Katy Weil	Brittin Witzenburg

Numerous Metro staff contributed data to the GHG inventory, including:

Lena Bannick	Katy Barnett	Robyn Brooks	Mike Brown	Molly Chidsey
Paul Ehinger	Chuck Geyer	Esther Hunt	Michael Guebert	Julie Hoffman
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Gary Ware	Ann Wawrukiewicz	Michael Weatherman	Lauri Wulf	Patty Zenger

Data Analysis:

Karen Scott-Lowthian – Employee commute distance

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CONTACT INFORMATION

Molly Chidsey
Sustainability Coordinator
Metro
503-797-1690
molly.chidsey@oregonmetro.gov

Metro | *People places. Open spaces.*
www.oregonmetro.gov

GLOSSARY

Anthropogenic: Emissions made or generated by a human or caused by human activity. The term is used in the context of global climate change to refer to gaseous emissions that are the result of human activities, as well as other potentially climate-altering activities, such as deforestation.

Biogenic: Greenhouse Gas emissions generated during combustion or decomposition of biologically-based material, such as forest or agricultural products.

Climate Change (United Nations Framework Convention on Climate Change – UNFCCC): A change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

Emissions Factor: A representative value that relates the quantity of a pollutant released into the atmosphere with an activity associated with the release of that pollutant. Emission factors are usually expressed as the weight of pollutant divided by a unit weight, volume, distance, or duration of the activity emitting the pollutant (e. g., pounds CO_2 emitted per gallon of fuel burned).

Greenhouse Gas (GHG): A gas that absorbs radiation at specific wavelengths within the spectrum of radiation (infrared radiation) emitted by the Earth's surface and by clouds. The gas in turn emits infrared radiation from a level where the temperature is colder than the surface. The net effect is a local trapping of part of the absorbed energy and a tendency to warm the planetary surface. Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), Hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) are the six Kyoto gases covered by the United Nations Framework Convention on Climate Change (UNFCCC).

Global Warming Potential (GWP): Global Warming Potential factors represent the heat-trapping ability of each greenhouse gas relative to that of carbon dioxide.

Intergovernmental panel on climate change (IPCC): The IPCC is a scientific intergovernmental body set up by the World Meteorological Organization (WMO) and by the United Nations Environment Programme (UNEP). The IPCC is open to all member countries of WMO and UNEP and was established to provide decision-makers and others interested in climate change with an objective source of information about climate change.

EXECUTIVE SUMMARY

In 2008 Metro council made a commitment to systematically address the sustainability of all Metro internal government operations and practices and identified climate change as a critical component of this effort. Metro Council committed to supporting the State of Oregon's greenhouse gas (GHG) reduction targets and made a public proclamation in support of the Global Day of Climate Action and the efforts to reduce atmospheric carbon levels.[1] Metro has since developed a strategic plan which guides Metro's operations to achieve internal sustainability goals.[2]

The Sustainability Plan identifies environmental impacts of Metro's operations, sets a baseline from which progress can be measured over time, and creates a framework of the specific strategies and actions that need to be completed to meet these goals. The Metro Agency GHG Inventory report sets the GHG baseline for the Sustainability Plan using calendar year 2008 data for all Metro facilities including the Metropolitan Exposition Recreation Commission (MERC). For consistency with Metro's Regional Climate Initiative and the efforts of various regional partners, Metro staff completed an internal GHG inventory, which includes all direct and indirect emission sources within Metro's operational boundary.

Analysis Results: Overview

Metro's GHG emissions for calendar year 2008 (CY08) equaled roughly 58,000 MT CO_2e (metric tons carbon-dioxide equivalent). The various emission sources for this baseline total are organized as follows (see Figure 1):

Scope 1: Vehicle and non-mobile fuel combustion; refrigerants and St. Johns landfill gas (LFG)
Scope 2: Building energy consumption from purchased electricity
Scope 3: Business travel; embodied emission in material goods purchased, and services contracted; landfilled solid waste; and employee commute
The inventory does not capture the transportation related impacts of visitors to Metro owned facilities and venues.

The largest emissions sources in 2008 for each scope category include:

Scope 1 emissions totaled 20,009 MT CO_2e (35%)

- Solid Waste operations including direct **St. Johns landfill gas** and fuel burned for **long-haul waste transport** (contract).
- Natural gas use at visitor venues (**MERC** and the **Oregon Zoo**)

Scope 2 emissions totaled 13,352 MT CO_2e (23%)

- Electricity use at **MERC** facilities
- Electricity use at the **Oregon Zoo**

Scope 3 emissions totaled roughly 24,215 MT CO_2e (42%)

- Supply Chain emissions at the **Oregon Zoo**
- Employee commute at the **Oregon Zoo** and **MERC** facilities

[1] Metro Council resolution No. 09-4080, "For the Purpose of Proclaiming October 24, 2009 as a Global Day of Climate Action and recognizing the number 350 as a message to the Copenhagen Conference on climate change," 2009.
[2] Metro's sustainability plan addresses five environmental sustainability goals that were adopted by Metro Council in 2003. These goals address the following areas: climate change (GHG reductions); toxins; waste; water; and habitat. For information on Metro's Sustainability Plan contact Molly Chidsey (Molly.Chidsey@oregonmetro.gov).

Figure 1: Metro agency-wide emissions from regional government operations (2008), by emissions source

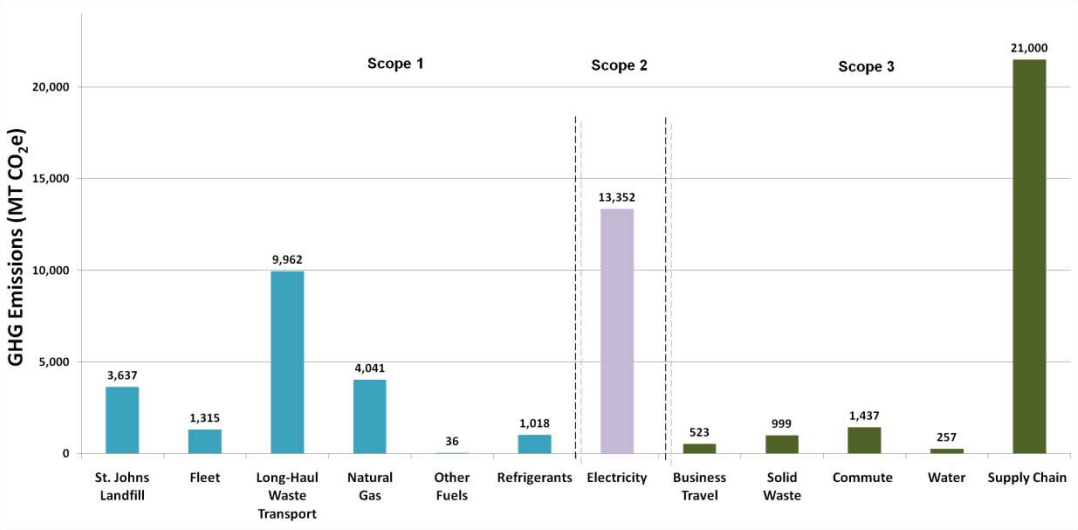


Table 1 provides an overview of the largest emission sources, both at the agency-wide level and within each of the emissions categories (scopes). Emissions values for high and medium emissions sources are provided for a sense of scale for the greatest emissions reductions opportunities in the short to mid-term.

Table 1: Metro agency-wide emissions from regional government operations (2008), by largest emissions source

Scope	Emissions Source	MRC	Solid Waste	MERC	Parks	Zoo	*% emissions source total*
Scope 1	Landfill gas		**3,637** (M)				*100%*
	Waste Transport		**9,962** (M)				*100%*
	Natural Gas			**2,190** (M)		**1,763** (M)	*97%*
	Fleet		**305** (M)			**231** (M)	*41%*
Scope 2	Electricity		**1,703** (M+U)	**7,499** (56%) (M +U)		**3,119** (M+U)	*92%*
Scope 3	Supply Chain	**3,103** (M +V)		**3,351** (M +V)		**11,442** (54%) (M +V)	*85%*
	Commute			**431** (M + C)		**428** (M + C)	*59%*
	Solid Waste					**506** (M +C)	*50%*
	% functional area total	*67%*	*88%*	*91%*		*96%*	

Figure key

Emissions Scale
- high =
- medium =
- low =

Responsible party
- (M) = Metro
- (M + C) = Metro and community-wide
- (M + U) = Metro and utility
- (M + V) = Metro and vendors

INTRODUCTION

Mitigating the impacts of climate change is a priority for Metro, both in the context of long-range regional planning and other community services the agency provides, as well as in the day-to-day internal operations of facilities. Metro has adopted aggressive goals for reducing greenhouse gas (GHG) emissions from internal operations as a way to demonstrate this commitment and bring about real reductions in the emissions over which Metro has direct and indirect control. Metro Council adopted five environmental sustainability goals in 2003, one of which was to achieve "Zero net increase in carbon emissions" by 2025.[3]

Since then, climate science has advanced and Metro has stepped up its commitment to support the State of Oregon's targets to reduce greenhouse gas emissions to at least 10 percent below 1990 levels by 2020, and reduce emissions to at least 75 percent below 1990 levels by 2050.[4] Metro has also has made a public proclamation in support of the Global Day of Climate Action and the efforts to stabilize atmospheric carbon levels at 350 ppm.[5]

Greenhouse Gas Emission Reduction Goal

For Internal Metro Operations

Reduce direct and indirect greenhouse gas emissions (CO_2e) 80 percent below 2008 levels by 2050.

In response to this Council direction, Metro developed a strategic Sustainability Plan which guides Metro's operations to achieve these internal sustainability goals. The adopted climate goal was also refined to reflect current climate science and Metro's commitment to the State of Oregon's GHG goal (see inset box this page). The Sustainability Plan identifies environmental impacts of Metro's operations, sets a baseline from which progress can be measured over time, and creates a framework of the specific strategies and actions that need to be completed to meet these goals.

In order to effectively select strategies for reducing greenhouse gas emissions from operations, a current baseline was needed. And while the Metro Auditor included a GHG inventory in a 2009 report of recommendations on internal sustainability management, the methodology used didn't reflect the consumption-based model that Metro used to create the regional GHG inventory a year later.[6]

For consistency and accuracy, Metro staff completed an internal GHG inventory based on best practices in reporting. This report is the result of that analysis.

[3] Metro Council resolution 03-3338, "Establish a Sustainable Business Model for Metro Departments and Facilities and to Undertake Related Duties," 2003.

[4] Metro Council resolution No. 08-3931, "For the Purpose of Adopting a Definition of Sustainability to Direct Metro's Internal Operations, Planning Efforts, and Role as Regional Convener," 2008.

[5] Metro Council resolution No. 09-4080, "For the Purpose of Proclaiming October 24, 2009 as a Global Day of Climate Action and recognizing the number 350 as a message to the Copenhagen Conference on climate change," 2009.

[6] Metro Auditor Suzanne Flynn (2009) "Sustainability Management: Focus Efforts and Evaluate Progress" http://www.oregonmetro.gov/index.cfm/go/by.web/id=32285/level=4; Metro Regional GHG inventory Available at: http://www.oregonmetro.gov/index.cfm/go/by.web/id=32823

Policy Context

The Intergovernmental Panel on Climate Change, the United Nations body that regularly convenes climate scientists, has identified human activity as the primary cause of the climate change that has occurred over the past few decades and quickened in recent years. Consensus statements from the IPCC suggest that human-caused emissions must be reduced significantly – perhaps more than 50% globally, and by 80% in wealthier nations that are the largest emitters – by mid-century in order to avoid the worst potential climate impacts on human economies.

Many individual corporations, government agencies, universities, non-profits and even individuals have proactively sought to take on this challenge. Emissions from government operations can be significant, which means public agencies have a direct impact through emissions reductions. Public agencies also have a role in educating policy makers and citizens. By measuring emissions from Metro's operations, this inventory is a step toward taking action, managing risk and leading the way forward.

There has recently been much regulatory action regarding Greenhouse Gas (GHG) emissions, as well as energy- and transportation-related legislation and policy related to climate action. Action is taking place at the international, national, regional, state and local levels as shown in the table below.

Table 2: Overview of policy activity related to greenhouse gas emissions management

SCALE	RECENT ACTIVITY
International	The world's leaders met in Copenhagen in December 2009 to negotiate the next international climate agreement to follow the Kyoto Protocol, which is set to expire in 2012. While the Copenhagen Summit did not result in any legally-binding emissions reductions targets, the Copenhagen Accord, which was drafted by the United States, China, Brazil, India and South Africa, calls for nations to take actions to keep increases in global temperatures below 2 degrees Celsius.
Federal	The US Congress is considering sweeping energy and climate legislation. In parallel, the US EPA has issued mandatory reporting guidelines for large emitters. Other energy and economic stimulus legislation recently passed by the federal government supports renewable energy development and other climate-related initiatives.
Regional	The Western Climate Initiative (WCI) Regional Program includes seven U.S. states (including Oregon) and four Canadian provinces. The objective of the WCI Partner jurisdictions' plan is to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The central component of the WCI Partner jurisdictions' comprehensive strategy (July 2010) is a flexible, market-based, regional cap-and-trade program. The WCI regional cap-and-trade program will be composed of the individual jurisdictions' cap-and-trade programs implemented through state and provincial regulations.
State	In Oregon, recent legislation includes climate and energy bills targeting fuels, solar power opportunities, and GHG emissions from land use and transportation. A number of statewide efforts are facilitating the widespread deployment of electric vehicles. Dozens of states are taking these and similar actions.
Local	At the local level, over 1,000 cities from all 50 states have signed the US Mayors Climate Protection Agreement, including 13 in Oregon. A comprehensive GHG inventory is the first step toward fulfilling a signatory's commitments. While most communities are still at an early stage we hope Metro's work here will provide a good example to other communities in Oregon.

Mandatory Reporting in Oregon

Oregon Department of Environmental Quality will require GHG reporting for a wide range of entities, beginning in 2011 for the 2010 calendar year. The threshold for reporting is currently set at 2,500 MT CO_2e annually. In general, the sources and entities required to report are holders of Title V air pollution permits or Air Contaminant Discharge Permits (ACDP), with at least one discrete permitted source emitting above the threshold.[7]

As currently articulated, these requirements will not require reporting from many organizations that have aggregate emissions from multiple sources (building energy, fleet fuel, etc.) that together exceed the reporting threshold. Municipal governments likely fall into this category of non-reporters. As a result, only a few Oregon municipalities will have regulatory reporting burdens, but many are likely to have total emissions from local government operations that well exceed 2,500 MT CO_2e annually. However, Metro holds a Title V air pollution permit for St. Johns Landfill and is subject to DEQ mandatory reporting. Therefore, the emissions associated with the methane management practices at St John's Landfill, and included in this inventory, follow state DEQ reporting requirements.

Mandatory Reporting at the Federal Level

US EPA has also issued mandatory reporting guidelines, finalized in September 2009, with a reporting threshold of 25,000 MT CO_2e per year.[8] It is possible that future federal climate legislation will require participation by some large entities in carbon trading and auctions for emissions allowances. Given the current structure of proposed legislation, very few Oregon entities – and probably no government agencies – will have such responsibilities.

[7] For more information on Oregon's rules, visit DEQ's GHG reporting page www.deq.state.or.us/aq/climate/reporting.htm.

[8] For more information on Federal rules, visit EPA's GHG rulemaking page http://www.epa.gov/climatechange/emissions/ghgrulemaking.html

BOUNDARIES

Metro owns and operates a diverse portfolio of facilities, which presented challenges when determining the organizational boundaries for the GHG inventory. However, Metro used standard GHG inventory protocols to define the organizational boundaries for this inventory. In many GHG inventory protocols, emissions sources and activities are defined as either producing direct or indirect GHG emissions. Direct emissions are those that stem from sources owned or controlled by a particular organization. Indirect emissions occur because of the organization's actions, but the direct source of emissions is controlled by a separate entity. The following inventory captures all direct and indirect emissions associated with Metro's operations (excluding those sources identified in the following Inventory Exclusions section on p. 10).

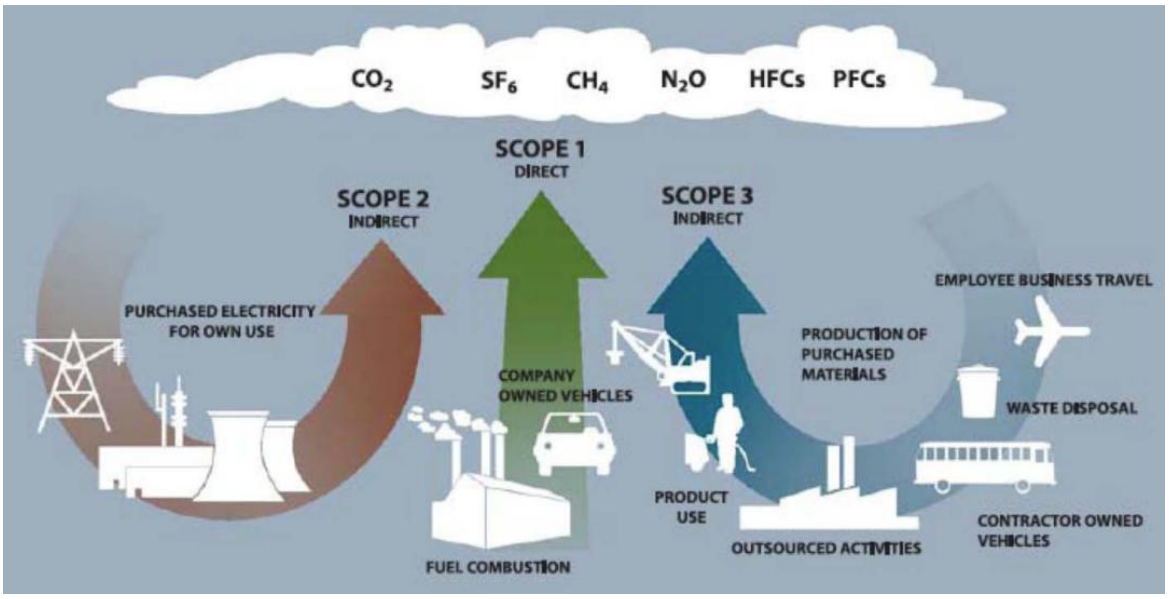
To distinguish direct from indirect emissions sources, three "scopes" are defined for traditional GHG accounting and reporting.[9] Figure 2 illustrates the three emission scopes.

Scope 1: All direct GHG emissions occur from equipment and facilities owned and/or operated by Metro (excluding direct CO_2 emissions from biogenic sources, which are reported separately – See St. Johns Landfill section).

Scope 2: Indirect GHG emissions from purchased electricity, heat or steam.

Scope 3: All other indirect emission sources that result from Metro activities but occur from sources owned or controlled by another company or entity, including: business travel; embodied emission in material goods purchased, and services contracted by Metro; emissions from landfilled solid waste; and emissions associated with Metro employee commute patterns.

Figure 2: Greenhouse gases and accounting and reporting scopes



[9] Source: WRI/WBSCD Greenhouse Gas Protocol, Corporate Accounting and Reporting Standard (Revised Edition), Chapter 4.

In an effort to organize Metro's diverse operations portfolio all facilities are grouped by type and hereafter referred to as functional areas. Table 3 is a summary of the facilities included in the analysis, grouped by functional area.

Table 3: GHG baseline Inventory boundaries

METRO FUNCTIONAL AREA	FACILITIES INCLUDED IN THE INVENTORY	FACILITIES EXCLUDED FROM INVENTORY
Metro Regional Center	Office Building	
Regional Parks	Blue Lake Boreland Field Station Oxbow Smith and Bybee Lakes Cooper Mountain Nature Park Rental Homes	Beggars Tick Wildlife Refuge Cemeteries Glendoveer Golf Course Mt Talbert Nature Park Chinook Landing
MERC Facilities	Oregon Convention Center Expo PCPA Keller Auditorium PCPA Arlene Schnitzer Hall PCPA Antoinette Hatfield Hall/Admin	
Solid Waste	Metro South Transfer Station Metro South Hazardous Waste Facility Metro Central Transfer Station Metro Central Hazardous Waste Facility Metro Paint St Johns Landfill Long Haul Waste Hauling (fleet)	
Oregon Zoo	64 acre zoo Off-site condor facility	

Inventory Exclusions

This inventory attempts to estimate emissions from all of Metro's facilities for calendar year 2008 (CY2008), however due to data limitations a number of Metro's facilities are not included in the inventory and complete data sets were not available for each facility included in the inventory. In addition to the handful of individual facilities not included in the inventory, this analysis does not capture the transportation related impacts of visitors to Metro owned facilities and venues due to data and resource limitations. Also Metro does not have direct control over how visitors choose to travel to Metro owned properties. That said, Metro plays a significant role in regional transportation planning and has the capacity to promote alternative transportation modes at the majority of Metro's facilities, especially the visitor venues. It is recommended that future GHG analyses include these "visitor" impacts.

AGENCY-WIDE INVENTORY RESULTS

Agency-wide summary

Metro's emissions from vehicle fuel and building energy consumption account for 33,361 metric tons carbon dioxide equivalent (MT CO_2e), shown in Figure 3 and described in Table 4 as Scope 1 and Scope 2 emissions. Estimated Scope 3 emissions total 24,215 MT CO_2e, which accounts for the emissions from mission-critical operations and activities related to Metro operation, but outside of its direct control.[10]

Metro's total emissions equal 58,062 MT CO_2e.

Unique to Metro's regional government services are the emissions associated with the St. Johns Landfill and long-haul waste transport (Scope 1 emissions) and the regional waste disposal contracts (Scope 3 emissions). These emissions result from operating a closed landfill (St. Johns Landfill located in N. Portland) and Metro's responsibility to manage the processing and transfer of the region's waste. These emissions sources are discussed in detail in the Solid Waste Functional Area Analysis section (p. 34)

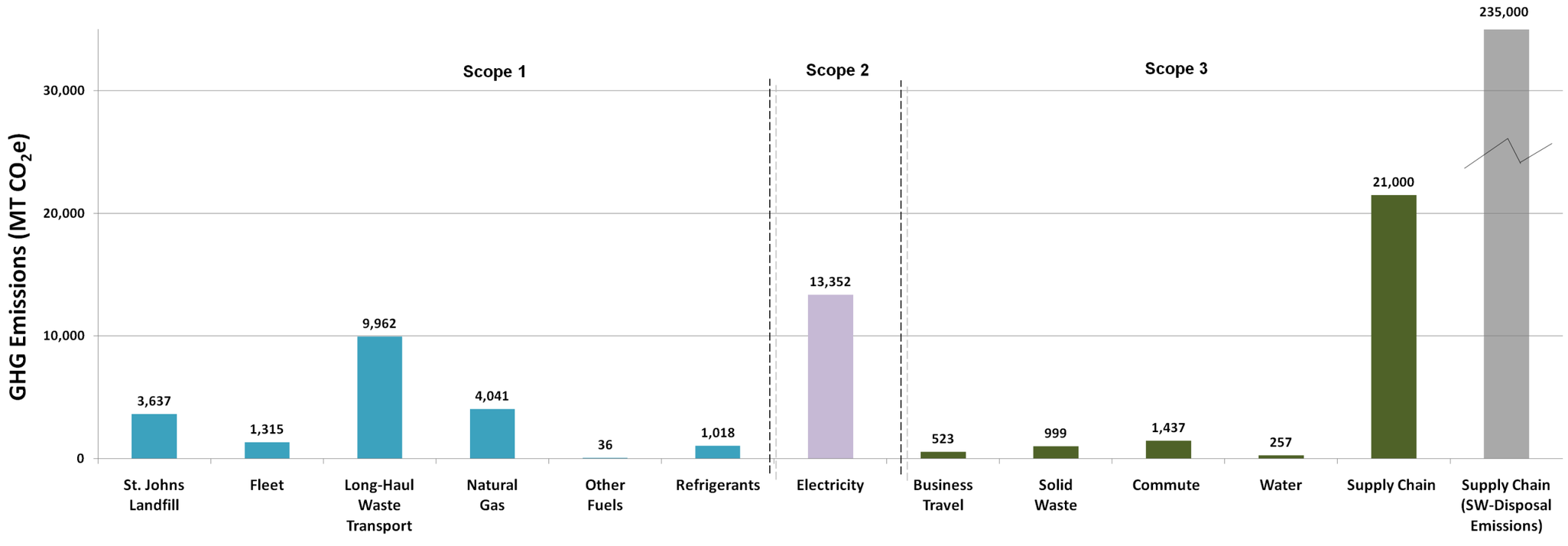
Scopes 1 and 2 yield 33,361 MT CO_2e. For sense of scale, this is equivalent to:

- Annual emissions from 6,379 passenger vehicles
- Annual emissions from the energy consumed by 2,839 homes (US average)

Scope 3 yields 24,701 MT CO_2e. For sense of scale, this is equivalent to:

- Annual emissions from 4,723 passenger vehicles
- Annual emissions from the energy consumed by 2,102 homes (US average)

Figure 3: Metro agency-wide emissions from regional government operations (2008)[1]



[10] Supply Chain emissions are rounded to demonstrate the level of uncertainty for this emission source.

Figure 4 provides a breakdown of the total GHG emissions for calendar year 2008 by functional area. MERC, the Oregon Zoo and Solid Waste functional areas each account for roughly one-third of Metro's total 2008 emissions; and the Metro Regional Center (MRC) and Parks account for eight and four percent, respectively.

Figure 4: Metro agency wide greenhouse gas emissions (2008), by functional area

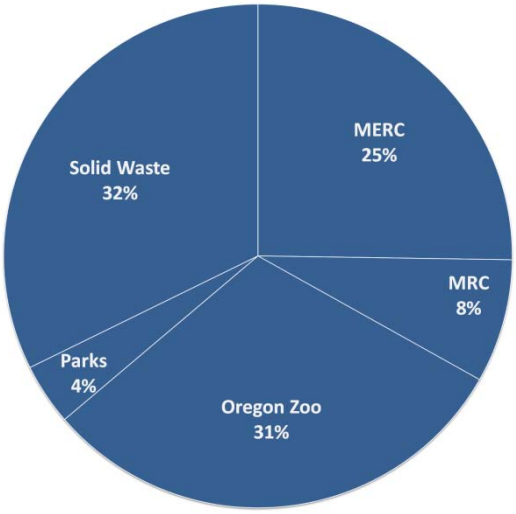


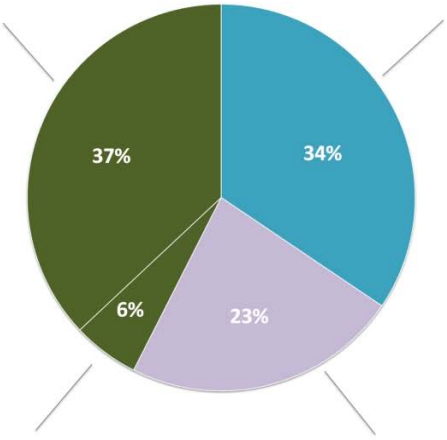
Figure 5 includes a breakdown of GHG emissions for calendar year 2008 by emissions scope and distinguishes supply chain emissions within the total share of Scope 3 emissions. Roughly 73% of the total Scope 1 emissions (owned vehicle fuel use, natural gas consumption for building heat, and refrigerants) come from Solid Waste operations, with MERC accounting for the next largest source at 15%. Scope 2 emissions (electricity) account for the second largest emissions source at 23% of Metro's total GHG emissions; 57% of all Scope 2 emissions result from MERC operations.

Scope 3 emissions, Metro's largest emissions source, are separated into two general categories; the purchase of potable water, solid waste disposal, employee commute, and business travel and supply chain emissions from purchased materials and services. Supply chain emissions make up the largest portion of Scope 3 emissions, the majority of which come from Zoo operations. The remaining Scope 3 emissions comprise six percent of Metro's total emissions, and similar to the supply chain emissions, the two largest sources result from operations at the Zoo and MERC functional areas.

Figure 5: Metro agency-wide greenhouse gas emissions (2008), by emissions scope

Scope 3: Supply Chain (Metro Operations)
- 53% of this scope results from Zoo operations
- 16% of this scope results from MERC operations
- 14% of this scope results from MRC operations

Scope 1: Fleet, Stationary Fuels, Refrigerants, Long-Haul Waste Transport, St Johns Landfill
- 73% of this scope results from Solid Waste operations
- 15% of this scope results from MERC operations



Scope 3: Travel, Commute, Water and Waste
- 37% of this scope results from Zoo operations
- 28% of this scope results from MERC operations

Scope 2: Electricity
- 56% of this scope results from MERC operations
- 23% of this scope results from Zoo operations

Table 4 includes a detailed overview of all emission sources for all Metro functional areas.

Table 4: Description of Metro's operational greenhouse gas emissions categories

EMISSIONS SCOPE	EMISSIONS CATEGORY	MT CO_2e	INPUT DATA (DESCRIPTION)
Scope 1 (Direct Emissions)	**Natural gas**	4,041	Metro uses natural gas for space heating at a 13 of the facilities included in the GHG inventory.
	Fleet	1,315	This emission category includes emissions from the following sources: On-road fleet vehicles (owned and leased through Multnomah County and DAS); Off-road vehicles – Parks, Solid Waste, Oregon Zoo and MERC; Fuel types used by these vehicles include diesel, diesel blend, gasoline, and propane.
	Other fuels	36	Metro has diesel generators at all facilities excluding MRC. However, a minimal amount of fuel is consumed by these generators and data for this emissions source is often not separated from diesel used in mobile vehicles.
	Refrigerants	1,018	Refrigerants are used in HVAC and commercial food refrigeration systems at all of Metro facilities. However, refrigerant use data at Metro Parks was not available for inclusion in this inventory; therefore this total may represent an emissions undercount. Refrigerant systems at Metro facilities use: HCFC-22 (R-22): Though preferable to prior refrigerants including CFCs, the manufacture of R-22 contributes significant greenhouse gasses to the atmosphere and contains chlorine, which contributes to atmospheric ozone depletion. CFC-11: This refrigerant in on the Class 1 Ozone Depleting Substance list and is on the phase-out list through Clean Air Act Regulations. The other refrigerants used at Metro include: R-404 (and -404A); R-410; R-414 (A and B); and R-134
	Regional waste hauling	9,962	This emissions category includes the fuel used to transport waste loads from Metro South and Metro Central Transfer Stations to the Columbia Ridge Landfill (under contract with Walsh Trucking Co.) By following standard GHG inventory protocols used to define the organizational boundaries of baseline inventories, Metro is responsible for these source emissions for the following reasons: Metro purchases the fuel used by Walsh Trucking Co from Devin Oil; the long haul waste fleet was designed to Metro specifications; and Metro holds the contract for regional waste hauling services as part of the agency's mission-critical responsibilities
	St. Johns Landfill	4,188	The emissions reported here are based on a preliminary GHG inventory of emissions from various aspects of operating the St. Johns Landfill. Under new Title V air pollution permit reporting requirements, Metro must meet DEQ reporting requirements related to the methane management practices at the landfill. The preliminary estimate reported in this St. Johns landfill source only includes the landfill gas emissions. The emissions associated with operating the St. Johns landfill are included in the other emission scopes outlined in this table.
Scope 2 (Indirect Emissions)	**Electricity**	13,352	Metro calculated the electricity consumption from all facilities included in the inventory boundary. The electricity consumption totaled 32,639,109 kWh for 2008.
Scope 3 (Indirect Emissions)	**Business travel**	523	Business travel includes employees' use of airlines, rental cars and personal vehicles for travel associated with training, conferences, and meetings.
	Solid waste	999	The emissions associated with solid waste generation are calculated based on the methane management practices at the landfills where Metro generated solid waste is disposed.
	Commute	1,437	In 2008 Metro employed 508 people at MERC facilities and 1150 employees at Metro facilities, totaling 1658 employees (including benefits eligible, part-time, seasonal and non-benefits eligible employees). Mode split information was available for 1000 of the total 1658 employees; the average distance of travel was 10 miles one way.
	Water	257	Metro purchases water and sewer services from multiple providers and utilizes non-potable sources such as wells at a number of park facilities. The emissions reported here result from the electricity associated with the treatment and distribution of potable water to Metro facilities. The emissions associated with the distribution or collection of well and river water as included in the Scope 2 emissions estimate since these emissions are captured by the direct energy (electricity) used at the facility site and included in METRO's utility bills.
	Supply chain	21,000	Embodied emissions in purchased goods and services accounts for emissions that result from all of the products and services Metro purchases.

The emissions results above are normalized for each functional area using the following where applicable.

FUNCTIONAL AREA	SCOPE 1 AND 2 EMISSIONS (MT CO_2e) BY:					
	Employee	Building Square Foot (1000 sq ft)	$1 Million of Revenue	Visitors (1000 visitors)	Show Days	Shows
MERC	30	7	347	5	4	7
MRC	3	9	N/A	Unknown	N/A	N/A
Oregon Zoo	15	30	342	3	N/A	N/A
Parks	6	1	N/A	Unknown	N/A	N/A
Solid Waste	83	6	N/A	Unknown	N/A	N/A

Methods: Data, Protocols and Sensitivity Analysis

This inventory follows the Local Government Operations Protocol, which provides the highest-consensus guidelines for minimum reporting and was developed jointly by The Climate Registry and other organizations.[11] However, the protocol only requires emissions in Scopes 1 and 2. Scope 3 is usually considered an optional emissions reporting category and has typically been ignored by conventional inventories. However, including Scope 3 emissions analysis in a GHG baseline presents a more accurate picture of an organization's carbon footprint and better illustrates the potential regulatory and financial risks associated with carbon emissions. While Metro may not have complete or direct control over all Scope 3 emissions, it can influence all emissions sources to varying degrees.

All emissions are reported in metric tons of carbon-dioxide equivalent (MT CO_2e).

The analysis attempts to cover all six "Kyoto gases" including: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6) and the groups of high Global Warming Potential (GWP) gases, perfluorocarbons (PFCs) and hydrofluorocarbons (HFCs).

Overwhelmingly, the direct and indirect CO_2e emissions are CO_2 from combustion of fossil fuels.

The analysis drew on high-consensus public-domain tools for emissions factors and methods. Some sources (such as embodied emissions in purchases) were estimated by combining available budget data with careful assumptions, while others had more direct data, such as electricity use (from billing information), and solid waste from hauler account data and waste sort studies. The following is a description of the completeness of data for the major categories, as well as assumptions made to calculate estimated emissions. Following this methodology section is a detailed analysis of each

[11] The Local Government Operations (LGO) Protocol was developed as a collaboration of The Climate Registry (TCR), the California Air Resources Board (CARB), the California Climate Action Registry (CCAR, now the Climate Action Reserve), and ICLEI Local Governments for Sustainability. The LGO Protocol follows the same format as The Climate Registry's General Reporting Protocol (GRP).

of the inventory reports by functional area, including MERC, Metro Regional Center, Parks, the Oregon Zoo and Solid Waste. All assumptions detailed in the following methodology section apply to the analysis completed for each functional area inventory, unless otherwise noted.

Fleet

Data related to vehicle fuel consumption is most likely incomplete and results for this emissions category should be considered estimates since they potentially represent an undercount of the total emissions associated with Metro's fleet. Fuel or mile use information was accessible for roughly 68% of the total vehicles included in the inventory; it was not possible to collect or estimate total fleet use information for the remaining 32% of the fleet The accuracy limitations associated with this emissions category result from a number of data collection limitations in Metro's business operations. Metro and MERC's fleet and fleet fuel use is not tracked and reports are difficult to obtain for a number of reasons.

First, there is no single inventory of all Metro vehicles, off-road or on-road. Second, Metro uses multiple fuel vendors and no single department tracks all fuel use. In addition to having multiple fuel contracts with private vendors, in 2008 Metro leased about half of the on-road fleet vehicles from Multnomah County and the State of Oregon. All efforts were made to assemble a complete fleet inventory and complete fuel use reports, however it is assumed that these reports are incomplete. In addition to these data limitations, assumptions about vehicle fuel use were made for the following functional areas:

MRC

- All vehicles housed at MRC were assigned to the MRC fleet, even though these vehicles are used by Parks and Solid Waste staff.

Oregon Zoo

- Diesel fuel purchases are tracked by month at an on-site fuel tank. However, building generators, fleet vehicles, the four train engines and miscellaneous equipment (e.g. leaf blowers) all draw from the same fuel tank however only the Zoo train engine fuel use is tracked.
- Gasoline is primarily used by vehicles, but equipment such as leaf blowers and lawnmowers are also powered by gasoline. However, fuel use is not tracked by end use, therefore all gasoline use was assigned to the vehicle fleet.

Parks

- Data for fuel use at Blue Lake Park was not available so fuel consumption data from Oxbow Park was used as a proxy.
- The total vehicle fuel emissions are most likely an undercount because of the difficulties of tracking vehicle use for the vehicles stationed at MRC (conversely, MRC vehicle fuel emissions are most likely an over count.) Vehicle reservation records for CY 2008 (maintained by Office Services) did not track total miles traveled by department. However, Office Services is now tracking this information and submitting monthly use reports to the new fleet operations manager. This tracking improvement is part of the Metro fleet centralization project.

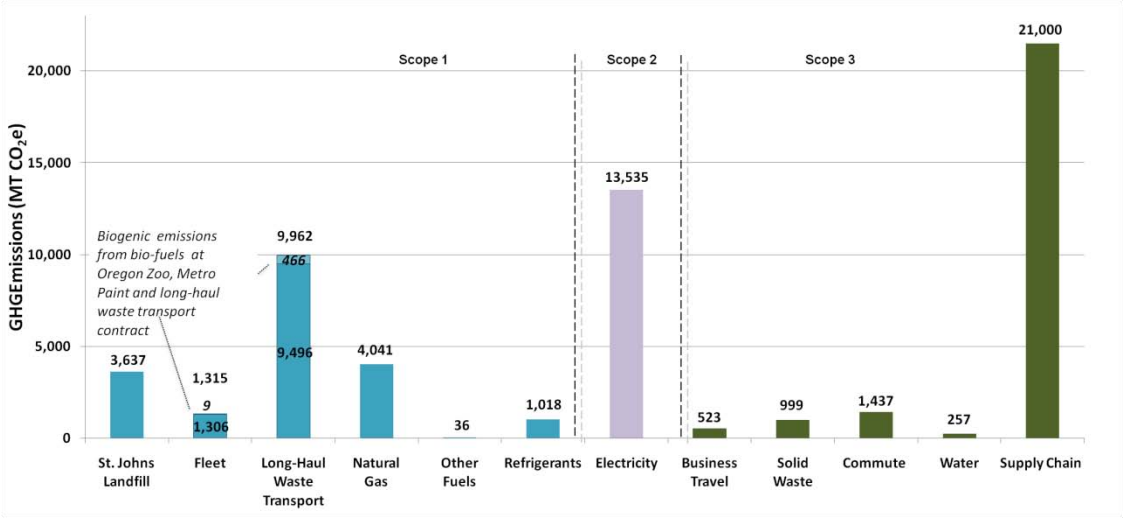
Solid Waste

- Because Solid Waste Enforcement vehicles are tracked separately from the Metro fleet, emissions from the five SW Enforcement vehicles are included in the Solid Waste fleet emissions despite being stationed at MRC.
- The total miles driven by the Metro Paint box truck (delivery truck) are used as a proxy for the box truck at Metro Central since vehicle use data are not tracked at Metro Central.
- Fuel use or mileage records are not available for solid waste education or toxics reduction vehicles.

The fleet inventory includes all available heavy or off-road equipment fuel use. Metro is currently in the process of improving all fleet use tracking systems as part of the fleet centralization project, which includes the implementation of a centralized fleet tracking software system that will monitor fleet mileage and fuel use by department.

After assembling a master fleet list (including total gallons used by vehicle and average fuel efficiency, based on US fleet averages), diesel and gasoline emission factors were used to calculate total emissions.[12] Alternative fuels (ethanol and biodiesel) are used at the Oregon Zoo (10% ethanol mix in gasoline), Metro Paint (15% bio-diesel) and for the long-haul waste transport fuel as part of the Walsh Trucking hauling contract (5% bio-diesel). Figure 6 below identifies the biogenic emissions (associated with the biological carbon cycle of burning plant materials) from these bio-fuels from the anthropogenic emissions (human-caused from the mining of fuels out of the Earth's crust) from the burning fossil fuels. The benefit of using bio-fuels is captured by conducting a life-cycle analysis comparing the carbon intensity of different fuel feed stocks.[13]

Figure 6: Agency-wide biogenic fuel emissions from bio-fuel (2008) (used at Oregon Zoo, Metro Paint, and Long-haul waste transfer contract)



[12] Environmental Protection Agency (2007): Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2007. Available at: www.fueleconomy.gov The Climate Registry, Version 1.1 (May 2008). Available at: http://www.theclimateregistry.org/resources/protocols/general-reporting-protocol.php

[13] For more information on the GHG benefits of using bio-fuels see Oregon DEQ's low carbon fuels standards, available at: http://www.deq.state.or.us/aq/committees/lowcarbon.htm or California Air Resources Board Low Carbon Fuel Standard Program, available at: http://www.arb.ca.gov/fuels/lcfs/lcfs.htm

Various biofuels can have very different life-cycle carbon-intensities based on raw materials used for production and energy intensity of the production processes. When selecting biofuels for use in Metro's fleets it is important to select fuels based on life-cycle carbon intensity to insure the greatest carbon reduction benefit. There are current limitations to this however, given that life-cycle emissions of biofuels are still being studied, and new biofuels are constantly under development. Despite this fast-changing landscape and the limited life-cycle assessments of biofuels there are recent analyses of fossil fuel and biofuel pathways by the California Air Resources Board (CARB) and the Oregon Department of Environmental Quality that apply to the fuels available in Oregon.[14]

Natural Gas

Billing records from Northwest Natural (NW Natural), Metro's natural gas utility, were used to determine the total volume of natural gas burned at all facilities that use natural gas. Because Metro does not track utility data (except at the MERC facilities) it was necessary to contact NW Natural directly to request billing and fuel use data.

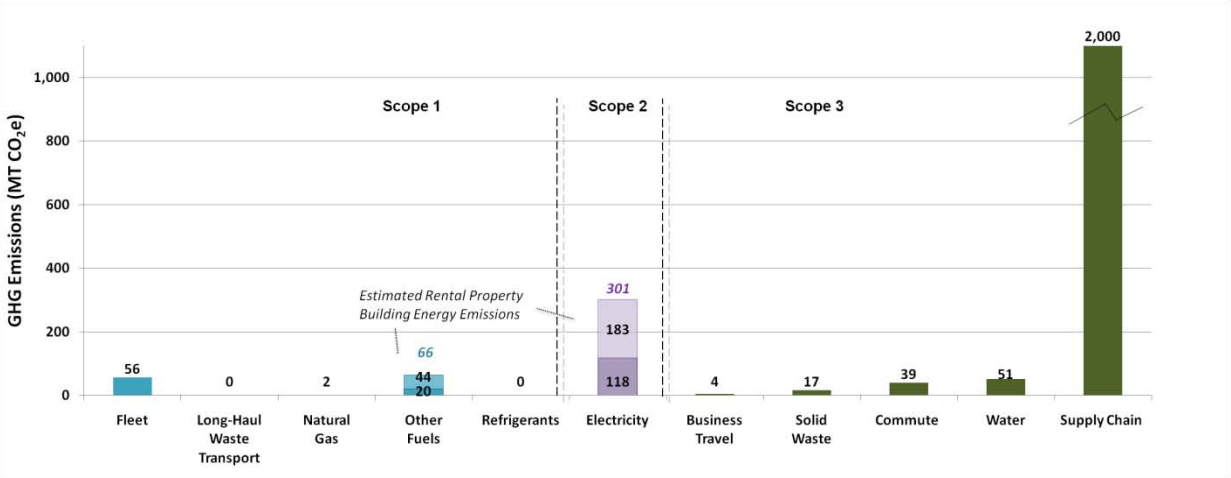
Emissions factors based on an average U.S. heat content (provided by the Local Government Operations Protocol) were used to calculate emissions from burning natural gas.

In 2008 Metro owned and maintained 37 rental properties at a number of regional park facility locations. While Metro is not directly accountable for all operational GHG emissions associated with these rental properties, Metro does pay for utility bills when the houses are vacant. Metro also has direct control over all energy efficiency upgrades and building maintenance at each facility. Scope 1 and 2 GHG emissions estimates are calculated for each rental property and presented in Figure 7. These emissions estimates are calculated using the U.S. Energy Information Administration's 2005 Residential Energy Consumption Survey (RECS).[15] The Survey provides energy-related consumption and expenditure data for the average US household. After identifying the energy fuel sources at each rental location national average energy consumption data for Climate Zone 3 was used to estimate average annual energy use for each of the residential rental properties. These emissions results should be viewed as estimates and are provided for sense of scale purposes only. To improve the accuracy of the results for this emissions source, all relevant emission source data for Metro rental properties should be collected for future GHG emissions tracking and monitoring purposes.

[14] For more information on the GHG benefits of using bio-fuels see California Air Resources Board Low Carbon Fuel Standard Program, available at: http://www.arb.ca.gov/fuels/lcfs/lcfs.htm. CARB's Low Carbon Fuel Standard, available at: http://www.arb.ca.gov/fuels/lcfs/lcfs.htm or Oregon DEQ's low carbon fuels standards, available at: http://www.deq.state.or.us/aq/committees/lowcarbon.htm

[15] U.S. Energy Information Administration (2005), Residential Energy Consumption Survey (RECS), available at: http://www.eia.doe.gov/emeu/recs/recs2005/c&e/detailed_tables2005c&e.html

Figure 7: Metro parks rental properties, building energy estimates (2008)



Other Stationary Fuels

The total number of stationary backup generators at Metro facilities is unknown. All functional areas have diesel generators, excluding MRC. However, fuel use for the generators is not tracked at any facilities and at a number of facilities (where fuel is delivered and stored onsite) the fuel used to run these generators is typically not differentiated from other fuel sources. Therefore, it is possible that a portion of the generator emissions are accounted for in fleet emissions. This may be a larger issue for the Parks and the Oregon Zoo than for other functional areas (MERC and Solid Waste). In addition, no stationary fuel use data was available for any of the solid waste facilities, which results in an undercount for Scope 1 emissions for all Solid Waste facilities however, it is anticipated that this is not a large undercount given the small number of generators used at these facilities.

Refrigerants

Metro uses refrigerants at all functional area facilities however, refrigerant use data at Metro Parks was not available for inclusion in this inventory. The majority of refrigerants are used for rooftop HVAC systems and commercial food refrigeration units. The emissions associated with this source result from the fugitive refrigerant emissions from seals and gaskets on aging HVAC or refrigerant units. The types of refrigerants used in these systems vary by facility and are presented in Table 4. No Metro facilities maintain refrigerant purchasing or replacement records, therefore estimation methods outlined in The Climate Registry's General Reporting Protocol were used to calculate average annual refrigerant loss at each facility (excluding one known refrigerant leak at the Oregon Zoo). [16] In addition, no refrigerant information was available from any of the Parks facilities. The confidence level for this emissions category is moderate given the data limitations. Comprehensive data collection systems should be established at all Metro facilities in preparation for future inventories and to improve the accuracy of the results for this emission source. While refrigerants may not represent a large share of Metro's total GHG emissions, refrigerants have high global warming potentials relative to other GHGs – small leaks in HVAC or refrigerant units can have a large effect relative to the size of loss.

[16] The Climate Registry, General Reporting Protocol, Version 1.0 (March 2008). Chapter 16, Page 126.

Landfill Gas from St. Johns Landfill

The emissions reported for St. Johns Landfill are exclusively attributable to landfill gas (LFG) flow (2008), not St. Johns landfill facility operation emissions. In other words, all of the emissions for St. Johns Landfill from owned vehicle fuel use (gasoline and diesel), natural gas consumption for building and refrigerants (Scope 1); electricity consumption (Scope 2); and the Scope 3 supply chain, water, solid waste disposal, employee commute, and business travel emissions are included in the respective emission source totals with all other Metro operational emissions.

Metro determines the amount of landfill gas (LFG) that is both released and collected from the landfill using data collected from onsite flow and composition monitoring devices. Flow data is collected by continuous monitoring devices that record data to a central St. Johns computer. Methane concentration is also measured with a portable instrument each work day and recorded. It is assumed that approximately 30% of the direct St Johns Landfill gas is CO_2 and that 95% of LFG is collected and processed.

Metro used data provide by Ash Grove Cement to determine the amount of landfill gas that was sent off site for consumption by Ash Grove in their kilns (based on a contractual agreement that allows Ash Grove Cement exclusive rights to use landfill gasses from St. Johns Landfill as needed, based on their production energy needs). Ash Grove sends Metro monthly statements of gas flow and methane consumption as recorded daily at their site. In 2008, Metro sent 75% of the total collected landfill gas to Ash Grove Cement. Therefore, the following analysis includes only the collected LFG minus the 75% sent to Ash Grove Cement (not total landfill gas flow).

The Local Government Operations Protocol (LGO) does not consider all landfill gas as anthropogenic (human caused). The majority of landfill gases are considered biogenic, or naturally occurring and not contributing to human caused climate impacts.

The total Scope 1 emissions from St. Johns Landfill (3,637 MT CO_2e) are comprised of the following emission sources:

- Direct Landfill Gas (LFG) fugitive emissions from CH_4 emitted from landfill (3,228 MT CO_2e)
- LFG to Flare: CO_2e from CH_4 due to incomplete combustion in landfill flares (169 MT CO_2e)
- LFG to Flare: CO_2e from NO_x emitted due to combustion in landfill flares (240.4 MT CO_2e)
- LFG to Evaporator: CH_4 due to incomplete combustion in evaporator (4.72E-04 MT CO_2e)
- LFG to Evaporator: CO_2e from NO_x emitted due to combustion in evaporator (4.72E-04 MT CO_2e)

Electricity

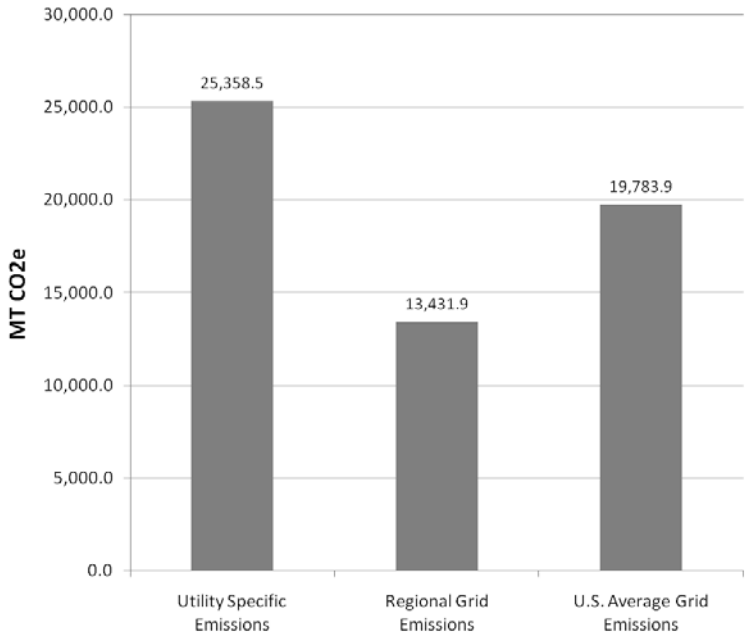
PacificPower and PGE are the electricity utility providers for Metro facilities. Billing data from both utility companies were used to determine the total amount of electricity used at all Metro facilities (by meter). This data was cross referenced with electricity inventories provided by facility managers at a number of facilities. The data related to electricity consumption is complete and results for this emissions category should be considered highly accurate. It should be noted however, that there is a sub-meter at the Metro Central Hazardous Waste Facility that is not

tracked. This meter should be read monthly to get accurate facility readout for ongoing energy related inventories.

The calculations reported in Figure 3 (p.11) are the sum of the electricity emissions calculated for each functional area. These results were calculated using the CO_2 emissions factor for the Northwest Power Pool (NWPP)—907.3 lbs CO_2e/kWh. Using the utility specific emissions factors and not the regional or national electricity-production emissions factors does not consider the emissions associated with purchased electricity. Therefore, the regional grid emissions factor provides a more meaningful number. However, purchased electricity emissions using utility specific emissions factors are included in figure 8 for reference and sense of scale. PacificPower and PGE, Metro's electricity providers, directly reported 1,776 lbs CO_2/kWh, and 1,625 lbs CO_2/kWh respectively. PacificPower did not provide emissions factors for CH_4 or N_2O, so regional electricity-production emissions factors were used to calculate total CO_2 equivalents. (The average emissions factor for these two utility providers is used to calculate the utility specific emissions results.) It is important to note that this is the "owner-based" emissions factor and does not consider the emission factors from the electricity that they purchase from other producers. Because no utility sells only its "owner-based" produced electricity to its clients, but rather an ever-changing mix of utility produced and purchased power sources (other electricity providers around the country), it is impossible to know the exact energy source mix for an individual facility at any given moment.

The carbon intensity of PacificPower and PGE's generation are distinctly different—considerably higher— than the emissions of the regional and national grids. However, when such large emissions factor differences exist, it is important to acknowledge these differences in order to more accurately compare emissions to other organizations that may use one or more emissions factors. Figure 8 demonstrates how the emissions totals for MRC's Scope 2 emissions would differ when using the local utility emissions factors for PacificPower and PGE (demonstration purposes only), the regional grid mix for the Northwest Power Pool (NWPP) and the national grid mix.

Figure 8 Electricity emissions scenarios for Metro agency-wide emissions using local, regional and national emissions factors (2008)



Electricity Emissions Factors

Utility Specific = 1,700.5 MT CO_2e/kWh

NWPP = 907.3 MT CO_2e/kWh

National Average = 1329.4 MTCO_2e/kWh

Business Travel

Business travel data (total miles traveled by transportation mode; air, train, and vehicle) was challenging and time consuming to collect. Metro does not track miles traveled by mode split in the electronic business travel reports; there is no accounting code to distinguish the dollars spent on travel from other travel expenditures (such as hotel or food). In addition, Metro does not track the total miles traveled for each trip. Data for business travel at Metro facilities was gained by pulling all individual travel reimbursement forms submitted to the accounting department from onsite storage. The travel reimbursement forms require employees to include copies of airline or rail tickets, or mileage traveled by vehicle. The process of pulling individual travel reimbursement forms was time consuming for accounting staff, in part because all accounting documents are filed by check number. However, the data for Metro business travel is complete and should be considered accurate.

MERC's accounting department stores total miles traveled in their accounting system, however a series of time consuming queries were required to compile MERC business travel. While the data compiled for MERC is highly accurate it only includes trips taken for conferences or trainings and does not include local in-city business travel and is therefore an undercount of all MERC business travel related emissions.

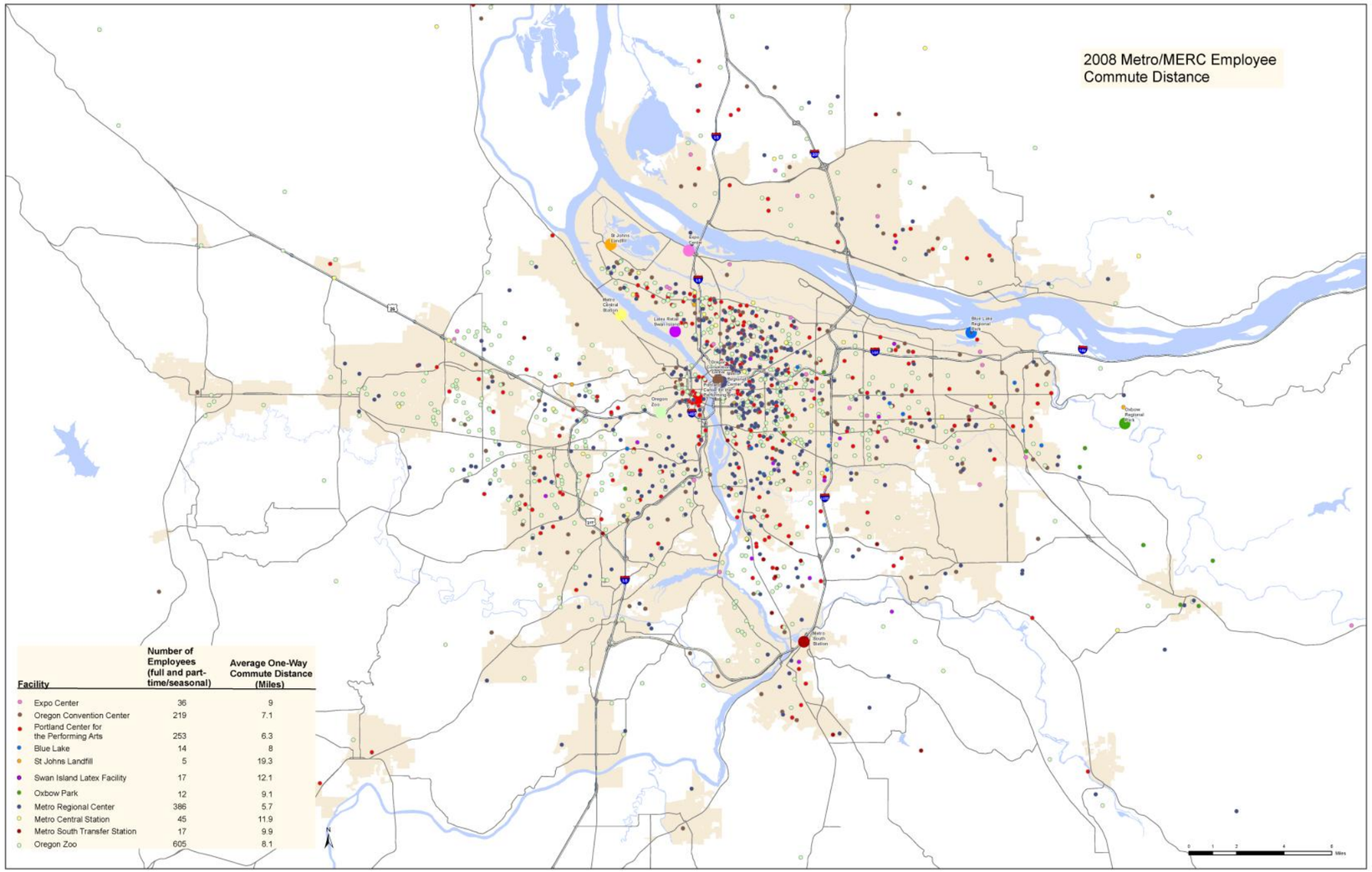
The data for business travel does not include travel by light rail or bus. Metro does not track the total miles traveled by employees by in-city public transit. Metro does provide transit passes to benefits eligible employees at a number of facilities; however it is not possible to determine how many business travel miles are traveled by public transit in 2008.

Commute

The emissions associated with employee commute are calculated using three data sets and with the assistance of Metro's Data Resource Center (DRC). Metro does not track data to estimate the emissions generated by employee commuting, however a series of data sets were compiled to estimate annual employee commute distances and mode split.

Human resources generated the data set used in this inventory to estimate Metro's commute emissions. The data set included Metro employees' home addresses and their work location (no employee identification information was included in the data set to ensure employee privacy). These trip start and end locations were then geo-coded in GIS to generate total miles traveled by employee (as the crow flies). Some employee addresses did not geocode because they were either PO Boxes, missing, or unrecognizable by the locator (the percentage that did not geocode was between 3-5%). The average one-way commute distance (miles) was calculated using the total miles traveled by facility.

Figure 9 2008 Metro/MERC employee commute distance



Facility	Number of Employees (full and part-time/seasonal)	Average One-Way Commute Distance (Miles)
Expo Center	36	9
Oregon Convention Center	219	7.1
Portland Center for the Performing Arts	253	6.3
Blue Lake	14	8
St Johns Landfill	5	19.3
Swan Island Latex Facility	17	12.1
Oxbow Park	12	9.1
Metro Regional Center	386	5.7
Metro Central Station	45	11.9
Metro South Transfer Station	17	9.9
Oregon Zoo	605	8.1

Figure 9 is a map of all employee commute start locations, color coded by the final work destination (facility). The following is the resulting mode split for this sample: Drove alone – 73%; Carpool – 11%; Bus/Rail – 11%; Bike – 3%; Walk – 1%; Telecommute or compressed work week – 1%. The average on-way commute distance for all Metro functional areas is 10 miles.

After generating the average one-way commute distance by facility (work location) average mode split percentages were applied to generate the commute mode split for each location. These mode split data were generated by the Lloyd District Transportation Management Association's (Lloyd TMA) annual survey. The Lloyd TMA survey is distributed only to benefits eligible employees on an annual or biennial basis (depending on facility location) – at some facilities upwards of 50% of the staff may be excluded from the survey. These mode split rates were assigned to the total employee address list in an effort to estimate the emissions associated with all employee commute travel. Because the Lloyd TMA survey is conducted in the summer and asks recipients to report on their commute patterns for one week only, the mode split data may not represent typical annual commuting patterns and possibly over count bus, walk and bike commute modes. Given these limitations, the results of this emissions category should be seen as estimates.

Metro staff is working to develop an annual employee commute survey for all Metro employees (including non-benefits eligible employee) that records travel modes and miles traveled supplemental to the Lloyd TMA survey. Implementing an employee commute survey would provide more accurate data for ongoing tracking and monitoring of employee commute emission sources.

Solid Waste

Data on the solid waste generated at MRC were taken from the waste generation and recycling baseline conducted for Metro's Sustainability Plan. Facility managers requested waste generation reports from the franchised hauler for each facility. These reports include waste estimate calculations based on the number and size (volume) of containers and frequency of collection from all facilities, as well as historical container weight studies conducted by the hauler. However, there are a number of limitations with this dataset; first, no waste data was available for any of the park facilities except for Oxbow Regional Park. Second, this methodology assumes all waste containers are full and does not represent actual waste collection (in tons). Due to these data limitations the results of this emissions category should be considered estimates.

Emission factors associated with landfill methane management techniques at the waste disposal facilities were applied to the estimated waste generation totals discussed above.[17] Because it is not possible to identify the exact landfill destination for each ton of waste generated at Metro facilities, the solid waste emissions estimates are based on the following waste allocation assumptions: regional waste allocation rates by landfill (percent of total tons disposed) were applied to the total tonnage estimates from each facility in an effort to determine the percentage allocation of Metro generated waste throughout the regional waste disposal system. [18]

Metro staff are working with waste haulers to devise more accurate methods to capture volume or weight of solid waste generated at Metro facilities.

Water

Potable water treatment and distribution to regional facilities, residents and businesses is a source of GHG emissions because it takes electricity (and other inputs) to treat water and pump it throughout a community. Metro purchases water from seven different water utilities (Portland Water Bureau, City of Fairview, Sunrise Water Authority, Rockwood Water Public Utility District, Tualatin Valley Water, City of Gresham Stormwater, and Clackamas County Water and Environmental Services). Due to limitations in time and availability associated with collecting utility specific emissions factors for each water provider an emissions factor calculated by Good Company for the Joint Water Commission was used to provide an estimate of Scope 3 GHG emissions associated with Metro's consumption of water. [19] The GHG estimate only applies to water supply, not waste water treatment.

It should be noted that a number of facilities use well water, which was excluded from this analysis. It is assumed that the emissions associated with pumping well water are captured in the electricity emissions for each facility (Scope 2).

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[17] Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks, 3rd EDITION, September 2006, Exhibit 6-8. Available at: http://www.epa.gov/climatechange/wycd/waste/SWMGHGreport.html

[18] Regional waste allocation data came from Metro's Solid Waste Information System, which is used to track tonnage information that incurs through Metro's regional system fee and excise tax.

[19] Five agencies share ownership in the Joint Water Commission including: Cities of Hillsboro, Forest Grove, Beaverton and the Tualatin Valley Water District (TVWD). All of the agencies serve areas in Washington County and have varying water source supplies and levels of ownership in the Joint Water Commission.

Supply Chain

A life-cycle greenhouse gas (GHG) analysis using Carnegie Mellon's Economic Input-Output Life-Cycle Assessment (EIO-LCA) model was conducted for all supply chain purchases (including goods, food and services) for all functional area (including Metro and MERC) for calendar year 2008 (CY 2008).[20]

The analysis of all four Metro functional areas (MRC, Zoo, Parks and Solid Waste) was completed by Good Company, while the analysis of the three MERC functional areas was completed in-house by Metro staff. However, the same methodology was used for both data sets and a methodology check was completed to ensure that meaningful comparison could be made between the results of these analyses. (For more information on the EIO-LCA analysis, see Appendix A.)

A detailed account of the supply chain analysis is included in the *Embodied Emissions in Purchased Goods and Services* starting on page 40.

[20] Carnegie Mellon University Green Design Institute. (2008) Economic Input-Output Life Cycle Assessment (EIO-LCA), US 1997 Industry Benchmark model [Internet], Available at: http://www.eiolca.net.

FUNCTIONAL AREA INVENTORY ANALYSIS

The following section provides a detailed analysis of emissions from Metro regional government operations by functional area. For consistency with the Metro Sustainability Plan the functional areas are defined as follows: MERC, Metro Regional Center (MRC), the Oregon Zoo, Regional Parks and Solid Waste. (For information on the facilities included in each functional area see Table 3, p.10)

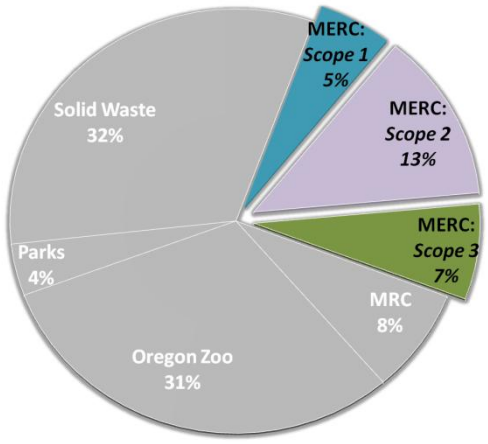
Following the five functional area analysis sections is a detailed summary of the life-cycle supply chain analysis. This inventory includes two separate supply chain analyses sections as a result of the decentralized accounting systems between MERC and Metro. There is one centralized accounting department for all Metro functional areas, including MRC, the Oregon Zoo, Parks and Solid Waste operations. MERC, which includes the Oregon Convention Center, Portland Center for the Performing Arts, and the Portland Expo Center has a separate accounting department. These two accounting departments use different accounting software and do not coordinate consolidated quarterly or annual reports. In addition, MERC and Metro have different procurement codes and procedures. Because of these decentralized and varied accounting structures the EIOLCA (or supply chain) analyses for calendar year 2008 expenditure reports was conducted separately for MERC and Metro. However, the same methodology was used for both data sets. The analyses results were combined to provide an overall snapshot of supply chain emissions for calendar year 2008 for all Metro functional areas.

MERC

In 2008, the emissions from operating MERC facilities accounted for 14,445 metric tons of carbon equivalent (MT CO_2e) or **roughly 25% of Metro's total operational emissions**.

Scope 1 and 2 emissions:
- 7 MT CO_2e per building sq. ft.
- 30 MT CO_2e per employee
- 347 MT CO_2e per $1 million of revenue
- 5 MT CO_2e per thousand visitors
- 4 MT CO_2e per show day
- 7 MT CO_2e per show

Figure 10: MERC greenhouse gas emissions as a share of total regional government operation emissions (2008)



MERC's emissions from owned vehicle fuel use (gasoline and diesel), natural gas consumption for building heat, and refrigerants for air conditioning accounted for **3,046** MT CO_2e, defined as Scope 1 emissions. Electricity consumption accounted for **7,499** MT CO_2e, defined as Scope 2 emissions. This electricity was used to light and power performing arts, conference and convention centers. The total Scope 1 and 2 emissions for 2008 was approximately **10,545** MT CO_2e. These are the emissions that Metro has the most control over.

In addition, this inventory identified approximately **3,900** MT CO_2e of other emissions from mission-critical activities that are outside of MERC's direct control (Scope 3). Scope 3 emissions are primarily composed of embodied emissions from the supply chain of purchased materials and services at MRC, but also include the purchase of potable water from the Portland Water Bureau, solid waste disposal, employee commute, and business travel (see Figure 11 below). While Metro may not have direct control over these additional emissions sources, it can influence them by reducing purchases or consumption of waste generating materials and business related travel, and by providing additional employee commute options. By calculating these Scope 3 emissions, Metro is able to explore these areas for emissions reduction opportunities.

Scope 2 emissions from electricity consumption are the largest emissions source for MERC (7,499 MT CO_2e) and is over twice the next largest emissions source – supply chain (3,351 MT CO_2e). **The emissions from MERC's electricity consumption make up roughly 56% of Metro's entire agency wide scope 2 emissions**.

Table 5: MERC supply chain emissions

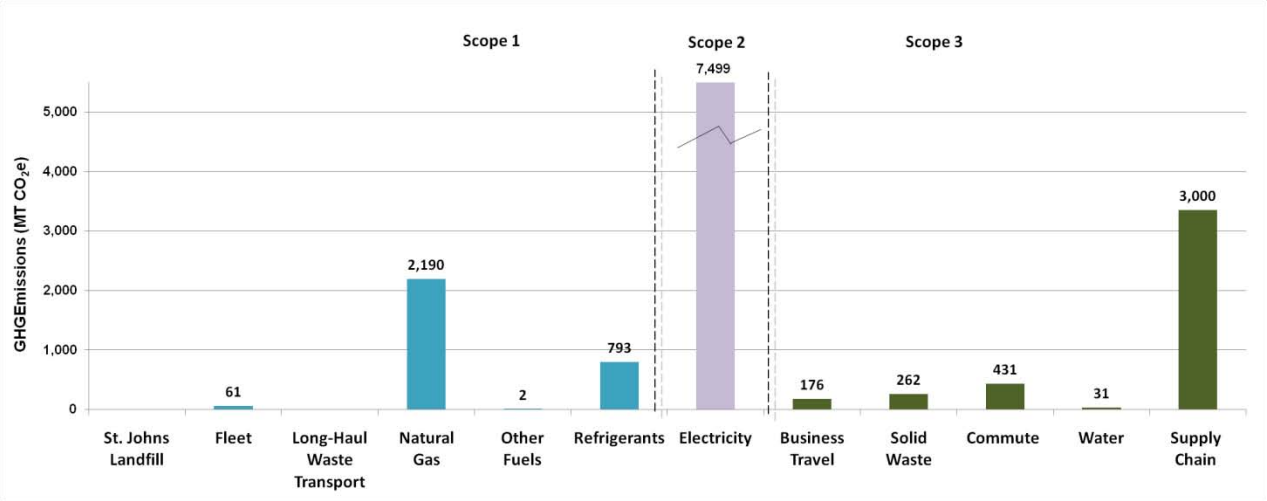
MERC Supply Chain Emissions by Category (CY 2008)	MTCO_2e
Food	1,270
Professional Services	1,023
Buildings (Construction and Maintenance)	571
Other	215
Operating Supplies	107
Office Supplies	96
Vehicles/Equipment (Buy, rent, maintain)	68
Total	**3,350**

Supply chain emissions are the second largest source for the MERC functional area (roughly

3,000 MT CO_2e). Similar to the Zoo, food comprises the largest emissions category within MERC's supply chain. The second largest emissions source includes professional services, which is not surprising given the large number of professional services contracted out by MERC. Table 5 provides details on MRC's largest supply chain emissions categories.

The third largest emissions source for MERC is natural gas, which is used to heat all of the MERC facilities. **Natural gas use at MERC facilities accounts for roughly 54% of Metro's entire agency wide natural gas use.**

Figure 11: MERC greenhouse gas emissions from regional government operations (2008)



Scopes 1 and 2 yield 10,545 MT CO_2e. For sense of scale, this is equivalent to:

- Annual emissions from 2,016 passenger vehicles
- Annual emissions from the energy consumed by 897 homes (US average)

Scope 3 emissions yield 3,900 MT CO_2e. For sense of scale, this is equivalent to:

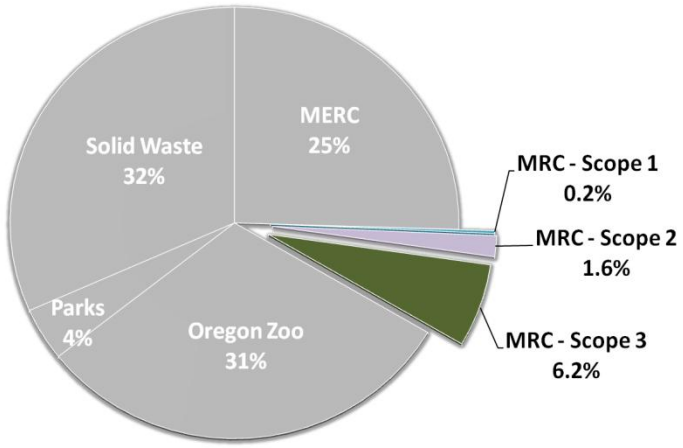
- Annual emissions from 746 passenger vehicles
- Annual emissions from the energy consumed by 332 homes (US average)

Metro Regional Center

In 2008, the emissions from operating the Metro Regional Center accounted for 4,540 metric tons of carbon equivalent (MT CO_2e) or roughly **8% of Metro's total operational emissions**.

Scope 1 and 2 emissions:
- 9 MTCO_2e per building sq ft
- 3 MTCO_2e per employee

Figure 12: Metro Regional Center greenhouse gas emissions as a share of regional government operation emissions



Metro's emissions from owned vehicle fuel use (gasoline and diesel), natural gas consumption for building heat, and refrigerants for air conditioning accounted for **120** MT CO_2e, defined as Scope 1 emissions. Electricity consumption accounted for **913** MT CO_2e, defined as Scope 2 emissions. This electricity was used to light and power Metro's only solely dedicated office building. The total Scope 1 and 2 emissions for 2008 was approximately **1,033** MT CO_2e. These are the emissions that Metro has the most control over.

In addition, this inventory identified approximately **3,507** MT CO_2e of other emissions from mission-critical activities that are outside of Metro's direct control (Scope 3). Scope 3 emissions are primarily composed of embodied emissions from the supply chain of purchased materials and services at MRC, but also include the purchase of potable water from the Portland Water Bureau, solid waste disposal, employee commute, and business travel (see Figure 13 below). While Metro may not have direct control over these additional emissions sources, it can influence them by reducing purchases or consumption of waste generating materials and business related travel, and by providing additional employee commute options. By calculating these Scope 3 emissions, Metro is able to explore these areas for emissions reduction opportunities.

Table 6: MRC supply chain emissions

Metro Regional Center Supply Chain Emissions by Category (CY 2008)	MTCO_2e
Professional Services	1,648
Office Supplies	670
Other	273
Buildings (Construction and Maintenance)	247
Vehicles/Equipment (Buy, rent, maintain)	201
Operating Supplies	65
Food[21]	—
Total	**3,163**

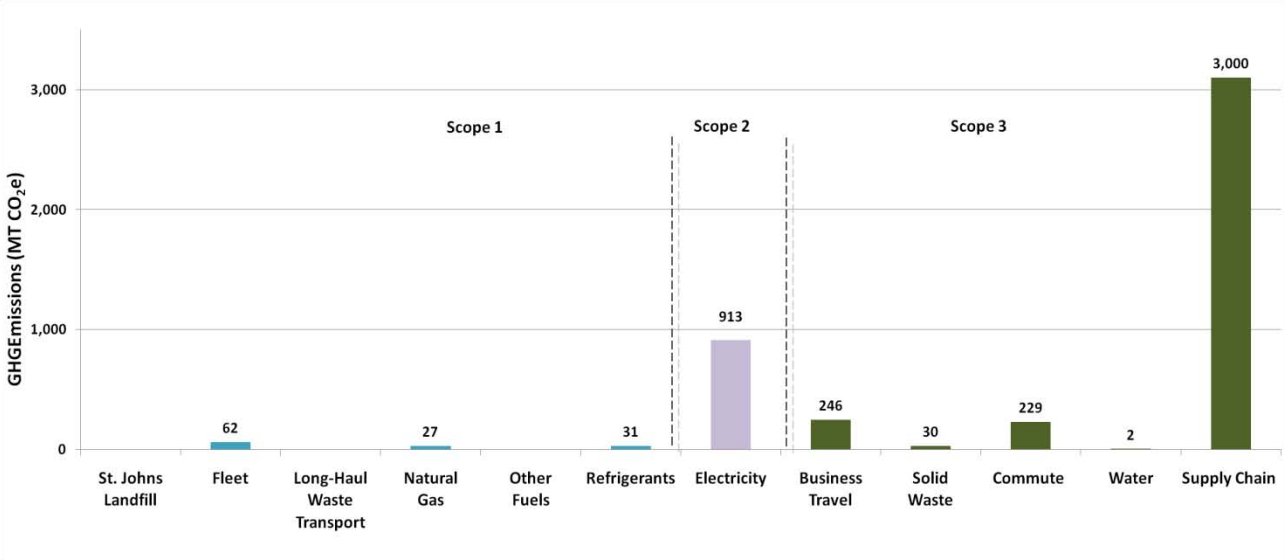
Supply chain emissions are the largest emissions source for MRC (roughly 3,000 MT CO_2e) and is nearly twice the next largest emissions source – building electricity use (913 MT CO_2e). Table 6 provides details on MRC's largest supply chain emissions categories.

The third largest emissions source for MRC is business travel. This results from the number and frequency of international and transcontinental

[21] Meeting expenses for MRC are grouped in the Other Goods and Services category. These expenses likely include food, but the data did not provide clear differentiation between food and other meeting related expenses.

flights taken by Metro staff. While business travel is the third largest emission source for government operations at MRC, it only accounts for 5% of the total emissions attributable to MRC and roughly .4% of Metro's total government operation emissions. Building electricity however, accounts for 20% of MRC's total emissions and roughly 2% of Metro's total emissions.

Figure 13: Metro Regional Center greenhouse gas emissions from regional government operations (2008)



Scopes 1 and 2 yield 1,033 MT CO_2e. For sense of scale, this is equivalent to:

- Annual emissions from 198 passenger vehicles
- Annual emissions from the energy consumed by 88 homes (US average)

Scope 3 emissions yield 3,507 MT CO_2e. For sense of scale, this is equivalent to:

- Annual emissions from 671 passenger vehicles
- Annual emissions from the energy consumed by 298 homes (US average)

Oregon Zoo

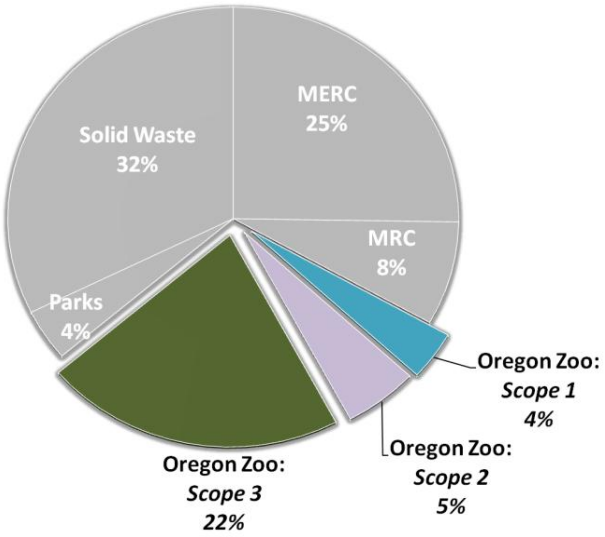
In 2008, the emissions from operating the Oregon Zoo accounted for **17,489 metric tons of carbon equivalent (MT CO_2e) or roughly 31% of Metro's total operational emissions.**

Scope 1 and 2 emissions:

- 30 $MTCO_2e$ per building sq ft
- 15 $MTCO_2e$ per employee
- 342 $MTCO_2e$ per $1 million of revenue
- 3 $MTCO_2e$ per thousand visitors

The Oregon Zoo's emissions from owned vehicle fuel use (gasoline and diesel), natural gas consumption for building heat, and refrigerants for air conditioning accounted for **2,183** MT CO_2e, defined as Scope 1 emissions. Electricity consumption accounted for **3,119** MT CO_2e, defined as Scope 2 emissions. This electricity was used to light and power buildings and animal exhibits, including heating for some of the large exhibit areas. The total Scope 1 and 2 emissions for 2008 was approximately **5,302** MT CO_2e. These are the emissions that the Oregon Zoo (Metro) has the most control over.

Figure 14: Oregon Zoo greenhouse gas emissions as a share of regional government operation emissions (2008)



In addition, this inventory identified approximately **12,187** MT CO_2e of other emissions from mission-critical activities that are outside of the Oregon Zoo's direct control (Scope 3). Scope 3 emissions are primarily composed of embodied emissions from the supply chain of purchased materials and services at the zoo, but also include the purchase of potable water from the Portland Water Bureau, solid waste disposal, employee commute, and business travel (see Figure 15 below). While the Oregon Zoo may not have direct control over these additional emissions sources, it can influence them by reducing purchases or consumption of waste generating materials and business related travel, and by providing additional employee commute options. By calculating these Scope 3 emissions, the Oregon Zoo is able to explore these areas for emissions reduction opportunities.

Supply chain emissions are the largest emissions source for the Oregon Zoo (roughly 11,000 MT CO_2e) and is nearly three times the next largest emissions source – building electricity use (3,119 MT CO_2e). The Oregon Zoo's supply chain emissions account for roughly

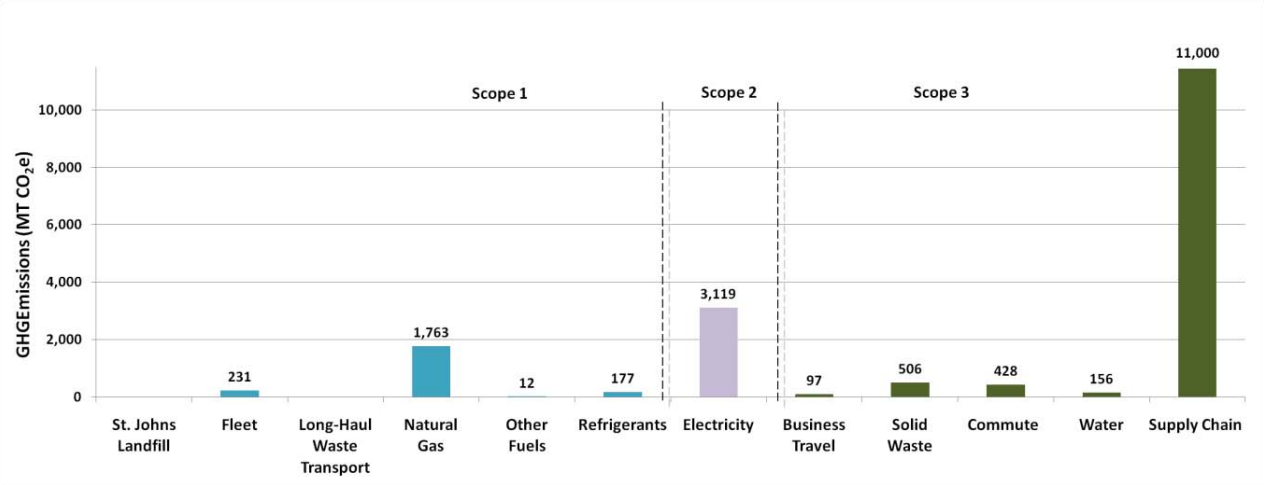
Table 7: Oregon Zoo supply chain emissions

Oregon Zoo Supply Chain Emissions by Category (CY 2008)	$MTCO_2e$
Food	8,055
Buildings (Construction and Maintenance)	1,307
Operating Supplies	692
Professional Services	537
Office Supplies	301
Other	280
Vehicles/Equipment (Buy, rent, maintain)	269
Total	**11,442**

20% of Metro's total GHG emissions from all government operations. Table 7 provides details on the Oregon Zoo's largest supply chain emissions categories. It is important to reference the scale of emissions that food purchases at the Oregon Zoo have relative to Metro's total government operations emissions. The food-related embodied emissions at the Oregon Zoo are the largest aggregated supply chain category, contributing 44% of Metro's (excluding MERC and the previously discussed "community-owned" solid waste emissions) total supply chain emissions and 14% of Metro's total emissions.

The third largest emissions source for Oregon Zoo is natural gas, which results from heating large areas, especially the visitor venue areas and the commercial kitchens.

Figure 15: Oregon Zoo greenhouse gas emissions from regional government operations (2008)



Scopes 1 and 2 yield 5,302 MT CO_2e. For sense of scale, this is equivalent to:[22]

- Annual emissions from 1,014 passenger vehicles
- Annual emissions from the energy consumed by 451 homes (US average)

Scope 3 emissions yield 12,187 MT CO_2e. For sense of scale, this is equivalent to:

- Annual emissions from 2,330 passenger vehicles
- Annual emissions from the energy consumed by 1,037 homes (US average)

[22] Source: http://www.epa.gov/RDEE/energy-resources/calculator.html

Parks

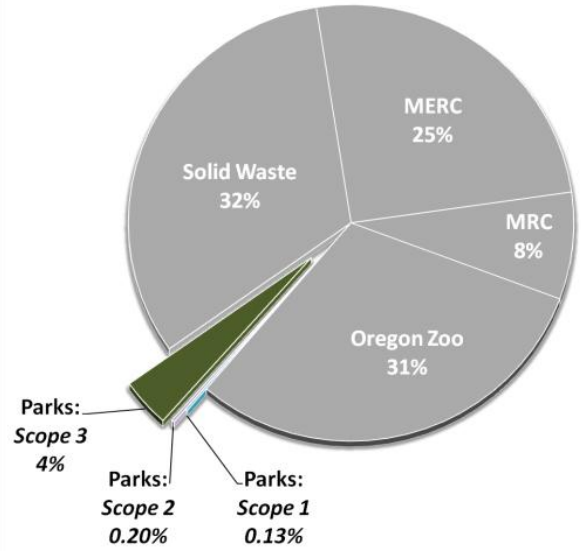
In 2008, the emissions from operating the regional parks system (referred to as Metro Parks) accounted for 2,307 metric tons of carbon equivalent (MT CO_2e) or roughly 4% of Metro's total operational emissions.

Scope 1 and 2 emissions:

- 1.7 $MTCO_2e$ per building sq ft
- 8.3 $MTCO_2e$ per employee

Metro Parks' emissions from owned vehicle fuel use (gasoline and diesel), and natural gas consumption for building heat accounted for **78** MT CO_2e, defined as Scope 1 emissions. Electricity consumption accounted for **118** MT CO_2e, defined as Scope 2 emissions. This electricity was used to light and power buildings including rental properties owned and managed by Metro. The total Scope 1 and 2 emissions for 2008 was approximately **196** MT CO_2e. These are the emissions that the Metro Parks have the most control over.

Figure 16: Metro Parks greenhouse gas emissions as a share of regional government operation emissions (2008)



In addition, this inventory identified approximately **2,111** MT CO_2e of other emissions from mission-critical activities that are outside of Metro Parks' direct control (Scope 3). Scope 3 emissions are primarily composed of embodied emissions from the supply chain of purchased materials and services at the parks, but also include the purchase of potable water from a number of water providers, solid waste disposal, employee commute, and business travel (see Figure 17 below). While Metro Parks may not have direct control over these additional emissions sources, it can influence them by reducing purchases or consumption of waste generating materials and business related travel, and by providing additional employee commute options. By calculating these Scope 3 emissions, Metro Parks is able to explore these areas for emissions reduction opportunities. It is important to note that Glendoveer Golf Course, and other smaller facilities, are not included in the scope of this analysis due to data collection limitations. In addition, a number of emission categories for Metro Parks are based on limited data (e.g. fleet fuel at Oxbow park is used as a proxy for fleet fuel use at Blue Lake).

Table 8: Parks supply chain emissions

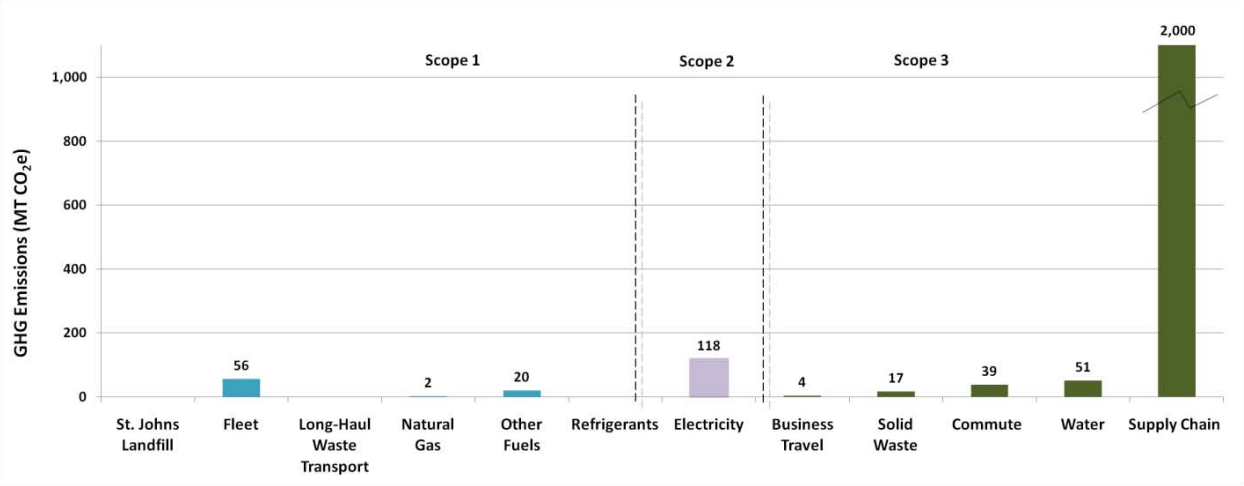
Metro Parks Supply Chain Emissions by Category (CY 2008)	$MTCO_2e$
Buildings (Construction and Maintenance)	1,400
Professional Services	275
Office Supplies	123
Vehicles/Equipment (Buy, rent, maintain)	93
Operating Supplies	74
Other	40
Food	—
Total	**2,005**

Supply chain emissions are the largest emissions source for Metro Parks (roughly 2,000 MT CO_2e) and is nearly sixteen times larger than the next largest emissions source – building electricity use (118 MT CO_2e). Metro Parks' supply chain emissions account for just under 3%

of Metro's total GHG emissions from all government operations. Table 8 provides details on Metro Parks' largest supply chain emissions categories.

The third largest emissions source for Metro Parks' is fleet fuel, which results from both the type of operations tasks associated with Parks maintenance as well as the location of the majority of Metro Parks. Most of the regional parks are located far from the urban core and require long distance vehicle trips (most regional parks are not served by public transit).

Figure 17: Metro Parks greenhouse gas emissions from regional government operations (2008)



Scopes 1 and 2 yield 196 MT CO_2e. For sense of scale, this is equivalent to:[23]

- Annual emissions from 37.5 passenger vehicles
- Annual emissions from the energy consumed by 17 homes (US average)

Scope 3 emissions yield 2,111 MT CO_2e. For sense of scale, this is equivalent to:

- Annual emissions from 404 passenger vehicles
- Annual emissions from the energy consumed by 180 homes (US average)

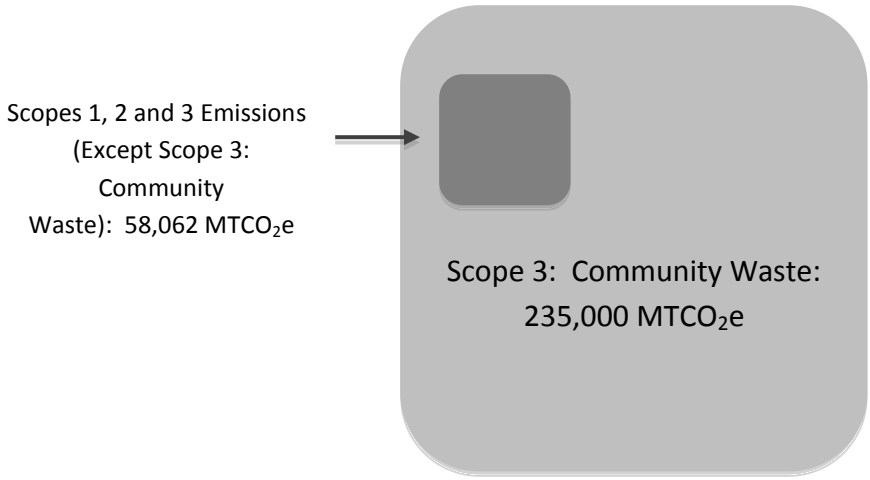
[23] Source: http://www.epa.gov/RDEE/energy-resources/calculator.html

Solid Waste

There are five separate areas of Metro's operations, or in some cases legislative responsibilities, covered in the solid waste inventory report. Those include the operation related emissions of both regional transfer stations and hazardous waste facilities; Metro Paint; St. Johns Landfill operations and methane management practices; and the direct purchase of the fuel used by the long-haul waste hauling fleet. It also includes the regional waste disposal contracts managed by Metro. Not all of the emissions from these sources fit neatly into the standard reporting protocol scopes. However, all of which fall along a spectrum of control along which Metro controls or influences an aspect of each of these emission sources. Therefore, Metro is responsible for taking ownership over a portion of the GHG emissions from each of the following sources, whether shared or fully owned.

The GHG emissions from Metro's solid waste operations include the operational activities at Metro's transfer stations (equipment, electricity use, etc.) as well as the emissions associated with final disposal of the waste, be it landfilled or incinerated. These solid waste emissions associated with final waste disposal are included in this inventory, and discussed in the Solid Waste supply chain analysis, because Metro pays for the operation of the transfer stations as well as for the disposal of the solid waste brought to those stations. With that said, these solid waste handling activities are conducted on behalf of Metro residents who generate the waste and as such the associated emissions are considered (for the purpose of this analysis) "community-owned". Figure 18 compares the scale of these "community-owned" solid waste emissions (community waste) to all other sources of emissions included in Metro's GHG inventory. The size of the two boxes is meant to visually show that emissions associated with the community waste are over 4 times that of *all* other emissions sources included in Metro's GHG inventory.

Figure 18: Comparison of "community-owned" solid waste emissions versus all other Metro emissions sources.



Like Figure 18, Figure 19 also compares the scale of various emissions sources included in Metro's GHG inventory, but in greater detail by breaking the emissions into scope categories. It compares the community waste emissions (Scope 3 – Community Waste) to the embodied emissions in Metro's purchased goods, food and services (Scope 3 – Metro Operations) to all other Metro 2008 emissions sources (Scopes 1, 2 and all other Scope 3 sources), aggregated by Scope category. As can be seen in Figure 19, the embodied emissions at 21,486 metric tons of carbon dioxide equivalent (MT CO_2e) are almost equal to all Scope 1 emissions (directly controlled emissions).

Figure 19: Metro agency-wide emissions from regional government operations (2008) by scope category including supply chain

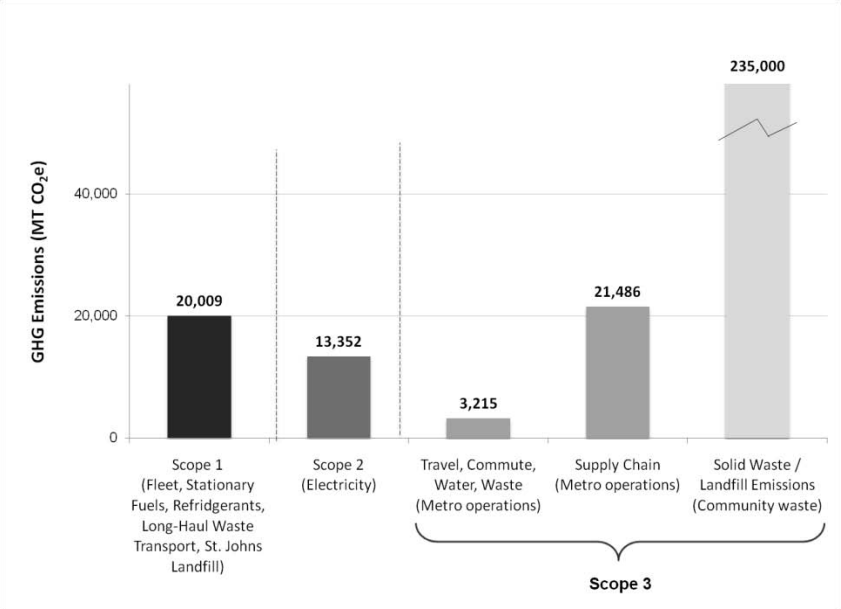
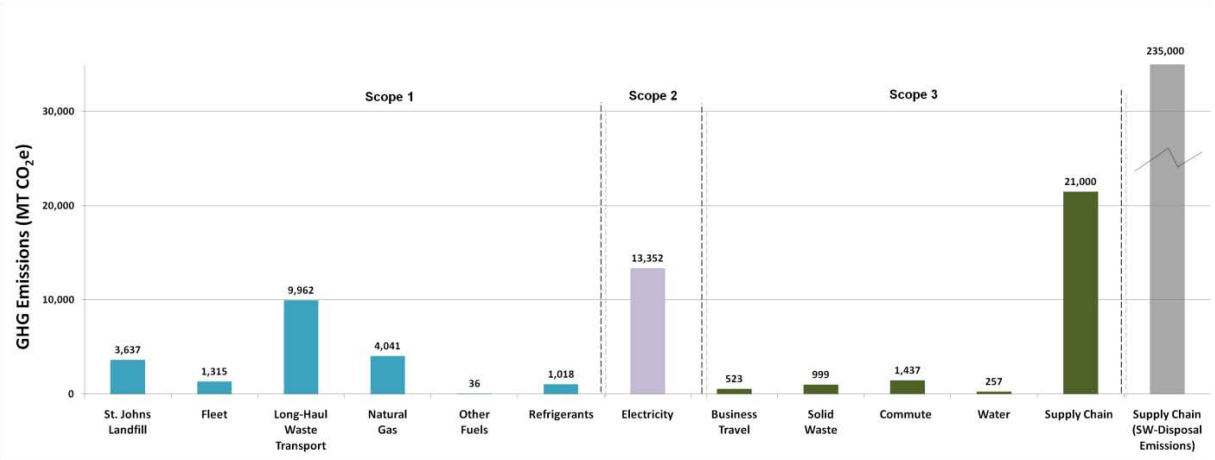


Figure 20 provides a comparison of all Metro Solid Waste Operations' emissions to the "community-owned" supply chain emissions that are held in contract by Metro.

Figure 20: Metro Solid Waste greenhouse gas emissions from regional government operations (2008) and community-owned solid waste emissions



These figures are included to provide the scale of emissions from the disposal of solid waste from Metro transfer stations, but are excluded from the general supply chain results analysis because these emissions are outside of the direct control of Metro and its vendors. Additional information on the "community-owned" solid waste GHG emissions may be found in Metro's Community GHG Inventory.[24] From this point forward these "community-owned" emissions are excluded from the general solid waste inventory results.

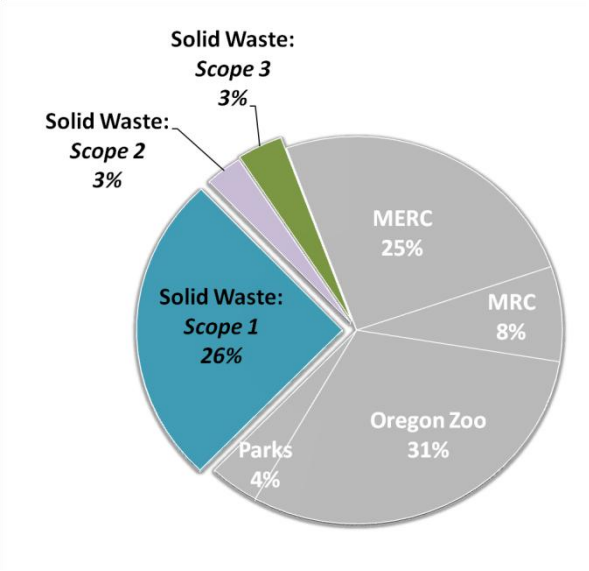
In 2008, the emissions from Metro's Solid Waste operations accounted for **18,380**metric tons of carbon equivalent (MT CO_2e) or **roughly 32% of Metro's total operational emissions**.

Scope 1 and 2 emissions:

6 MTCO_2e per building sq ft

83 MTCO_2e per employee

Figure 21: Solid waste operations greenhouse gas emissions as a share of regional government operation emissions (2008)



Metro Solid Waste emissions from owned vehicle fuel use (gasoline and diesel), the emissions from the regional long-haul fuel use (purchased directly by Metro), St. Johns Landfill emissions, natural gas consumption for building heat, and refrigerants for air conditioning accounted for **14,582** MT CO_2e, defined as Scope 1 emissions. Electricity consumption accounted for **1,703** MT CO_2e, defined as Scope 2 emissions. This electricity was used to light and power buildings owned by Metro. The total Scope 1 and 2 emissions for 2008 was approximately **16,285** MT CO_2e. These are the emissions that Metro Solid Waste operations have the most control over.

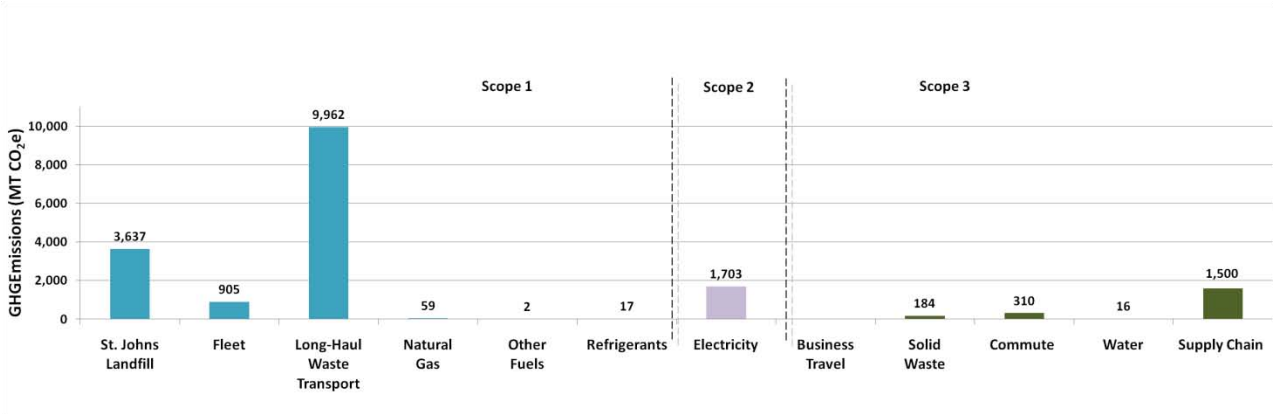
In addition, this inventory identified approximately **2,010** MT CO_2e of other emissions from mission-critical activities that are outside of Solid Waste Operation's direct control (Scope 3). Scope 3 emissions are primarily composed of embodied emissions from the supply chain of purchased materials and services at the various Solid Waste facilities, but also include the purchase of potable water from a number of water providers, solid waste disposal of waste generated by Metro employees, employee commute, and business travel (see Figure 22 below). While Metro Solid Waste Operations may not have direct control over these additional emissions sources, it can influence them by reducing purchases or consumption of waste generating materials and business related travel, and by providing additional employee commute options. By calculating these Scope 3 emissions, Metro is able to explore these areas for emissions reduction opportunities.

Long haul fleet fuel is the largest emissions source for Solid Waste Operations (9,962 MT CO_2e) and is nearly two times greater than the next largest emissions source – St. Johns

[24] Metro's Community GHG Inventory may be found online at http://www.oregonmetro.gov/index.cfm/go/by.web/id/32823.

Landfill Emissions (3,637 MT CO_2e). The long-haul waste transport emissions only capture the fuel used by Walsh Trucking for the transport of the region's solid waste to the Columbia Ridge Landfill. The emissions associated with hauling the numerous recycling and hazardous waste streams that result from operating Metro Central and South are accounted for in the supply chain emissions source. This distinction is the result of organizing GHG emissions into direct and indirect emission categories; Metro directly purchases the fuel used by Walsh Trucking and is therefore directly responsible for reporting the emissions that result from burning this fuel; Metro contracts out all aspects of the recycling and hazardous waste hauling services and is therefore only indirectly responsible for these emissions.

Figure 22: Metro solid waste greenhouse gas emissions from regional government operations (2008)



Scopes 1 and 2 yield 16,285 MT CO_2e. For sense of scale, this is equivalent to:[25]

- Annual emissions from 3,114 passenger vehicles
- Annual emissions from the energy consumed by 1,386 homes (US average)

Scope 3 emissions yield 2,010 MT CO_2e. For sense of scale, this is equivalent to:

- Annual emissions from 384 passenger vehicles
- Annual emissions from the energy consumed by 171 homes (US average)

The St. Johns landfill emissions (2008) *only* represent landfill gas (LFG) emissions, not operational emissions from the St. Johns landfill. (For more information see the St. Johns Landfill Methods section.) The emissions reported for St. Johns Landfill (3,637 MT CO2e) are exclusively attributable to landfill gas (LFG) flow.[26] **Only 49% of the landfill gas managed on-site is reported as Scope 1 and considered anthropogenic.** The other 51% is considered biogenic CO_2 and comes from two landfill sources. The first is generated by converting methane to CO_2 by combusting the landfill gas and the second is "pass-through" CO_2. "Pass-through" CO_2 is the portion of the landfill gas that is directly emitted from the landfill as CO_2. St. Johns landfill gas is approximately 30% CO_2 and 50%

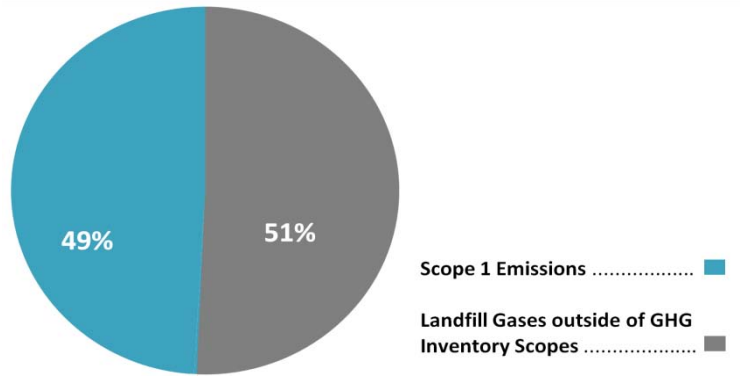
[25] Source: http://www.epa.gov/RDEE/energy-resources/calculator.html

[26] The CO_2 emission factor in table G-2 of the LGO was used to determine the amount of biogenic CO_2e emitted from onsite consumption of landfill gas. Equation 9.1 of the Local Government Operations Protocol (LGO) was used to determine the amount of CO_2 equivalence emitted from the landfill. Available at: http://www.theclimateregistry.org/resources/protocols/local-government-operations-protocol/

methane (CH_4). It is important to note that 75% of landfill gas collected in 2008 from St. Johns was sent off site to Ash Grove Cement and therefore not included in emissions calculations for St. Johns.

Figure 23 demonstrates the relative scale of these anthropogenic Scope 1 emissions compared to the biogenic emissions, which are excluded from the LGO Protocol reporting requirements. The LGO states that these "pass through" CO_2 emissions, along with other biogenic CO_2 emissions from combustion, should not be reported.[27] While Metro would not be required to report these biogenic emissions from on-site methane management as part of a voluntary reporting program, they are presented here to more accurately demonstrate the climate impacts of operating a landfill and of materials management in general.

Figure 23: Comparison of St Johns Landfill Scope 1 emissions to all St. Johns landfill gas processed on-site (2008)



If Metro did not manage the direct release of landfill gasses from St. Johns Landfill, either through flaring or through the contract with Ash Grove Cement, the total Scope 1 emissions for the St. Johns Landfill would increase significantly. Using 2008 emissions values it is possible to calculate two alternative Scope 1 emissions scenarios without these management practices (for demonstration purposes only). First, if no landfill gas had been sent to Ash Grove Cement in 2008 but was processed on-site using the flare, the St. Johns Landfill emissions would have totaled 19,315 MT CO_2e; this would have almost equaled Metro's largest emissions source for 2008 (Supply Chain: 21,000 MT CO_2e). Similarly, if none of the LFG had been sent to Ash Grove Cement or flared on-site the emissions would have increased to 76,823 MTCO_2e; this would have more than doubled the agency-wide 2008 emissions total.

It is important to recognize that while methane management practices are critical to mitigating the large climate impact of landfills, the current accounting protocols do not capture the entirety of these impacts. This accounting methodology continues to underestimate the beneficial impact that materials consumption and waste reduction programs can have in addressing climate change.

[27] Box 8.1 of the LGO

The third largest emissions source for the Solid Waste functional area is from building electricity (approximately 15% of the total Solid Waste emissions). Supply chain emissions are the fourth largest emissions source for Solid Waste functional area (roughly 1,500 MT CO_2e) – this is the only functional area within Metro where operational supply chain emissions are not the largest emissions source; Table 9 provides details on Metro Solid Waste Operation's largest supply chain emissions categories.

Table 9: Solid waste supply chain emissions

Solid Waste Supply Chain Emissions by Category (CY 2008)	$MTCO_2e$
Operating Supplies	590
Professional Services	346
Vehicles/Equipment (Buy, rent, maintain)	337
Buildings (Construction and Maintenance)	247
Office Supplies	53
Other	12
Food	-
Total	**1,585**

Embodied Emissions in Purchased Goods and Services

The following section provides an analysis of the embodied emission in the purchased goods and services for all Metro functional areas and two additional summaries for both Metro and MERC facilities.

The Economic Input Output Life –Cycle Assessment (EIO-LCA) analysis estimates the upstream GHG emissions generated by raw material extraction, production and transportation of goods and services, and associated waste disposal, up to the point of retail. The responsibility for embodied emissions in purchases is not equal to the responsibility for emissions produced directly by Metro operations and owned equipment (such as the combustion of fossil fuels). The embodied emissions are clearly shared, as the responsibility for the activities is in the hands of both vendors (who control the production processes directly) and Metro (who purchases and relies on these goods and services).

Agency Wide Embodied Emissions in Purchased Goods and Services

Figure 24 presents the total embodied emissions from seven aggregated purchasing categories for all Metro functional areas. The first six categories listed below are large discrete categories (food, buildings construction, professional services, office supplies, vehicles / equipment and operating supplies) of individual expense accounts grouped by like items, while the last is a catchall category for items that do not fit into any of the first six categories.

Food: Includes food purchased for resale as well as animal feed (Oregon Zoo).

Buildings Construction: Includes the labor and materials in building construction, renovation and maintenance services.

Professional Services: Includes various professional services such as accounting, advertising, legal, management consulting, employment, educational, architecture and engineering, real estate, insurance, etc.

Office Supplies: Includes paper and printing, all other supplies commonly found in office settings as well as information technology hardware, software and services.

Vehicles / Equipment: This category includes the purchase, rental and maintenance of vehicles and equipment.

Operating Supplies: This category includes general operating supplies as well as postage and delivery.

Other Goods and Services: Includes "all other" goods and services that were not included in the first six categories and were not large enough to be grouped into a separate category. This category includes widely disparate economic sectors that include: art, exhibits, permitting services, meetings, animal care, parking operations, grants, staff development and education as well as other things.

Figure 24: Metro agency wide supply chain emissions (21,000 MT CO_2e), by purchasing category (2008)

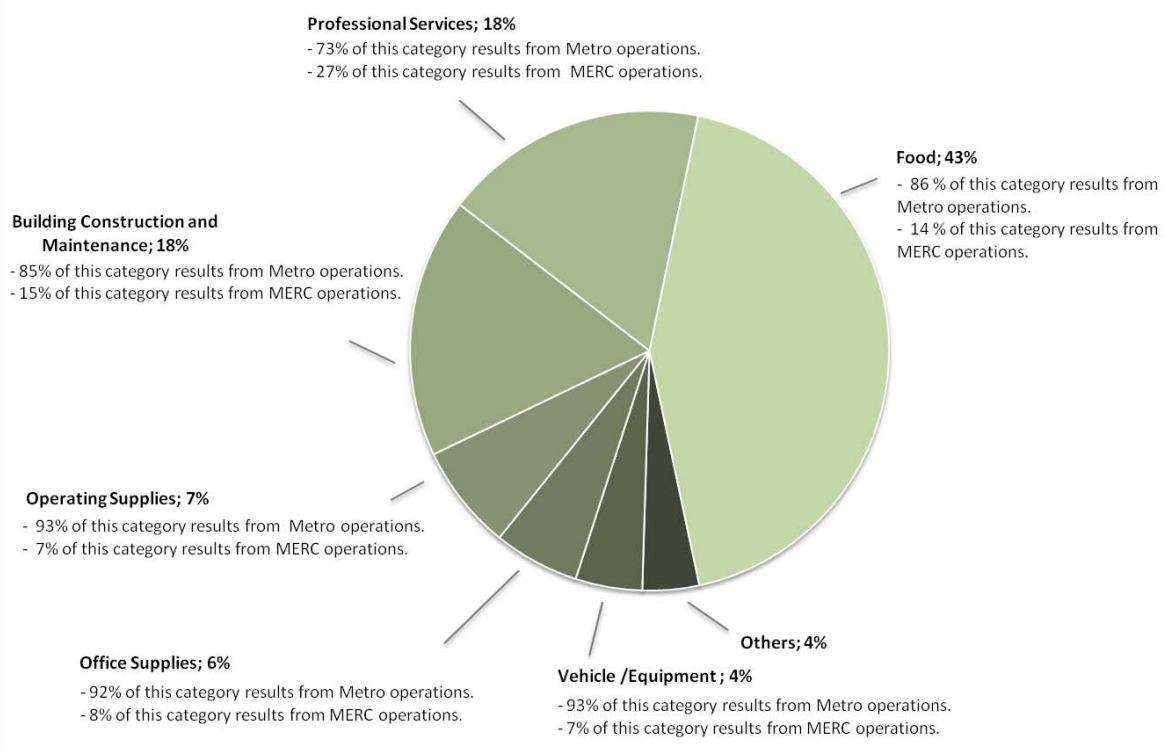


Figure 25 presents the results of the supply chain analysis in greater detail. The table shows CY2008 expenditures and emissions by Metro department and purchasing category.

Figure 25: Embodied emissions in purchased goods and services, comparison of MERC and Metro facilities (CY 2008)

Functional Area	Calendar Year 2008 Expenses (included in analysis)*	Food	Buildings (Construct and Maintain)	Professional Services	Operating Supplies	Office Supplies	Vehicles / Equipment (Buy, Rent, Maintain)	Others	Total Emissions
	Dollars ($)	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e
MERC	15,864,482	1,270	571	1,024	107	96	68	216	**3,351**
Metro	34,268,487	8,055	3,201	2,806	1,421	1,148	899	606	**18,135**
Total	**50,132,969**	**9,325**	**3,772**	**3,830**	**1,528**	**1,243**	**967**	**821**	**21,486**
Percent		**43%**	**18%**	**18%**	**7%**	**6%**	**4%**	**4%**	**100%**

Metro: Embodied Emissions in Purchased Goods and Services

The following is an analysis of all Metro functional areas (MRC, Oregon Zoo, Parks and Solid Waste); MERC data is analyzed separately in the following section. Due to the organizational separation of Metro and MERC accounting offices, expenditure data for calendar year 2008 was collected separately. Given the size and complexity of these data sets the supply chain analysis was conducted separately for Metro and MERC facilities. However, the same emission categories and factors were used for both data sets.

Figure 26 shows that food-related embodied emissions are the largest aggregated category, contributing 44% of Metro's embodied emissions (excluding the previously mentioned "community-owned" solid waste emissions). All of this category is attributed to the Zoo and is the result of the large quantities of food purchased to feed its many visitors.

This category is 100% attributable to the Zoo and includes food purchased for resale as well as animal feed.[28]

It's important to note that the production of food items is relatively carbon intensive (compared to other categories) due to the energy intensive nature of agriculture and specifically the production of fertilizers. Ninety percent of the food related emissions come from food purchased for retail at the Zoo and operations contracts for food services while the majority of the remaining ten percent is the result of animal food production.

The next largest category is buildings construction (and maintenance) at 18% of total supply chain emissions, which is typical for organizations with large building portfolios, such as higher education institutions or municipal governments.

The next largest category is professional services at 16%, which is not surprising considering that Metro spent over $12 million on a variety of professional services including: engineering, legal, real estate agents, environmental consultants, etc.

The rest of the purchasing categories each contribute less than 10% of Metro's total supply chain emissions and include: operating supplies (8%), office supplies (6%), vehicles and equipment (5%) and finally the other goods and services category (3%).

[28] Meeting expenses for MRC are grouped in the Other Goods and Services category. These expenses likely include food, but the data did not provide clear differentiation between food and other meeting related expenses.

Figure 26: Metro functional groups supply chain emissions (18,000 MT CO_2e), by purchasing category (CY 2008)[29]

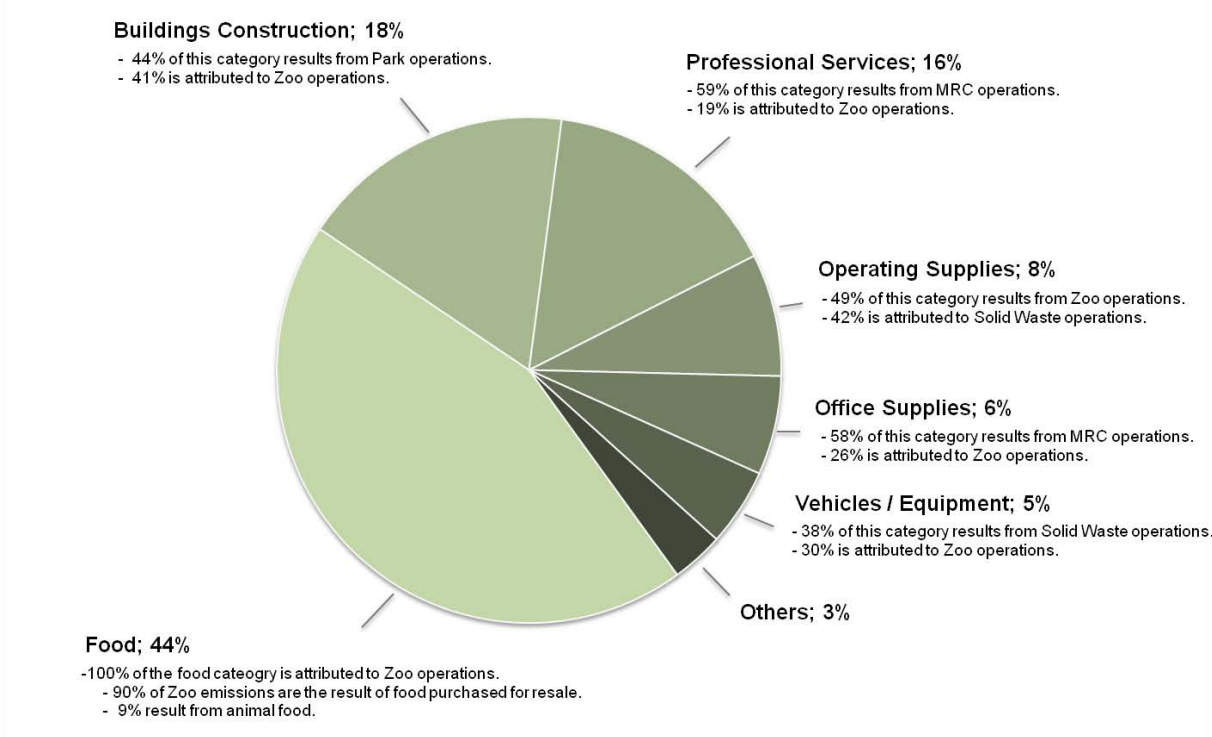


Figure 27 presents the results of the supply chain analysis in greater detail. The table shows CY2008 expenditures and emissions by Metro functional area and purchasing category.

Figure 27: Embodied emissions in purchased goods and services, by functional area and purchasing category (CY 2008)

Functional Area	Calendar Year 2008 Expenses (included in analysis)*	Food	Buildings (Construct and Maintain)	Professional Services	Operating Supplies	Office Supplies	Vehicles / Equipment (Buy, Rent, Maintain)	Others	Total Emissions
	Dollars ($)	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e
MRC	11,589,695	0	247	1,648	65	670	201	273	**3,103**
Zoo	12,923,895	8,055	1,307	537	692	301	269	280	**11,442**
Parks	5,355,303	0	1,400	275	74	123	93	40	**2,005**
Solid Waste	4,399,595	0	247	346	590	53	337	12	**1,585**
Totals	**34,268,487**	**8,055**	**3,201**	**2,806**	**1,421**	**1,147**	**899**	**605**	**18,134**
Percent		**44%**	**18%**	**15%**	**8%**	**6%**	**5%**	**3%**	**100%**

[29] Figure 26 does not included solid waste contracts for waste disposal at Arlington Landfill or the operation of the transfer stations. See figures 19 and 20 in the solid waste functional area section for a presentation of the emissions associated with these contracts.

MERC: Embodied Emissions in Purchased Goods and Services

Figure 28 provides similar results for the MERC supply chain analysis results food-related embodied emissions are the largest aggregated category, contributing 38% of MERC's embodied emissions. All of emissions this category is the result of the large quantities of food purchased through Aramark to feed the many visitors at MERC facilities.

The next largest category is professional services at 31%, and is the result of over $4.8 million spent on a variety of professional services including: marketing, advertising, management consulting, engineering, etc.

The next largest category is buildings construction (and maintenance) at 17% of total supply chain emissions, which is typical for organizations with large building portfolios, such as higher education institutions or municipal governments. A large portion of this category went to maintaining and repairing stage facilities and equipment.

The rest of the purchasing categories each contribute less than 10% of MERC's total supply chain emissions and include: the other goods and services category (6%), operating supplies (3%), office supplies (3%), and finally vehicles and equipment (2%). It is not surprising the smallest supply chain emissions category is associated with maintaining MERC's fleet given the small number of vehicles at each of the facilities.

Figure 28: MERC functional groups supply chain emissions (3,000 MT CO_2e), by purchasing category (CY 2008)

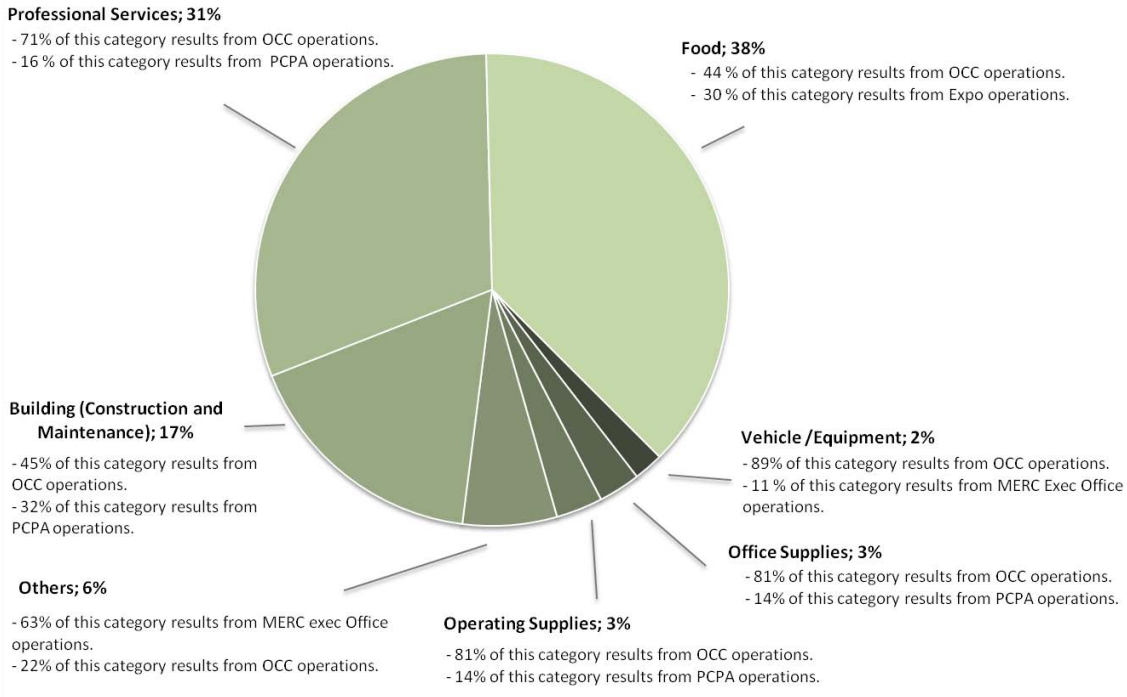


Figure 29 presents the results of the supply chain analysis in greater detail. The table shows CY2008 expenditures and emissions by MERC facility and purchasing category.

Figure 29: Embodied emissions in purchased goods and services, by institution and purchasing category.

Functional Area	Calendar Year 2008 Expenses (included in analysis)*	Food	Buildings (Construct and Maintain)	Professional Services	Operating Supplies	Office Supplies	Vehicles / Equipment (Buy, Rent, Maintain)	Others	Total Emissions
	dollars ($)	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e
EXPO	2,913,848	376	125	99	3	3	0	10	**615**
OCC	8,330,094	555	260	731	87	19	61	47	**1,759**
PCPA	3,521,752	335	180	165	15	23	1	24	**744**
MERC Executive Office	1,098,788	3	6	29	2	51	6	135	**232**
Totals	**15,864,482**	**1,270**	**571**	**1,024**	**107**	**96**	**68**	**216**	**3,351**
Percent		**38%**	**17%**	**31%**	**3%**	**3%**	**2%**	**6%**	**100%**

COST OF CARBON

Assembling a GHG inventory is an opportunity to analyze a particular kind of financial risk, i.e., the implications of a "cost of carbon" – a direct or indirect cost associated with GHG emissions, as a result of policy. Many analyses of proposed legislation have indicated a likely range of this cost, and we can see examples in countries that have already capped CO_2 emissions.

Recent EPA analysis of proposed climate policy suggests that, within a few years of implementing a cap-and-trade system, the cost of carbon could be around $15 per MT CO_2e.[30] One proposed "reserve price" (or price floor) is $10, while short-term "escape hatch" prices (or price ceilings) have been around $30. This range provides a sense of Metro's total direct and indirect financial exposure related to a cost of carbon.

This total financial risk is unlikely to be borne entirely by Metro. Indeed, just as various parts of the emissions sources identified in this inventory are shared with others – from employees who commute to vendors that supply the organization with goods and services – the cost-of-carbon risk will likely be shared. This rough calculation is an approximation of the financial risk that could emerge under likely climate policy scenarios.

Regardless of the carbon market policy scenarios that will likely play out over the coming years, it makes sense for Metro to reduce its vulnerability for future costs by reducing emissions from operations sooner rather than later.

[30] EPA Analysis of the American Clean Energy and Security Act of 2009 H.R. 2454 in the 111th Congress (presentation given on 6/23/09) http://www.epa.gov/climatechange/economics/pdfs/HR2454_Analysis.pdf

SUSTAINABILITY EFFORTS AND CLIMATE ACTION AT METRO

Sustainability Plan

This inventory has provided a clear understanding of greenhouse gas emission sources from Metro's operations and informed creation of the Metro Sustainability Plan. Three guiding principles frame Metro's work in the area of reduction greenhouse gas emissions from operations: to reduce energy demand, address emissions from all three scopes, and use most current climate science to guide actions.

Guiding Principles for Greenhouse Gas Emission Reduction at Metro

- **Reduce Energy Demand First**. Metro should work to increase energy efficiency of its facilities to the fullest extent feasible as a top priority for reducing GHG emissions. Purchase and/or on-site generation of renewable energy should be a second priority. Procurement of carbon offsets should not be considered until these avenues have been fully pursued, and then only if the offsets meet certain criteria.
- **Address Emissions from all Three Scopes.** Metro should be comprehensive and address all of Metro's greenhouse gas emission sources: energy, transport, and materials. In other words, address all Scope I, II and III emissions.
- **Use Most Current Climate Science to Guide Actions.** The findings from the IPCC (Intergovernmental Panel on Climate Change) outline what is needed in terms of the scale of emission reductions needed to avoid catastrophic climate change (change beyond the point that we can't adapt).

With these principles in mind, a planning team representing all of Metro's different operation types convened to select strategies and actions aimed at reducing GHG emissions from Metro's operations over time and work toward the goal of an 80 percent reduction in GHG emissions below 2008 levels (as defined by this inventory report) by 2050. Due to the unique services that Metro provides and the facility types in Metro's portfolio, this is a significant challenge. Despite these challenges, there are great opportunities for increasing efficiency and use of resources, reduction in operational costs over time, and providing for multiple benefits to the Metro region's community through green jobs and local product sourcing of low-climate-impact materials and services called for in the Sustainability Plan.

Next Steps

With the adoption of Metro's Sustainability Plan, an implementation process will begin, including creation of an ongoing tracking system for the roughly 50 unique data sets required to track GHG emissions from Metro operations. Metro anticipates that this inventory will be updated on a regular basis, but no more than every three years due to the resource and time-intensive nature of the analysis.

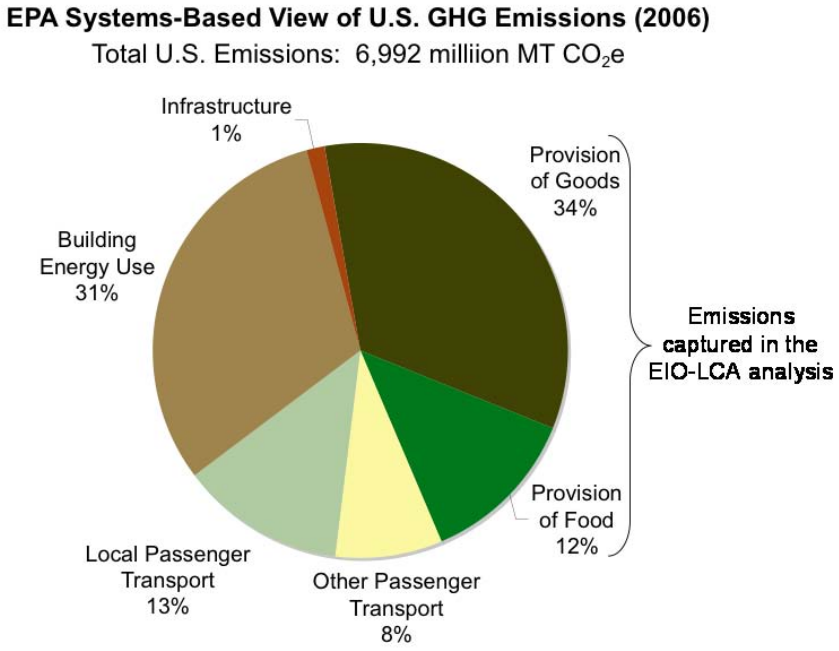
APPENDIX A: EIO-LCA ANALYSIS: MOTIVATION AND METHODS

Context and motivation

The emissions generated by the manufacture and distribution of goods, food and services are a large share of total emissions for the U.S. economy and for other economies, and the summary results above reflect this fact. This result will surprise some readers because common practice for GHG inventories has typically excluded these difficult-to-quantify emissions sources that lie beyond the day-to-day operations and direct control of entities that purchase these goods, food and services.

A recent EPA analysis provides the motivation for including the supply chain in GHG inventories. The accompanying graph (Figure 30) provides the core insight: the production of good and food together make up nearly half of all US GHG emissions.

Figure 30: Overview of U.S. GHG emissions in 2006[31]



This insight, however, poses a challenge. How does a purchaser – whether an individual, business, government agency or higher education institution – address this complex portion of the carbon footprint? Indeed, the analysis herein provides little guidance for action because of the complexity of this segment of Metro's carbon footprint.

[31] U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response (2008 draft). Opportunities to reduce greenhouse gas emissions through materials and land management practices, unpublished analysis.

The scale of these emissions requires that a thorough GHG inventory and climate action plan include supply chain specific mitigation strategies, despite the limited precision in current quantification models. Given that governments are part of the economy-wide systems that emit greenhouse gases, it is imperative that public agencies begin to assign a sense of scale to these emissions.

Description of Method

The analysis method used for this analysis follows the EIO-LCA method described in UC Berkeley's *Climate Action Partnership Feasibility Study 2006-2007 Final Report*, but refines UC Berkley's method by correcting for inflation.

The approach used for this estimate is Carnegie Mellon University – Green Design Institute's *Economic Input-Output Life Cycle Assessment* (EIO-LCA), U.S. 2002 Industry Benchmark model. Researchers at the Green Design Institute have developed this free online tool (available online at www.eiolca.net) to estimate life-cycle greenhouse gas emissions of economic activity in each of 428 sectors of the U.S. economy.

The model is valuable for simple, cost-effective emissions *estimates*. The strength of the model is its ability to provide comprehensive estimates by using aggregate values for all goods and services in the 428 sectors. Its weakness is that it cannot provide a detailed estimate for specific processes. In order to accurately estimate embodied emissions for a specific purchase, that product's specific supply chain must be assessed. This alternative is typically extremely time-consuming and often relies on data from many private sources.

The model has several significant sources of uncertainty. The first is that it is based on United States industry averages. These averages do not include the influence of major U.S. trading partners such as China on emissions factors, nor does the model have the ability to account for specific sourcing practices such as a higher than average percentage of post-consumer recycled content in paper products. Second, the model relies on a relatively old data set from 2002, which will not capture recent efficiency improvements or best practices that result in lower emissions for specific industrial sectors. This data set also requires adjustments to be made to account for inflation (see below). Finally, organizational accounting codes don't always directly map to the economic sectors included in the model.

In broad terms, the EIO-LCA method consists of utilizing the following equation to estimate total CO_2e emissions for various areas of expenditure:

$$\frac{\quad}{\quad}$$

In other words, the estimate stems from multiplying the carbon intensity of a given economic sector per dollar of output (the first term in the equation) by the quantity of purchases (the second term in

the equation). This product is summed across purchasing categories, which differ in both carbon intensity and total dollars spent.

It is noted that the EIO-LCA model asks for the production cost of each item, but the retail price (price paid for any given item) is what is readily available and was used in the 2008 Inventory. It is also noted that this calculator is last updated in 2002 and means that some simple refinements need to be made in the method. The initial calculations suffer from the distortions of price level, as described above. While this is rarely a problem over a short period (a year or two), the decade between the EIO-LCA database's creation and this inventory's calculations created an issue. We therefore attempt to correct for this change in price level.

Price-level refinements to EIO-LCA model

The initial calculations suffered from the distortions of price level, as described above. While this is rarely a problem over a short period (a year or two), the decade between the EIO-LCA database's creation and this inventory's calculations created an issue. We therefore attempted to correct for this change in price level.

Specifically, two corrections were made. First, for the large bulk of purchases (excluding those related to construction), we adjusted the calculations by the Consumer Price Index[32], the standard and official measure of retail inflation for the US economy. Second, we adjusted all construction expenditures (one of the largest areas of procurement) by a construction price index (Turner Building Cost Index[33]) that, while not official government data, is well known and has decades of history.

The results of these corrections made a significant difference, lowering the general (non-construction) procurement footprint estimate by more than 10% and lowering the construction-related procurement footprint by ~30%. Because of the central role of prices for purchased goods in using the EIO-LCA methodology, these corrections are likely to bring the overall estimate much closer to the truth.

[32] More information on the Consumer Price Index may be found on the Bureau of Labor Statistics website, available at: http://www.bls.gov/CPI/.

[33] More information on the Turner Building Cost Index may be found on the Turner Building Cost Index website, available at: http://www.turnerconstruction.com/corporate/content.asp?d=20.

Agenda Item Number 3.0

RECOMMENDATIONS TO MINORITIES, WOMEN AND EMERGING SMALL BUSINESSES (MWESB) PROGRAM

Metro Council Work Session
Tuesday, Sept. 7, 2010
Metro Council Chambers

METRO COUNCIL

Work Session Worksheet

Presentation Date: Sept. 7, 2010 Time: 2:00 PM Length: 20 minutes

Presentation Title: Recommendations to MWESB Program

Service, Office, or Center:
Finance & Regulatory Services, Procurement Services

Presenters (include phone number/extension and alternative contact information):
Darin Matthews, Procurement Officer, 797-1626;
Angela Watkins, MWESB Coordinator, 797-1816

ISSUE & BACKGROUND

At the direction of the COO and Metro Council, a committee of senior managers was established to recommend program improvements to the agency's MWESB program.

MWESB utilization in 2008 and 2009 was 6% of available dollars.

Metro Council strengthened the MWESB program earlier in 2010, including the increase of the sheltered market from $25,000 to $50,000 for construction related projects.

Recommendations have been presented to Senior Leadership Team and were supported. Input was also received from the small business community and area union leaders.

OPTIONS AVAILABLE

Accept, modify, or add to the suggested program improvements.

IMPLICATIONS AND SUGGESTIONS

Program improvements can be implemented within current Metro Code and policies, providing a "jump start" to the program. By providing additional contracting opportunities for MWESB firms, it is the hope of FRS that agency utilization can be increased to the level of other area governments.

QUESTION(S) PRESENTED FOR CONSIDERATION

Are the recommendations practical?

Do any of the recommendations need to be modified or added to?

Is the Council supportive of the implementation of the recommendations?

LEGISLATION WOULD BE REQUIRED FOR COUNCIL ACTION __Yes _X_No
DRAFT IS ATTACHED ___Yes _X__No

Minority, Women and Emerging Small Businesses (MWESB) Contracting Program Recommendations

Include an MWESB goal in all formal agency bids.

Metro should follow the practice employed by other area agencies (Portland Development Commission, City of Portland, TriMet, etc.) and include a numeric goal for MWESB subcontractor participation in all formal bids. Currently the agency requires a documented "good faith effort" of all prime bidders, but does not establish a firm target. We believe that a goal of 15 percent of contract dollars being awarded to MWESB firms is realistic. This approach has recently been used on a lighting project for the Oregon Convention Center, and will also be used on the Veterinary Medical Center project at the Oregon Zoo. This recommendation includes formal bids as well as request for proposals (RFP).

Increase reporting requirements for prime contractors.

Our current rules require prime contractors to identify which subcontractors (including MWESBs) they intend to use. Metro should require additional reporting during contract performance to assure that the MWESB subs actually receive the amount of work promised. Reporting could also serve to identify additional opportunities for replacement subcontractors, should the need arise during the course of the project.

Package construction projects to fit within our sheltered market program.

We believe that small construction projects can be planned better so that they fall within our sheltered market program (up to $50,000). Departments should consider this in their annual contracts planning and even consider pulling out pieces of larger contracts to make them more attractive for small business. Local minority business representatives cite this continually as a key approach to providing opportunity to MWESBs.

Include diversity as an evaluation criteria in all agency RFP's.

Metro has used the criteria of Diversity in Employment and Contracting in its selection of major RFPs for services. Recent examples include the transfer station operation, zoo master planning and food distribution. However, we feel that this should become standard criteria for all agency RFPs, even when a specific service area does not have strong MWESB capacity. It still sends the right message for Metro and promotes diversity in the workplace.

Increase the MWESB training program throughout the agency.

Training on our MWESB program is currently provided once a year, and this needs to be increased. The committee suggests that MWESB program training be offered at least twice a year and that all program, project and procurement staff throughout the agency be required to attend. As has been done in the past, the Office of Metro Attorney will participate with Procurement Services in hosting these classes.

Better coordinate MWESB and FOTA programs.

The MWESB and First Opportunity Target Area (FOTA) programs historically have operated independently. These programs should be coordinated more closely, and bids and RFPs issued by the MERC venues should include appropriate language for both programs. Additionally, the annual reporting to the Metro Council should include utilization data for MWESB and FOTA.

Expand agency outreach to other minority business groups.

Metro is highly involved with some minority business associations and has had minimal involvement with others. For example, the agency has been active with the Oregon Association of Minority Entrepreneurs (OAME) and the National Association of Minority Contractors of Oregon (NAMCO), but has not given other organizations adequate time and resources. We feel Metro could benefit by becoming more involved in the Asian, Native American and Hispanic business communities. This includes attendance, participation and sponsorship (when practical) of their minority business events, and communication with each group on current contracting opportunities.

Provide a forum for agency project managers to network with MWESB's.

In order to do a better job of reaching out to local MWESBs, Metro should host a minimum of two "meet and greet" events each year. This will provide certified firms the opportunity to network with agency project and program managers, learn more about how Metro does business and become more aware of future contracting opportunities. Metro procurement staff has attended minority business forums consistently (OAME, NAMCO, etc.), but the committee believes that the added presence of project managers at these events would be beneficial.

Actively engage Metro legal counsel in order to maximize MWESB activity.

In order for Metro to promote the use of MWESB firms, and stay in full compliance with state and local laws, it is imperative that the Office of Metro Attorney (OMA) be involved. It is recommended that OMA collaborate with the legal counsels of other public agencies to determine what MWESB practices are legally permissible and enforceable. This will allow Metro management to determine the most appropriate level of risk for the agency in strengthening the MWESB program.

Create an electronic notification system for MWESB's.

The committee believes that an electronic notification system should be developed that provides automated notice to MWESBs on upcoming bids and RFPs. Other area agencies (TriMet, City of Portland, Port of Portland) are currently utilizing such systems with success. Procurement Services should work with Information Services to develop and implement an online registration and notification system.

Include employee compensation in the selection of contractors.

Metro has used employee wages and benefits as a factor in evaluating responses to select RFPs (i.e. waste transfer stations operation), and the committee feels that this criteria should be included in all RFP solicitations. This method allows for best value selection, in that both cost and non-cost factors are used in determining the top ranked contractor. This provides local employment opportunities that include competitive wages and benefits, and also rewards responsible contractors who have established high labor standards.

MWESB Program Recommendations

Presented to

Metro Council

September 2010

Background

- Recent scrutiny of Metro contracting process from small business community
- Low MWESB utilization in 2008, 2009
- Priority of Metro Council and COO
- Senior management team appointed to review current program, make recommendations

Set Goals in Formal Contracts

- Aspirational goal of 15% for MWESB subcontracts
- For all contracts over $100,000
- Included in OCC Lighting Project and Veterinary Medical Center
- Requires reporting from prime contractor

Include Diversity in All RFP Selections

- Evaluate diversity of proposers in:
  - Past performance with using MWESB subs/suppliers
  - Proposed MWESB use for Metro
  - Efforts on maintaining a diverse workforce
- Used currently on certain projects, not all
- Sends the right message

Package Projects for Sheltered Market

- Construction projects up to $50,000
- Bid among qualified MWESB contractors
- An issue continually raised by small business groups
- Part of project delivery strategy

Improve Training Program

- MWESB program training offered at least twice a year
- Program, project and procurement staff required to attend
- Partner with OMA for classes

Increase Outreach to Minority Business Community

- Well engaged with OAME and NAMCO
- Participate with Hispanic Chamber
- Expand to Asian and Native American business communities

Host Meet & Greet Events

- Provide environment for small contractors to interact with Metro project managers
- Host informal event twice a year
- In addition to attending local meetings and pre-bids (OAME, NAMCO, etc.)

Coordinate MWESB and FOTA Programs

- Clearly define programs
- Include both when appropriate
- Include both programs in annual report to Metro Council

Create Electronic Notification System

- Currently done manually
- Registration and notification system could benefit MWESB and non-MWESB bidders
- Coordinate effort with IS

Actively Engage OMA

- Collaborate with legal counsel to ensure agency stays on sound legal ground
- Review other public agency MWESB practices and policies
- Participate in regional forum

Include Employee Compensation in RFP's

- Employee wages/benefits used in select, high-profile procurements
- Include in all formal RFP's as part of selection criteria
- Allows for best value selection

Agenda Item Number 4.0

VISITOR VENUES UPDATE

Metro Council Work Session
Tuesday, Sept. 7, 2010
Metro Council Chambers

METRO COUNCIL

Work Session Worksheet

Presentation Date: September 7, 2010 Time: _____ Length: _____

Presentation Title: Visitor Venues Update

Service, Office, or Center: Visitor Venues

Presenters (include phone number/extension and alternative contact information):

Teri Dresler, General Manager of Visitor Venues, 503-731-7837 or 503-860-3478 (cell)
Jeff Blosser, Oregon Convention Center, 503-235-7583 or 503-572-7721 (cell)
Stephanie Soden, Visitor Venues, 503-731-7847 or 971-227-1195 (cell)

ISSUE & BACKGROUND

Visitor Venues General Manager Teri Dresler is briefing the Council on the following three projects currently underway at the venues. The purpose is to inform the Council, answer questions and accept feedback for consideration and implementation as each project proceeds.

1. MERC brand identity transition
2. Oregon Convention Center outdoor plaza
3. Metro Cafe

1. MERC brand identity transition:

As a result of the Metro-MERC Business Practices Study and amendments to Metro Code Title VI, which prompted changes in reporting relationships and the organizational structure of MERC's administrative arm, recommendations to integrate the MERC brand with Metro were developed, including:

- Referring to only the 7-member Metropolitan Exposition Recreation Commission as MERC and all administrative employees as Metro;
- Retiring the MERC logo and utilizing the Metro logo and brand for the Commission and former MERC employees;
- Closing the MERC website (www.mercvenues.org) and shifting information to the Metro website (www.oregonmetro.gov); and
- Assigning Metro email addresses to former MERC employees.

The recommendations did not include the individual venue brands and logos and it is recommended that the venues maintain their established and recognized identities.

Sample mock-ups of new website pages and Commission and employee business cards and business materials are attached and will be distributed in full color.

These recommendations were accepted by the Commission in June and are expected to be fully implemented in September.

2. Oregon Convention Center outdoor plaza

The Oregon Convention Center (OCC) is finalizing a lease agreement with the Portland Development Commission (PDC) to develop an open-air event and exhibition plaza in the block containing the former Sizzler restaurant. This block is directly across the street from OCC's main entrance and it will serve as space for OCC customers and Lloyd District neighbors to enjoy special events and receptions in an urban outdoor setting.

The plan to clean up OCC's "front door" compliments feedback OCC and Travel Portland received in client focus groups held in an effort to learn what other strategies could be pursued, besides building a convention center headquarters hotel, to maintain the city's competitive position among the national convention and meeting market. A mix of patio space, grass and landscaping will allow for a combination of uses and, while no permanent structures will exist, tents and power will be available as necessary. The plaza is intended to generate revenue from booked events and also serve as a community gathering place. Response from OCC stakeholders and neighborhood groups has been overwhelmingly positive and the plaza concept supports the intent of the OCC Blocks Vision Plan.

PDC has scheduled deconstruction to begin the week of September 7; the bulk of the former building's materials will be reused and reclaimed. Internal asbestos abatement was completed over the summer. Upon approval of the lease agreement by the Commission at its October meeting, construction will begin and is anticipated to be completed by early spring 2011.

An architect's rendering is attached and will be distributed.

3. Metro Café

The Oregon Convention Center (OCC) and its exclusive food and beverage contractor, ARAMARK/Giacometti Partners, Ltd., are developing a community outreach program for economically disadvantaged individuals to learn the entrepreneurial aspects of managing a food service business through a two- year, hands-on training program.

The Metro Café is in the design concept stage and is planned as a gourmet delicatessen housed in the annex space at the Metro Regional Center (MRC) which currently serves as the employee breakroom. The space formerly housed Big Town Hero deli.

The full-service training program will target target residents within the First Opportunity Target Area (FOTA) and will include all facets of the MERC venue food and beverage opration and Metro Café management.

A design concept floor plan will be available for viewing at the work session.

LEGISLATION WOULD BE REQUIRED FOR COUNCIL ACTION __Yes _X_No
DRAFT IS ATTACHED ___Yes ___No

Materials following this page were distributed at the meeting.

Sustainability Plan
for Metro Operations

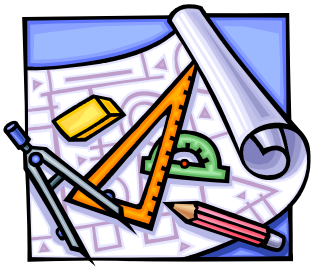
Metro Council Work Session

September 7th, 2010

Molly Chidsey, Sustainability Coordinator

Metro | *People places. Open spaces.*

Project Objective



To create a Sustainability Plan for Metro operations that will guide practices and projects to achieve Metro's long-term sustainability goals.

Metro Sustainability Goals
for Internal Business Operations

1. Greenhouse Gases
2. Toxics
3. Waste
4. Water
5. Habitat



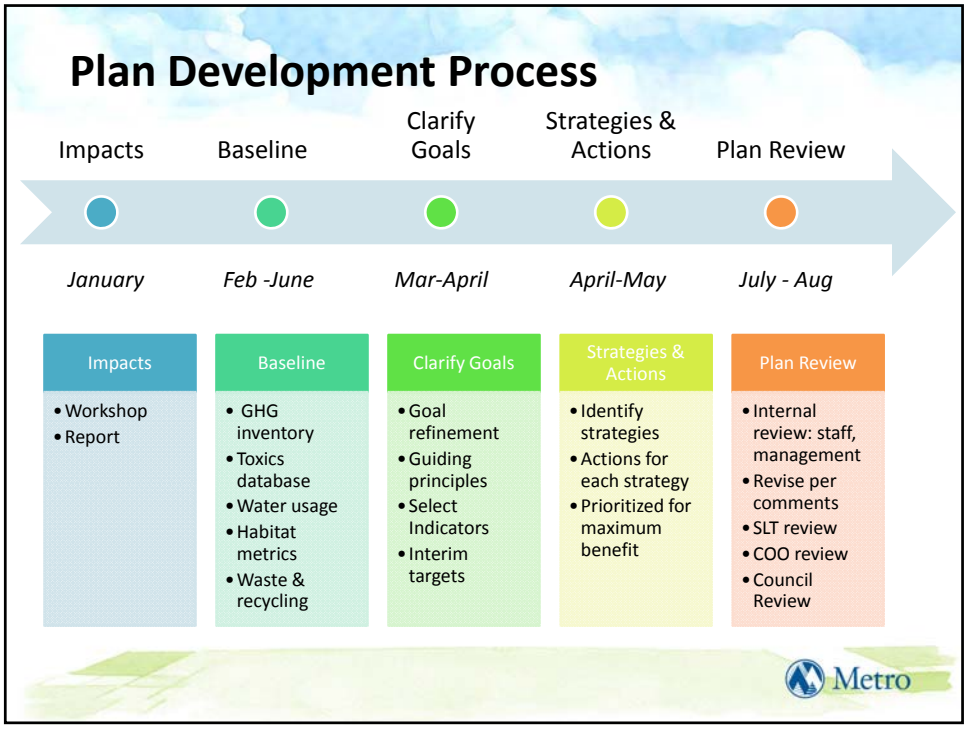


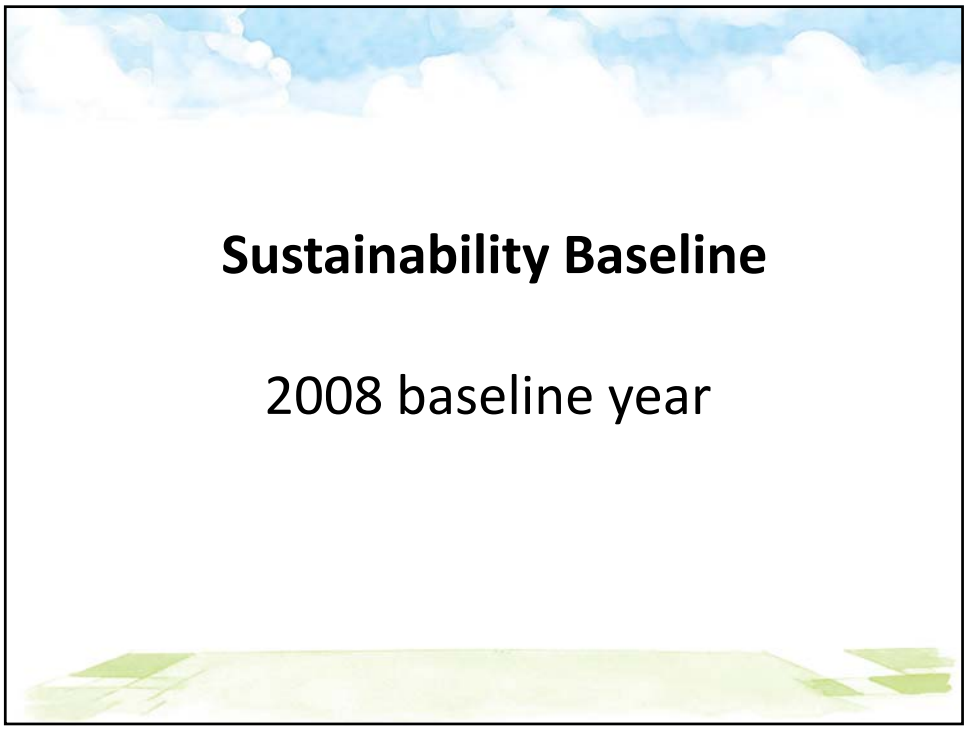
Scope: All Internal Operations









Plan Development Process
Impacts
Baseline
Clarify Goals
Strategies & Actions
Plan Review
January
Feb -June
Mar-April
April-May
July - Aug
Impacts
• Workshop
• Report
Baseline
• GHG inventory
• Toxics database
• Water usage
• Habitat metrics
• Waste & recycling
Clarify Goals
• Goal refinement
• Guiding principles
• Select Indicators
• Interim targets
Strategies & Actions
• Identify strategies
• Actions for each strategy
• Prioritized for maximum benefit
Plan Review
• Internal review: staff, management
• Revise per comments
• SLT review
• COO review
• Council Review
Metro


Sustainability Baseline
2008 baseline year

Baseline Indicators

Greenhouse Gases:	Direct and indirect emissions measured in MT CO_2e
Toxics:	Products in inventory with high hazard ratings for health, environmental toxicity
Waste:	Waste generated, Percentage of waste recycled
Water:	Quantity used, in CCF
Habitat:	Effective impervious surface, Habitat-friendly development practices

Greenhouse Gas Emissions Baseline

Indicator: Metric tons of carbon-dioxide equivalent from direct and indirect sources.

- Metro generated 58,062 MT CO_2e in 2008
- Largest sources: supply chain, electricity, fuel for long-haul waste transport.

Toxics Baseline

Indicator : Products in inventory with high hazard ratings for health, environmental toxicity

- 95% of the products have a high hazard rating in one or more category
- Cleaning supplies and paints are most prevalent toxic products in inventory

Waste and Recycling Baseline

Indicators : Tons of waste generated; percentage of waste diverted

- Metro facilities generate 2,600 tons of waste each year
- Recycling recovery ranges widely: from 8% to 72%
- Highest waste generators: Zoo, OCC

Water Consumption Baseline

Indicator : CCF (100 CCF = 748 gallons)

- Metro used 285 million gallons of water in 2008
- Highest users: Zoo, Glendoveer Golf Course

Habitat & Stormwater Baseline

Indicators: Effective Impervious Area, number of habitat-friendly development practices

- 96% of Metro's impervious surfaces generate stormwater runoff
- 2/3 of developed properties do not use habitat-friendly development practices

Strategies & Actions

Selecting Strategies and Actions

Strategy	The means for accomplishing goals
Action	The specific task or step taken to implement a strategy

Greenhouse Gas Reduction: Strategies

- Reduce energy demand from building operations
- Reduce consumption of carbon-intensive fuels
- Reduce emissions from supply chain

Toxics Reduction: Strategies

- Improve chemical inventory
- Replace most toxic products in inventory with least-toxic alternatives
- Implement less-toxic procurement standards for new purchases

Waste Reduction: Strategies

- Prevent waste through procurement
- Expand materials reuse
- Expand recycling programs
- Educate staff and clients

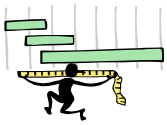
Water Conservation: Strategies

- Audit water usage at all sites and create water efficiency plans
- Reduce water usage (efficiency)
- Reuse water where feasible

Habitat Enhancement: Strategies

- Assess, prioritize habitat and stormwater opportunities and improve at each site
- Require habitat-friendly development practices in construction

Sustainability Management



- Track indicators, measure progress
- Update policies, procedures
- Educate, train staff
- Identify funding, build capacity

Next Steps for Implementation

1. Develop site-specific work plans
2. Create funding strategy for projects that require new capital
3. Strategic budget proposals
4. Develop tracking system

Successes to-date




Plan Adoption Process

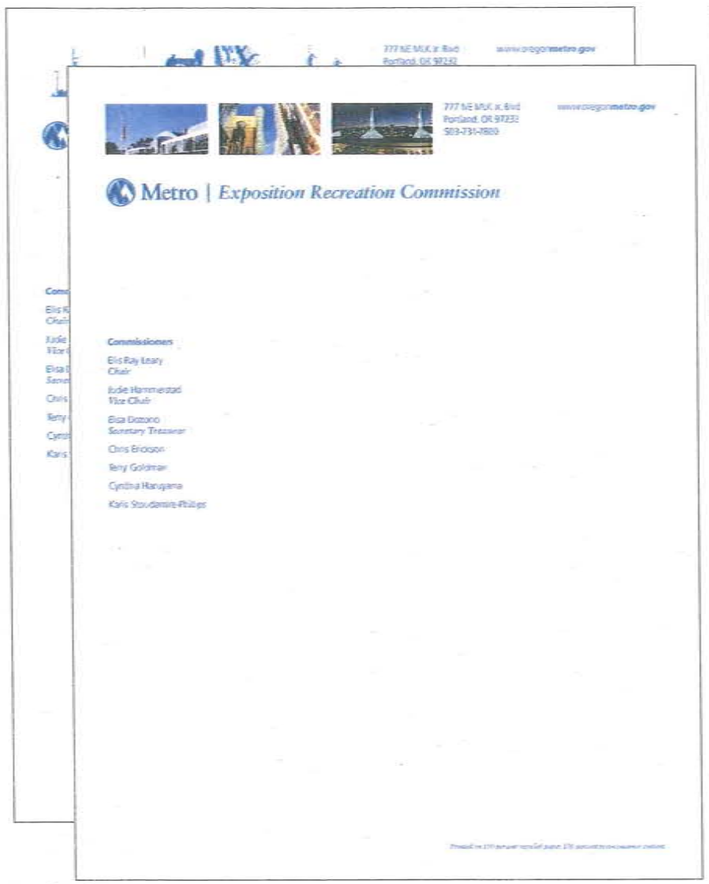
How would Council prefer that Metro adopt this Sustainability Plan?

Options include:

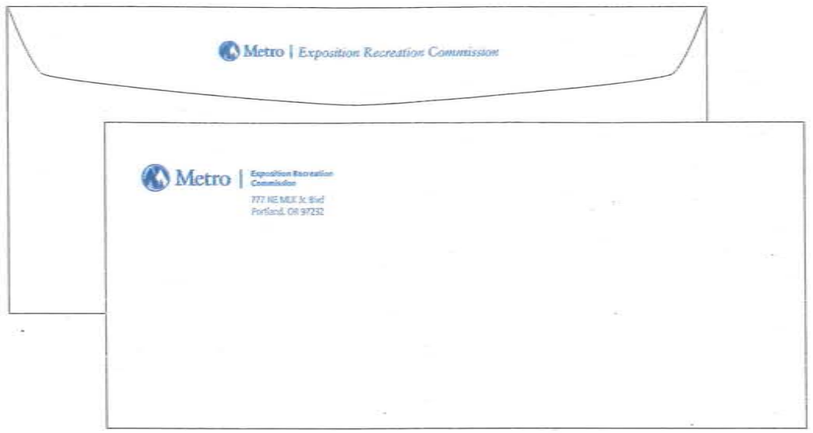
1. Adopt through a Metro Council resolution.
2. Adopt through approval of the COO.
3. Other

Metro | *Exposition Recreation Commission*

Business correspondence identity recommendations

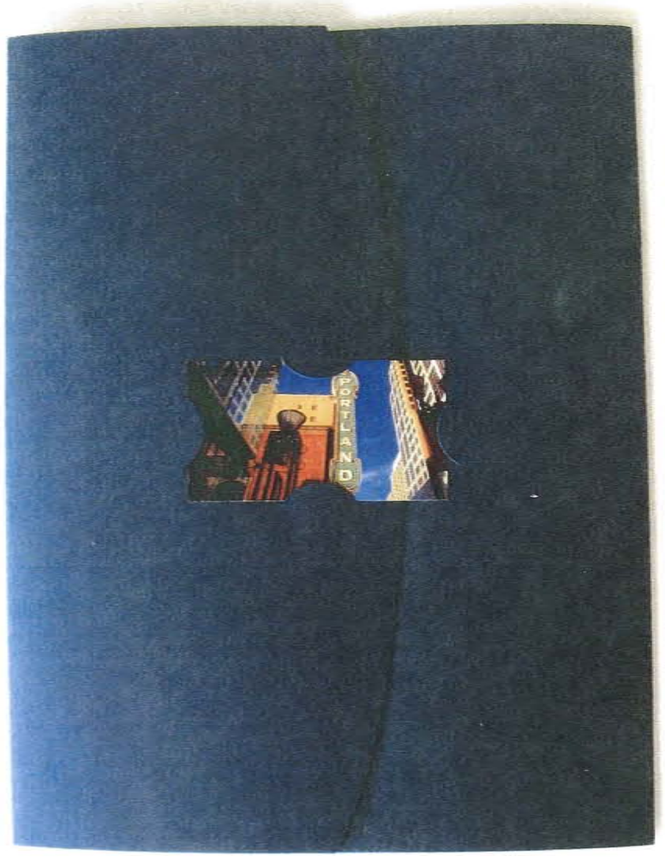


Letterhead



Correspondence envelope

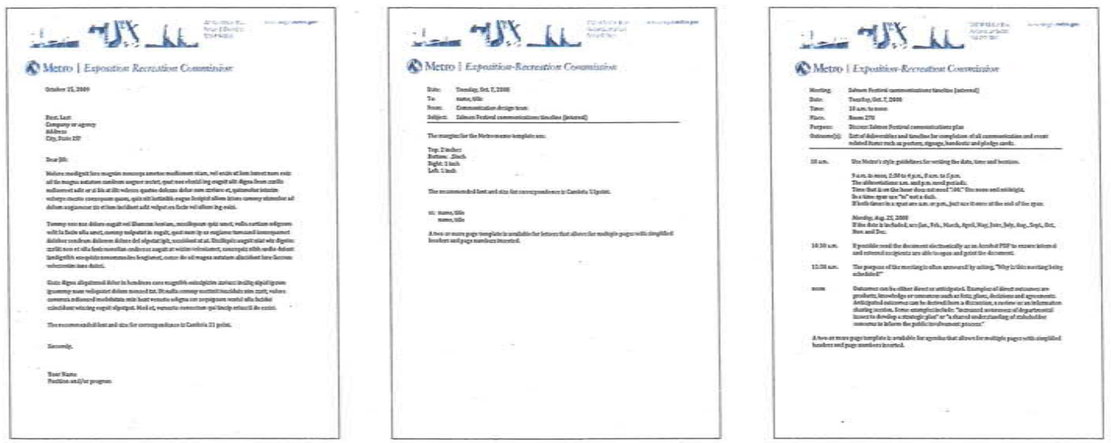
Adhesive mailing label



Presentation folder with business card closure

Business card

Reverse side of business cards



Business correspondence templates featuring letterhead masthead, includes letter, memo and agenda templates for Microsoft Word.
Designed to support print-on-demand. May be photocpied in black and white.

HOME
CALENDAR
+ PLACES AND ACTIVITIES
+ GARBAGE AND RECYCLING
+ SUSTAINABLE LIVING
+ PLANNING AND CONSERVATION
+ MAPS AND DATA
+ GRANTS
+ JOBS AT METRO
+ VOLUNTEER
+ DOING BUSINESS
+ NEWS
− ABOUT METRO
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COMMITTEES AND PUBLIC PARTICIPATION
MISSION, CHARTER AND CODE
FINANCES AND FUNDING
MANAGEMENT AND WORK TEAMS
HOW ARE WE DOING?
PUBLIC RECORDS REQUESTS
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2010 meeting materials for the Metro Exposition and Recreation Commission

Download agendas, meeting packets and audio files for the 2010 meetings of the Metro Exposition and Recreation Commission.

The Metro Exposition and Recreation Commission adopts policies and takes actions by resolutions at its public meetings. The agenda lists proposed resolutions by title and other actions or information for consideration by the commission. The agenda and meeting packet are posted on the Monday before a regular meeting.

The meeting packet contains materials pertaining to agenda items. To jump to specific agenda items using Adobe Reader, click on the bookmarks tab located to the left of the PDF document. If you have difficulty accessing meeting materials electronically, printed versions are available upon request. Minutes for regular meetings are posted after they are approved by the commission.

Meetings

The Metro Exposition and Recreation Commission holds regular meetings on the first Wednesday of the month starting at 12:30 p.m.

The public is invited to attend any regular or special meeting of the commission, and public testimony is welcome at regular meetings. › Go to the calendar

May 5, 2010

- Agenda

April 7, 2010

- Agenda (76 KB)
- Meeting packet (11 MB)
- Audio, part one (18 MB)
- Audio, part two (19 MB)
- Audio, part three (1 MB)
- Audio, part four (1 MB)

March 3, 2010

- Agenda (214 KB)
- Meeting packet (1.7 MB)
- Audio, part one (9 MB)
- Audio, part two (3.6 MB)

Feb. 3, 2010

- Agenda
- Meeting packet
- Audio (8 MB)

Jan. 6, 2010

- Agenda (214 KB)
- Meeting packet (1.7 MB)
- Audio, part one (9 MB)
- Audio, part two (6 MB)

+ CITIES AND COUNTIES
− METRO ADVISORY COMMITTEES
− METRO EXPOSITION AND RECREATION COMMISSION
2010 MEETING MATERIALS
MEET THE COMMISSIONERS
+ METRO POLICY ADVISORY COMMITTEE
+ METRO TECHNICAL ADVISORY COMMITTEE
+ JOINT POLICY ADVISORY COMMITTEE ON TRANSPORTATION
+ TRANSPORTATION POLICY ALTERNATIVES COMMITTEE
+ REGIONAL TRAVEL OPTIONS SUBCOMMITTEE
+ HIGH CAPACITY TRANSIT SUBCOMMITTEE
+ TRANSIT-ORIENTED DEVELOPMENT STEERING COMMITTEE
+ METRO COMMITTEE FOR CITIZEN INVOLVEMENT
NATURAL AREAS PROGRAM OVERSIGHT COMMITTEE
BI-STATE COORDINATION COMMITTEE
+ METRO SOLID WASTE ADVISORY COMMITTEE
+ GET INVOLVED

NEED ASSISTANCE?

Lisa Brown
503-731-7839
lisabrown@mercvenues.org

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Meet the members of the Metro Exposition Recreation Commission

The seven members of the Metro Exposition Recreation Commission share a strong commitment to ensuring that the regional facilities it manages serve the public interest.

Commissioners are appointed by the Metro Council President upon recommendation from local area governments. The commission includes seven members representing the city of Portland (two), Metro (two), and one each for Clackamas, Multnomah and Washington counties. The commissioners serve four-year terms.

Ellis Ray Leary

Commission chair, representing Portland

Ellis "Ray" Leary is a native Portlander and active participant in real estate, development, and the community. He is the principal officer of ERL, L.L.C., which specializes in urban real estate development, marketing, and workforce development and training. He is the co-owner of Leary & Associates, which provides consulting services for diversity training and organizational development.

Ray worked for Adidas America, where he managed its national urban marketing unit, served as the executive assistant to the president/CEO of Adidas America, and was project manager for Adidas' first full line retail store located in Portland. He also served as director of development and interim president for the Urban League of Portland.

Ray has received many awards and honors for his artistic achievements and civic leadership. His artistic accomplishments includes a 1996 Grammy award nomination for songwriter/producer and a Hip Hop Hall of Fame Award. Leaderships honors include the Salvation Army Community Pride Award, President Bush's Point of Light Foundation, the Ron Schmidt Award from the PRSA Portland Chapter, and the NAACP Portland Image Award.

Ray's broad accomplishments with both business and real estate give him a broad perspective on the business and strategic goals of MERC. His experience helps the agency anticipate and respond to the complex development issues associated with the MERC venues and to work effectively with the agency's business and community partners.

Judie Hammerstad

Commission vice chair, representing Clackamas County

Judie Hammerstad is a native Oregonian. She was born in Portland, grew up in Salem and moved back to Oregon in 1972 after living in Chicago, Boston and Palo Alto, CA for 12 years while her husband, John, received medical training as a neurologist. He is Professor Emeritus at Oregon Health and Science University in Portland. Judie and John have lived in Lake Oswego since 1972.

Judie's 30-year career in elected office began in 1981 as a two-term member and chair of the Lake Oswego School Board. She served in the Oregon State House of Representatives in 1987-88 and was elected to two terms as Clackamas County Commissioner in 1990. She was elected to two terms as Lake Oswego's mayor from 2001-09 where her major accomplishments include downtown redevelopment, promotion of the arts, and the acquisition and development of open space/parks projects.

Ms. Hammerstad is the founder and chair of the Community Streetcar Coalition, a national organization that promotes streetcar projects, and is a member of the board for Portland Streetcar, Inc. She is especially dedicated to bringing the streetcar from Portland to Lake Oswego. She was recently appointed to the Marylhurst University Board of Trustees. She holds a bachelor's degree in history from the University of Oregon.

Elisa Dozono

Commission secretary treasurer, representing Multnomah County

Professional Experience: Elisa J. Dozono is a fourth-generation Portlander and an attorney with Miller Nash law firm, where she specializes in business and intellectual property litigation and government relations. She has more than 11 years experience in communications management and government relations. Elisa has served as corporate media manager for the Port of Portland, communications director for former Portland Mayor Vera Katz, and media relations director for former Oregon Governor John Kitzhaber. She is a columnist with the Asian Reporter and has worked as a news producer for Portland's KATU television.

Elisa received her bachelor's degree in journalism from Boston University's College of Communications. She earned her law degree and certificate in general business law from Lewis & Clark Law School in Portland, Oregon, where she was also a member of the Business Roundtable. Elisa also externed for the Honorable Ann Aiken of the U.S. District Court.

Her deep roots in the community and her professional experience in the public and private sectors have prepared her well for the responsibilities of a commissioner.

Chris Erickson

Representing Portland

Mr. Erickson has been in hospitality profession and serving individuals for over 25 years. His passion for serving the guest was discovered while in college working for Skansonia Charters and Catering on Lake Union, Washington. Chris Erickson attended the University of Washington graduating with a Bachelor of Arts in 1991. He was then accepted to the Washington State University Management Development Program in Seattle, Washington where he earned accredited certification in Hospitality Management.

Mr. Erickson's professional hotel career began shortly thereafter in Seattle as a Guest Service Agent with WestCoast Hotels at the legendary Camlin Hotel. Mr. Erickson's success led to several promotions. His career grew fast as he served as Reservations Manager, Front Office Manager, Director of Food and Beverage, Assistant General Manager and within a few years was General Manager. Mr. Erickson continued his industry related education throughout his career, and received his Certificate Hotel Administrator (C.H.A.) in 1999.

He was Coast Hotel's (formerly WestCoast) "go-to" manager for many years, and was promoted and transferred to four different states and seven different cities, in just seven years. In each of these roles, he gained valuable experience. Having exceeded guest expectations for numerous "stars", dignitaries, professionals, and travelers, Coast Hotels, in 1999, gave him the opportunity to open the premier Paramount Hotel, Portland, Oregon.

During his tenure at the Paramount Hotel, Mr. Erickson served on several community boards including: Past Chair Elect, Executive Board of Directors Portland Oregon Visitors Association; Board of Portland Center for the Performing Arts; Past Co-Chair of Cultural District Council; Past Chair of Cultural District Development Committee.

In 2005, after making a significant impact in the Portland downtown community, Mr. Erickson decided to challenge himself with a unique opportunity. He joined a Forbes Fortune 130 national retail organization. As Store Director he utilized his hotel background, and in 2006, out of four-hundred (400) stores, his 27+ million dollar operation was ranked in the top 25 in guest service, and in the top 25 operationally.

Now at the helm of the 4 star Heathman Hotel, as General Manager, in downtown Portland, Mr. Erickson currently serves on numerous boards and commissions affiliated with the hospitality and tourism industries. In 2008, he received the prestigious American Hotel and Lodging Association's State Leadership Award for the State of Oregon. He resides in Portland with his wife, Melissa, a long time Portland resident, and is a supporter of everything Oregon!

Terry Goldman

Representing Washington County

Terry Goldman is the President and CEO of the Washington County Visitors' Association. Prior to this position, he served as general manager of the SpringHill Suites by Marriott-Portland Hillsboro and directed sales and marketing for the 12 Oregon and Washington properties owned by its third party management company, InnSight Hotel Management Group, capping off 16 years of sales and management experience in the hospitality industry. Throughout his tenure, he received numerous honors including the JW Marriott Award of Excellence in 2010 and one of two Oregon Lodging Association's Innkeeper of the Year awards in 2008. Goldman led the SpringHill Suites to distinction by earning the Hotel of the Year awards in 2008 and 2007; Community Service Hotel of the Year in 2006; and Opening Hotel of the Year award in 2004. He is the former chair of the Washington County Visitors' Association Board of Directors.

Mr. Goldman attended Pacific Lutheran University and is a graduate of Washington State University with a Bachelor of Arts degree in hotel restaurant administration. He currently resides in Beaverton with his wife and two children.

Cynthia Johnson Haruyama

Cynthia Johnson Haruyama is currently the Executive Director of Lan Su Chinese Garden in Portland, Oregon. Her prior work experience includes leadership for the non-profit Hoyt Arboretum Friends Foundation (Executive Director, 2001 - 2008) and the garden equipment manufacturer A.M. Andrews Co. (General Manager, 1994 - 2000). She has also practiced law, specializing in corporate law and business transactions with the Portland office of Davis Wright Tremaine and Farleigh Wada & Witt.

Ms. Haruyama's educational background includes a law degree from Columbia University and an undergraduate degree in East Asian Studies from Princeton University. She is a native of Portland, Oregon but has also lived in Japan, New Jersey and New York.

She has previously served as chair of the Washington Park Alliance, a member of Metro's Blue Ribbon Trails Committee and on the Master Planning Committee for Leach Botanic Garden. She is an active member of the Cultural Attractions of Portland Area.

Karis Stoudamire-Phillips

Karis Stoudamire-Phillips is a corporate relations officer for the Legacy Health Systems Foundations in Portland. She administered the Damon Stoudamire, Inc. Foundation from 1998 to 2008, and worked for the American Red Cross, Pacific Northwest Regional Blood Services, and Allergy Associates Research Center previously.

Ms. Stoudamire-Phillips is a Portland native and lifelong contributor to community service. She is a member of the YWCA, Schoolhouse Supplies, and Piedmont Rose Association Boards of Directors and the Big Brother Big Sister African American Advisory Board. She serves as Treasurer of the Boise Neighborhood Association and is a member of the St. Mary's Academy Alumni Council, Portland Rotary Club, Delta Sigma Theta Sorority, the Portland Chapter of the Links, Inc., and Bridge Builders, in which she has served as Black Baccalaureate Chair since 2001.

Karis resides in North Portland with her husband, Mike Phillips, and son.

NEED ASSISTANCE?

Stephanie Soden
503-731-7847
stephaniesoden@mercvenues.org

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- METRO EXPOSITION AND RECREATION COMMISSION
2010 MEETING MATERIALS
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+ METRO TECHNICAL ADVISORY COMMITTEE
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+ TRANSPORTATION POLICY ALTERNATIVES COMMITTEE
+ REGIONAL TRAVEL OPTIONS SUBCOMMITTEE
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NATURAL AREAS PROGRAM OVERSIGHT COMMITTEE
BI-STATE COORDINATION COMMITTEE
+ METRO SOLID WASTE ADVISORY COMMITTEE
+ GET INVOLVED

FEATURED VIEWPOINT

"We take seriously our responsibility of managing these cherished public assets to their fullest economic potential, and these numbers prove what our industry already knows: that our venues are lead by highly respected, seasoned professionals. The community is getting a heck of a deal with this team in place."

- Ellis Ray Leary, MERC chair, on the 2008-09 MERC economic impact report

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503-797-1804 TDD
503-797-1797 fax

Metro Exposition and Recreation Commission

ABOUT METRO › COMMITTEES AND PUBLIC PARTICIPATION › METRO ADVISORY COMMITTEES › METRO EXPOSITION AND RECRECREATION COMMISSION

Made up of seven business and civic leaders committed to the region's cultural and economic vitality, the Metro Exposition and Recreation Commission works to protect the public investment in Metro's visitor venues.

Meetings

The Metro Exposition and Recreation Commission holds regular meetings on the fourth Wednesday of the month starting at 12:30 p.m. The public is invited to attend any regular or special meeting of the commission, and public testimony is welcome at regular meetings. ›Go to the calendar

Meet the commissioners

Learn about the seven members of the Metro Exposition and Recreation Commission. ›More

Ellis Ray Leary, chair
Judie Hammerstad, vice chair
Elisa Dozono, secretary treasurer
Chris Erickson
Terry Goldman
Cynthia Haruyama
Karis Stoudamire-Phillips

Meeting materials

The commission adopts policies and takes action by resolutions at its public meetings. The agenda lists proposed resolutions by title and other actions or information for consideration. The agenda and meeting packet are posted online on the Monday before a regular meeting. Minutes for regular meetings are posted after they are approved by the commission. ›View 2010 meeting materials

Membership

Commissioners are appointed by the Metro Council President upon recommendation from local area governments. The commission includes seven members representing the city of Portland (two), Metro (two), and one each for Clackamas, Multnomah and Washington counties. The commissioners serve four-year terms. ›Meet the commissioners

NEED ASSISTANCE?

Stephanie Soden
503-731-7847
stephaniesoden@mercvenues.org

RELATED LINKS

2010 meeting materials for the Metro Exposition and Recreation Commission

Download agendas, meeting packets and audio files for the 2010 meetings of the Metro Exposition and Recreation Commission.

Meet the members of the Metro Exposition Recreation Commission

The seven members of the Metro Exposition Recreation Commission share a strong commitment to ensuring that the regional facilities it manages serve the public interest.

Art and business venues

Metro owns and operates the Oregon Convention Center and the Portland Metropolitan Exposition Center and operates the Portland Center for the Performing Arts.

RELATED INTERNET LINKS

- Oregon Convention Center
- Portland Center for the Performing Arts
- Portland Metropolitan Exposition Center

+ CITIES AND COUNTIES
− METRO ADVISORY COMMITTEES
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BI-STATE COORDINATION COMMITTEE
+ METRO SOLID WASTE ADVISORY COMMITTEE
+ GET INVOLVED

BY THE NUMBERS

5,540 jobs

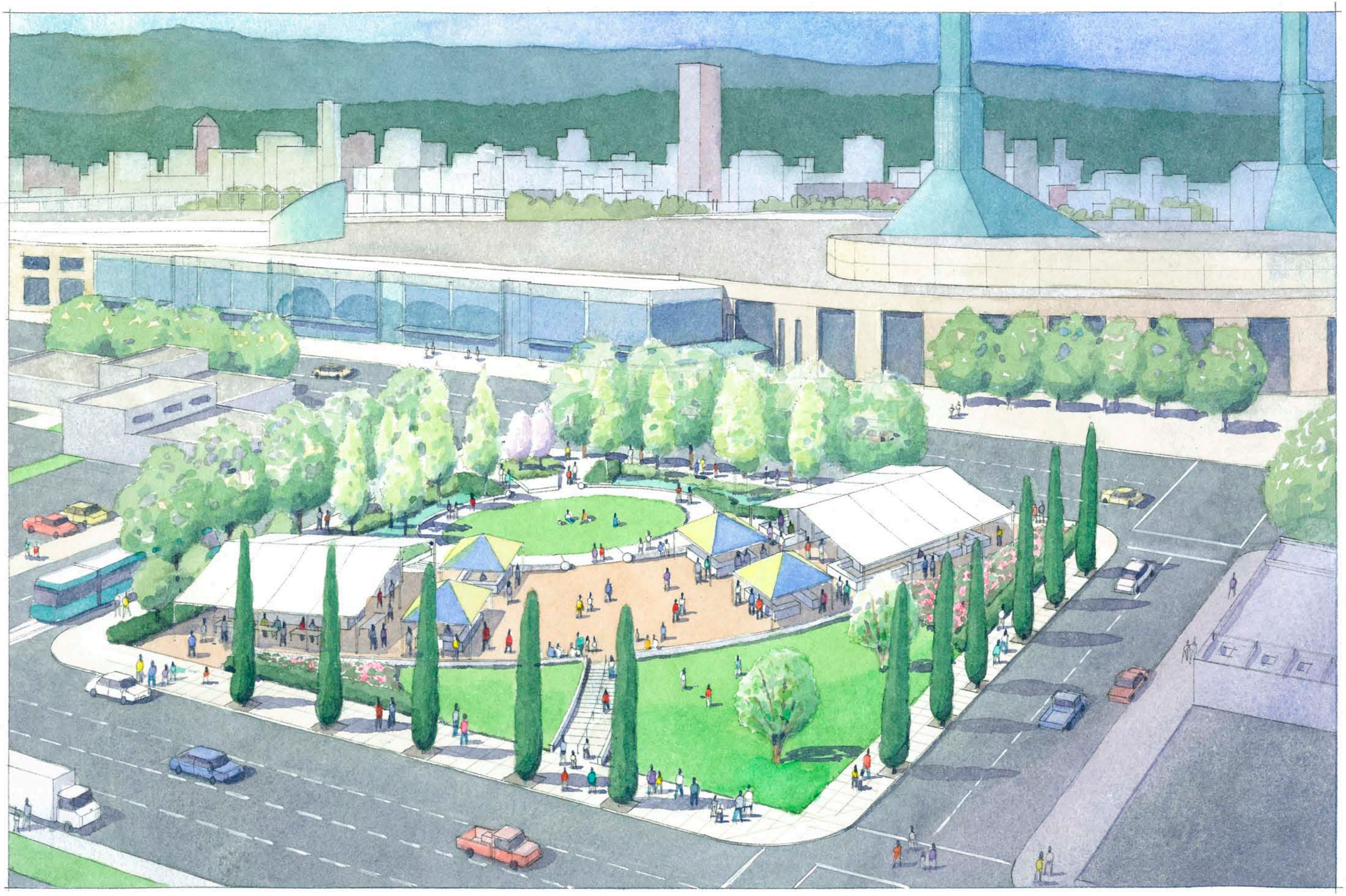
While there are only 174 full-time employees at Metro's visitor venues, activities at the Oregon Convention Center, Portland Center for Performing Arts and Expo support thousands of local jobs.

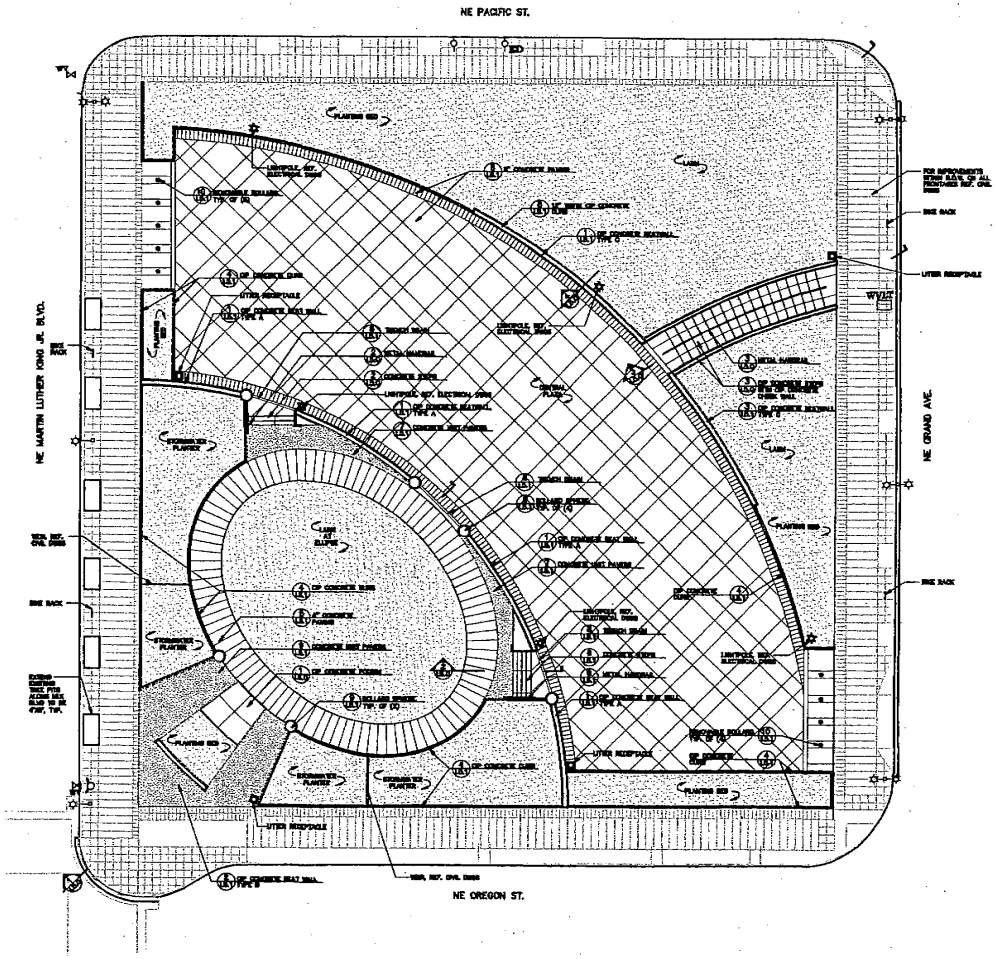
Source: MERC 2008-2009 Economic and fiscal impact report

FEATURED VIEWPOINT

"Since 2008, the economic recession hit Oregon and our region particularly hard, yet our cultural and entertainment venues continued to create and support local jobs. By design, these facilities were created to catalyze economic development."

Metro Council President David Bragdon





1 PROPOSED SITE PLAN
Scale: 1"=30'

30' 15' 0 30' 60'
SCALE: 1" = 30'

PRELIMINARY - NOT FOR CONSTRUCTION

Submittal / Date
DESIGN REVIEW
07/20/10

Project
PDC - REDEVELOPMENT
Block 26
Portland, Oregon

Sheet Title
PROPOSED SITE PLAN

Sheet No.
L1.0
FIGURE 8