

EUGENE WATER & ELECTRIC BOARD
2013 GREENHOUSE GAS INVENTORY

SEPTEMBER 2014

PREPARED BY GOOD COMPANY



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ACKNOWLEDGEMENTS

Andrew Janos collected and analyzed the data for the *Operations Inventory*.

Catherine Gray collected and analyzed the data for the *Oregon Department of Environmental Quality annual reporting*.

This inventory and other climate change related information is available online at:
www.eweb.org/sustainability/climatechange

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Good Company provided technical assistance in the preparation of the inventory and drafted the report.

EXECUTIVE SUMMARY

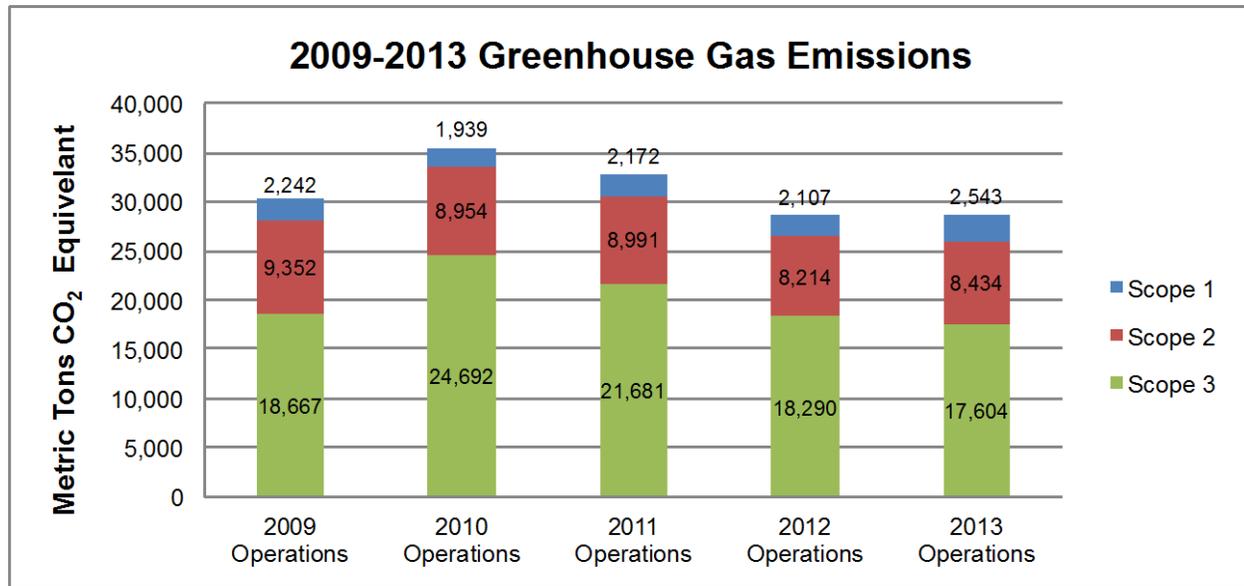
In order to better understand our contribution to global climate change and to measure our progress in reducing our climate impacts, EWEB annually prepares a greenhouse gas (GHG) inventory. This year's report, like our 2012 report, focuses on the GHG emissions associated with core business operations, such as fleet fuel consumption, electricity and natural gas use, and the procurement of goods and services.

EWEB'S OPERATIONS CARBON FOOTPRINT

Our 2013 operations GHG emissions totaled an estimated 28,582 metric tons of carbon dioxide equivalent (MT CO₂e), a level virtually unchanged from 2012. In 2013, reductions in emissions associated with fleet operations, purchased goods and services, business travel, and employee commute were offset by increases in emissions associated with purchased electricity, natural gas combustion, and the release of industrial gases.

The chart below (Figure 1) shows the four-year trend in EWEB's GHG emissions.

Figure 1: 2009-2013 Operations Inventories



EWEB'S GREENHOUSE GAS REPORTING TO THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

EWEB is required to file an annual report with Oregon Department of Environmental Quality (ORDEQ) in compliance with Oregon's GHG reporting rules. Under these rules, consumer-owned utilities, like EWEB, are required to report the megawatt hours of electricity distributed to end users of electricity in Oregon (i.e., our retail customers) and the source of that electricity on an annual basis.

EWEB's 2014 report to DEQ reflects that 85% of the power distributed to our retail customers in 2013 was from the Bonneville Power Administration (a combination of hydroelectric, nuclear, wind and unspecified market purchases), 13% was from EWEB's owned hydroelectric resources, and the remaining 2% came from a combination of owned and purchased resources.

CALCULATING THE CARBON FOOTPRINT OF ELECTRICITY USE

In past years, EWEB advised customers preparing their own corporate GHG inventories to report GHGs associated with their electricity consumption using both the emissions factor for the regional electric grid – the Northwest Power Pool – and EWEB’s Retail Power Delivery Metric. Since this year’s report does not include an analysis of the specific mix of power resources delivered to our retail customers and its associated emissions, EWEB’s advice for 2013 GHG inventories is to use only the regional emissions factor (see Figure 2 below).

Figure 2: 2013 Emissions Factors for EWEB Customers Calculating Indirect Emissions Associated with Electricity Consumption

2013 EMISSIONS FACTORS FOR EWEB CUSTOMERS CALCULATING INDIRECT EMISSIONS ASSOCIATED WITH ELECTRICITY CONSUMPTION		
Emissions Factor	METRIC	STANDARD
	MT CO ₂ e/MWh	lbs. CO ₂ e/MWh
Northwest Power Pool Regional Average	.384	847

GREENHOUSE GAS REPORTING SCOPES AND INVENTORY BOUNDARIES

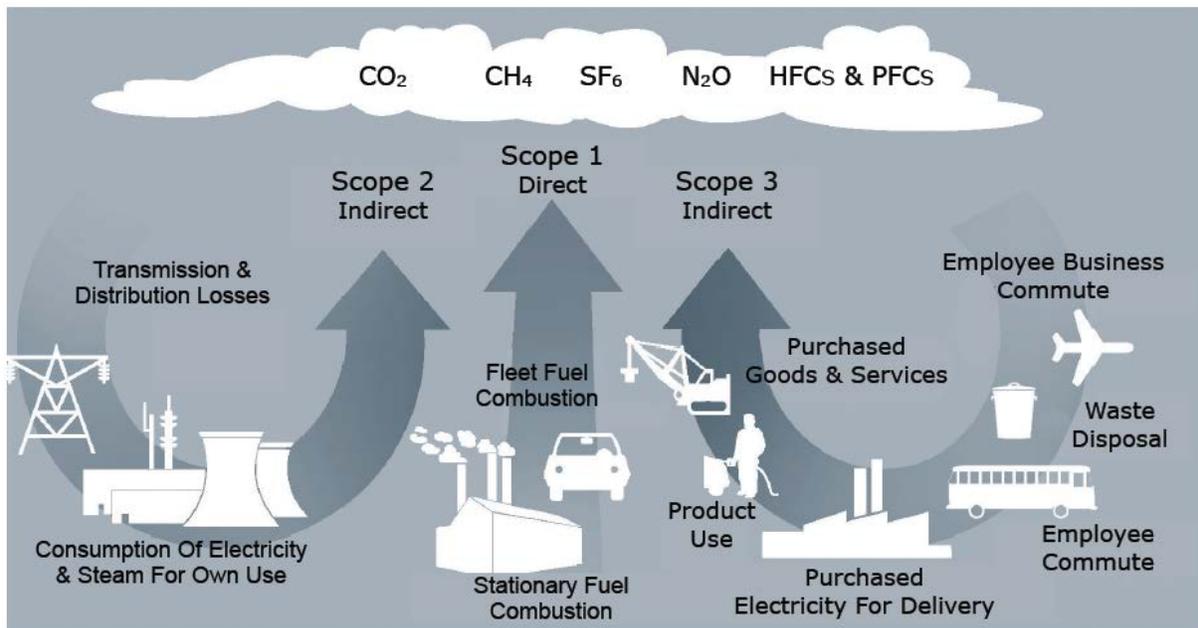
In quantifying our operational emissions, EWEB follows the guidelines of The Climate Registry's *General Reporting Protocol*. Per The Climate Registry's protocol, emissions sources are divided into three reporting scopes (see Figure 3 below).

Scope 1 – This includes direct GHG emissions that originate from operations-based equipment and facilities owned or operated by EWEB, such as the stationary and mobile combustion of fossil fuels, including vehicles and generators. This also includes the fugitive release of sulfur hexafluoride (SF₆) from the operation of high voltage equipment used in electricity transmission and distribution equipment.

Scope 2 – This includes indirect GHG emissions associated with the purchase of electricity and steam for internal consumption.

Scope 3 – This includes all other indirect GHG emissions resulting from EWEB's operational activities that occur from sources owned or controlled by another entity, such as business travel, employee commute, embodied emissions in purchased goods and services, and emissions from land-filled solid waste.

Figure 3: Greenhouse Gas Accounting Reporting Scopes



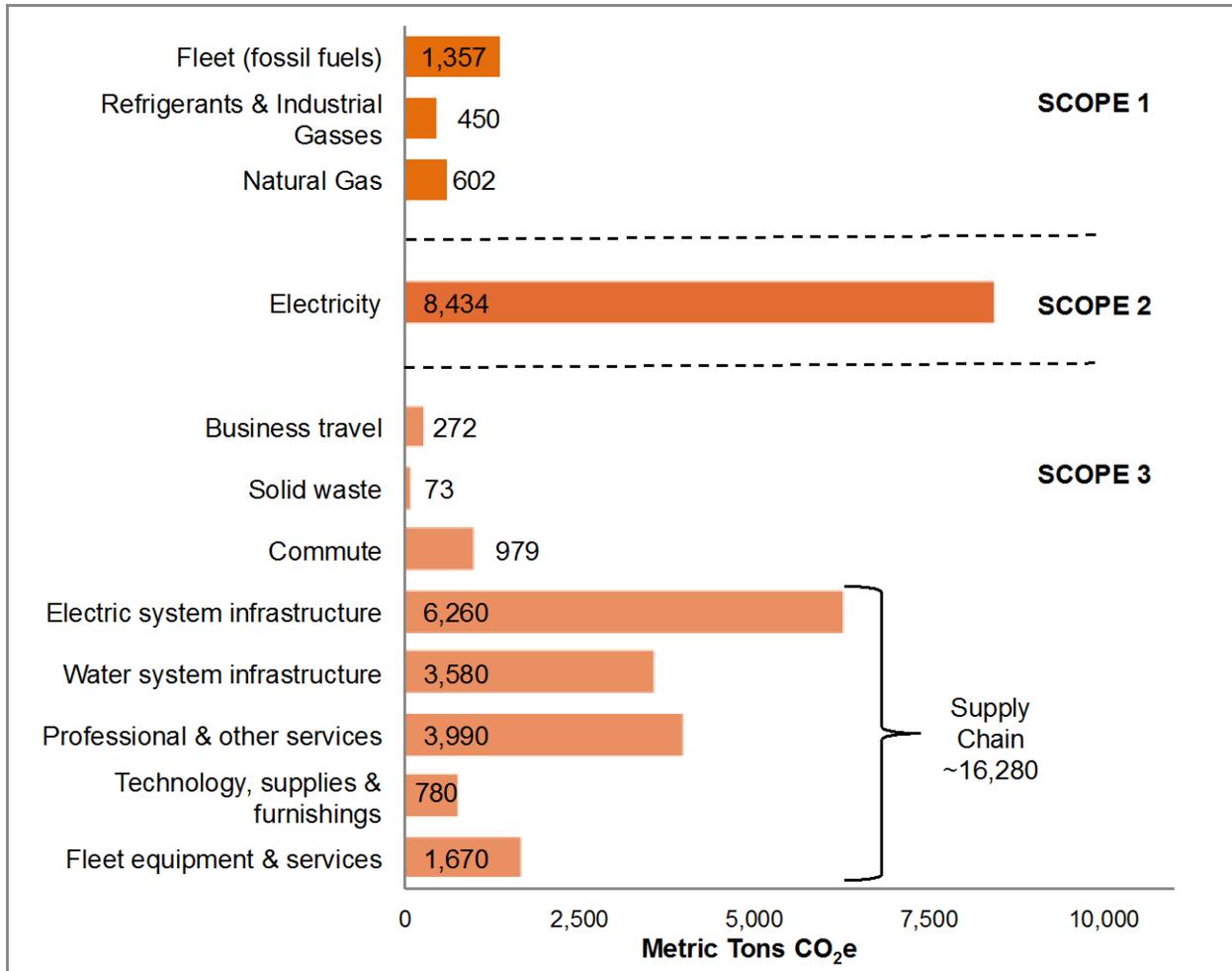
Source: WRI/WBCSD Greenhouse Gas Protocol, Corporate Accounting and Reporting Standard (Revised Edition), Chapter 4.

INVENTORY BOUNDARIES

This inventory estimates calendar year 2013 GHG emissions associated with EWEB's facility operations. The quantification of our facility operations emissions is limited to EWEB facilities in the Eugene-Springfield, Oregon metropolitan area and at our McKenzie River hydroelectric facilities at Leaburg, Walterville and Carmen-Smith.

In 2013, the largest single source of emissions associated with EWEB’s operations continued to be from our supply chain – those GHG emissions embodied in purchased goods and services (see Figure 4 below). However, given the limitations of the methodology used to calculate these emissions, they should be considered estimates¹. The second-largest source of emissions is from EWEB’s own consumption of electricity (see Figure 6 on page 11 for addition detail), followed by equipment and vehicle fleet operations.

Figure 4: 2013 Greenhouse Gas Emissions Associated with EWEB Operations



EWEB’s ability to manage our GHG emissions varies considerably across emissions scopes. We have specific control over some sources, such as our vehicle fleet, and can and do take direct steps to minimize emissions associated with the utilization of these vehicles. Influencing emissions in our supply chain is more challenging, as we do not control the energy and carbon intensity of our suppliers manufacturing processes. However, we can seek to mitigate our supply chain emissions by making changes in our purchasing decisions by specifying lower carbon intensive products (e.g., choosing goods with high recycled content).

¹ The methodology for estimating supply chain carbon is Economic Input-Output Life-Cycle Analysis (EIO-LCA). EIO-LCA, while reputable and credible as an estimation tool, lacks precision because the analysis is not built on vendor-specific data. Therefore, the estimate, while useful for “sense of scale”, is not precise.

TRENDS IN OPERATIONS GHG EMISSIONS

The tables (see Figure 5 below) below summarize the sources of EWEB’s operations emissions from 2009-2013. For additional detail on the underlying methods please refer to the 2009 GHG Inventory available at: <http://www.eweb.org/public/documents/sustainability/GHGreport2009.pdf>.

Figure 5: 2009-2013 Greenhouse Gas Emissions by Scope

Scope 1						
Fleet						
2009	2010	2011	2012	2013	History	Comments
1,669 (Fossil)	1,606 (Fossil)	1,658 (Fossil)	1,522 (Fossil)	1,357 (Fossil)		Tailpipe emissions associated with the combustion of fuels for the operation of EWEB’s vehicle and equipment fleet. EWEB has set a goal of reducing fossil fuel use by 50% by 2030 compared to 2009 levels. In 2013, fossil fuel consumption was 17% lower than 2009-2011 average levels.
62 (Biofuel)	66 (Biofuel)	120 (Biofuel)	143 (Biofuel)	134 (Biofuel)		The 2009-2012 year-to-year increases in “biogenic” emissions results from a combination of increases in biofuel consumption (a result of EWEB’s effort to reduce fossil fuel consumption) and changes in ethanol and biodiesel blending requirements. 2013 starts to see a decrease in biofuel consumption compared to 2012.
Refrigerants and Industrial Gases						
2009	2010	2011	2012	2013	History	Comments
510	0	151	141	450		Emissions associated with the fugitive release of refrigerants used in EWEB’s HVAC systems and sulfur hexafluoride (SF6) used in electric transmission and distribution equipment. Emissions are based on the quantity of gasses periodically added to these systems and, as a result, emissions vary from year to year depending on maintenance cycles. In 2009 and 2011, emissions are associated solely with HVAC maintenance, while 2012 emissions are associated solely with SF6, EWEB’s first-ever release.
Natural Gas						
2009	2010	2011	2012	2013	History	Comments
0	266	243	301	602		Emissions associated with the combustion of natural gas used to heat EWEB’s Headquarters and Roosevelt Operation’s Center. The increase in 2012 and 2013 emissions over 2011 levels is attributable to the the conversion of EWEB’s Headquarters buildings from district steam to natural gas. In 2013, EWEB completely converted the heating system to natural gas.

Scope 2

Electricity

<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>History</i>	<i>Comments</i>
8,140	7,911	8,093	8,024	8,434		Emissions associated with EWEB's self-consumed electricity usage. Between 2009 and 2011 emissions in this category fell by nearly 5%, a result of a downward trend in the regional emissions factor and not a reduction in EWEB's total electricity consumption. The increase in 2013 is largely attributable to the addition of new office space on W. 3rd Ave.

District Steam

<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>History</i>	<i>Comments</i>
1,054	1,043	898	190	0		Emissions associated with EWEB's consumption of district steam for heating EWEB's Headquarters. The decrease in emissions is attributable to reduced steam consumption at EWEB Headquarters. EWEB finished decommissioning the steam plant in June 2012.

Scope 3

Business Travel

2009	2010	2011	2012	2013	History	Comments
497	495	542	329	272		Estimated emissions associated with air travel, employee-owned vehicles used for business purposes and rental vehicles. The decrease from 2009-2011 average to 2013 is the result of substantial reduction in business air travel.

Solid Waste

2009	2010	2011	2012	2013	History	Comments
84	80	93	71	73		Emissions associated with unsorted non-hazardous solid waste landfilled at the Lane County Short Mountain Landfill. Not included in this total are emissions associated with the disposal of hazardous materials (e.g., incineration of used motor oil), as information about the processes used in that disposal was unavailable and therefore emissions could not be accurately calculated. The year-to-year changes in emissions is the result of differences in the estimated volumes of waste landfilled.

Employee Commute

2009	2010	2011	2012	2013	History	Comments
1,085	1,117	1,066	1,010	979		Estimated emissions associated with employee commute based on employee surveys about mode of transportation and distance traveled. The 2013 estimate of commute emissions is based on the 2011 survey results, adjusted for changes in staff size. Over a period of three years, surveys have shown a consistent pattern in employee commute modes. Not included in this total are emissions associated with customer or visitor trips to EWEB facilities.

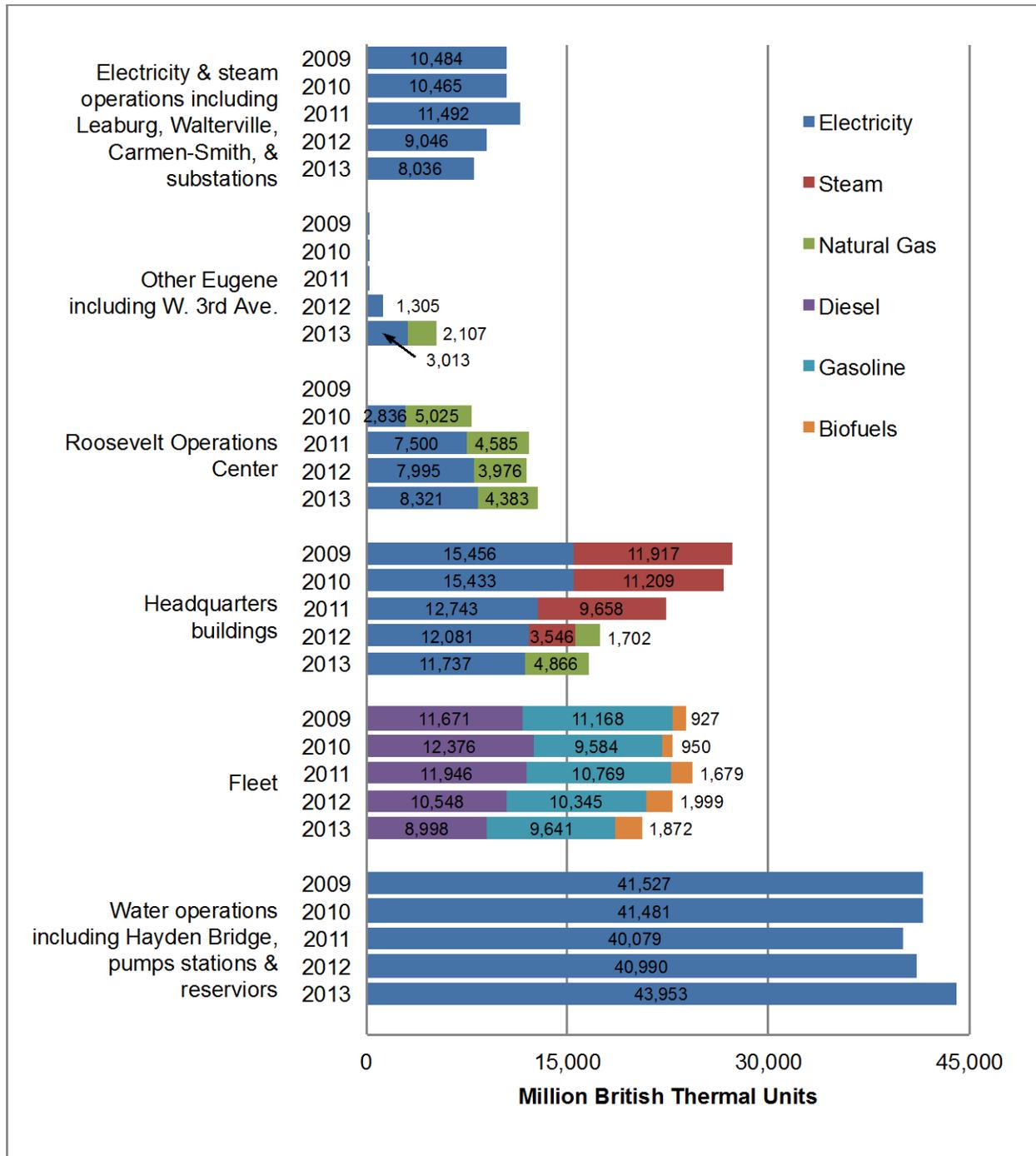
Supply Chain

2009	2010	2011	2012	2013	History	Comments
~17,000	~23,000	~19,980	~16,880	~16,280		Estimated emissions associated with energy consumption in the manufacture and production of goods and services purchased by EWEB. The year-to-year change in emissions is the result of fluctuations in the dollars spent by EWEB in the analyzed set of purchasing data, which prior to 2011 excluded some capital improvement projects because of insufficient data. Beginning in 2011 EWEB began reporting all expenditures associated with capital improvement projects. The total expenditures included in the supply chain analysis for 2009-2013 were respectively: \$43.9 million, \$55.3 million, \$51.3 million, \$47.7 million and \$36.2 million.

TRENDS IN ENERGY CONSUMPTION BY FACILITY

Figure 6 below shows EWEB’s energy consumption by facility and energy source from 2009 to 2013. Despite notable reductions in some areas (e.g. headquarters buildings and fleet), overall EWEB’s energy consumption is trending upwards, having increased by 4% between 2009 and 2013.

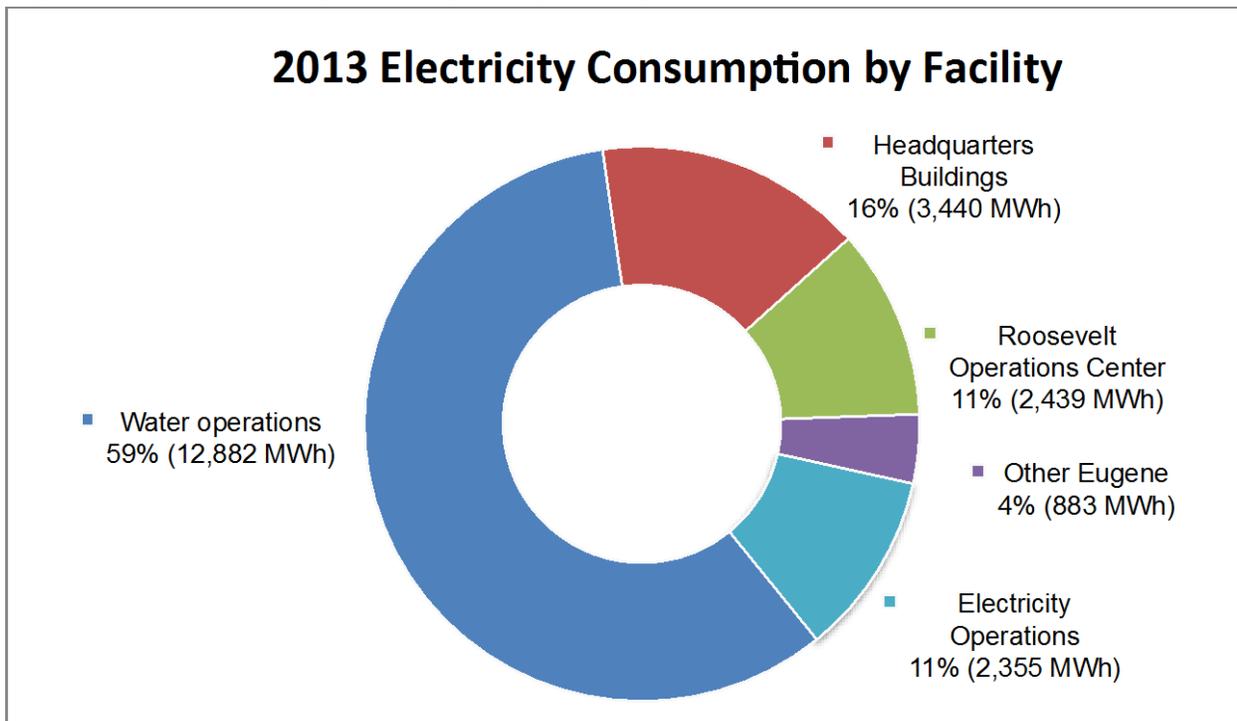
Figure 6: 2009-2013 Energy Consumption, by Facility and Energy Source



ELECTRICITY CONSUMPTION, BY FACILITY

Figure 7 below shows EWEB's electricity consumption by facility for 2013. The operation of the Hayden Bridge Treatment Plant and other water operations account for the majority (58%) of EWEB's electricity consumption, nearly 13,000 MWh. EWEB's downtown headquarters are the second-largest source of electricity consumption (3,440 MWh), followed by electricity consumption at the Roosevelt Operations Center (2,439 MWh). Electricity use at EWEB's McKenzie River hydroelectric facilities and substations accounted for (2,355 MWh) while the Eugene facilities accounted for the remainder (883 MWh).

Figure 7: 2013 Electricity Consumption by Facility

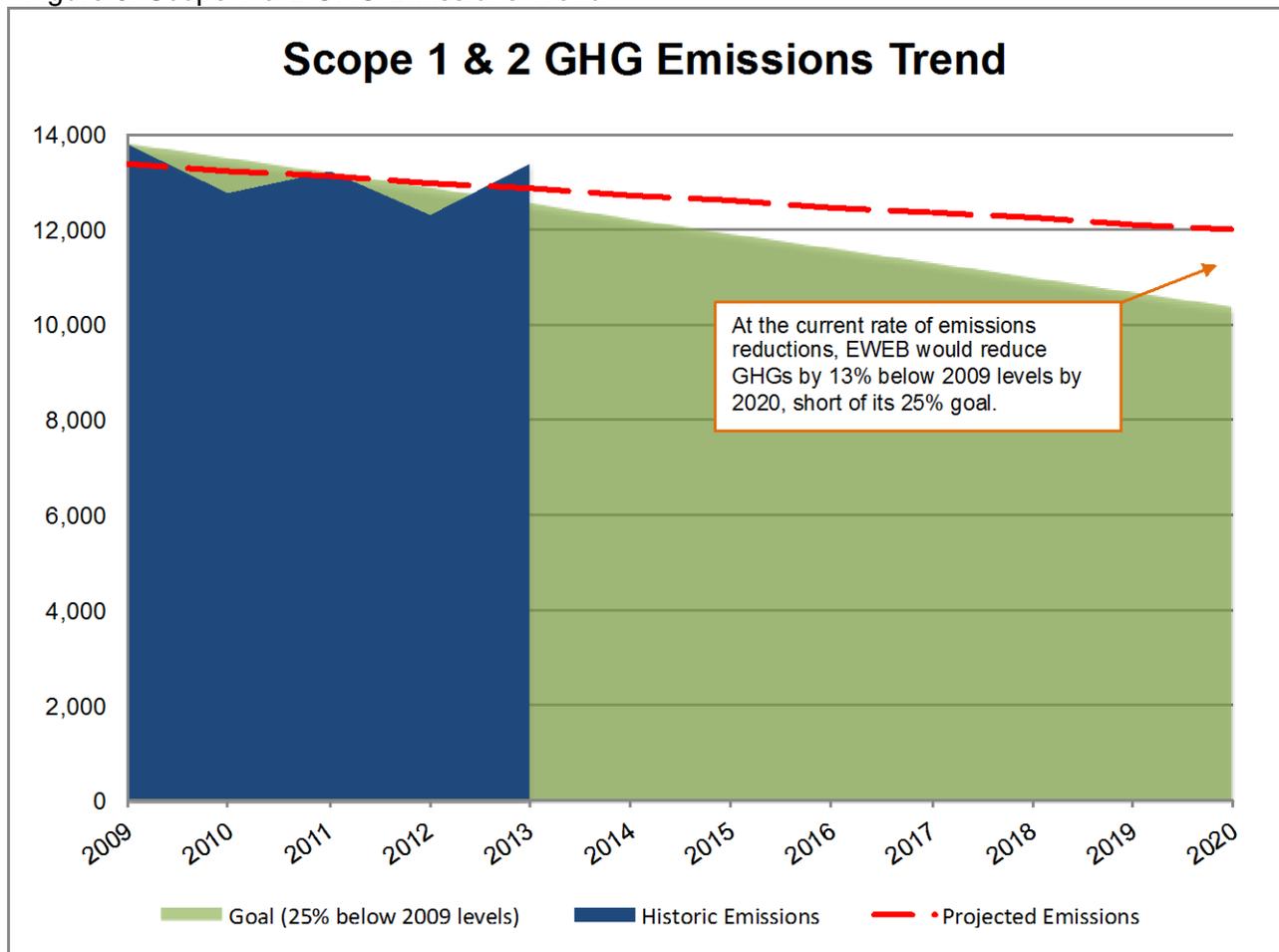


CONCLUSIONS

While, overall, EWEB's 2013 GHG emissions were virtually unchanged from 2012 levels, the organization's Scope 1 and Scope 2 emissions increased by 9%, reversing much of the progress EWEB has made over the last four years. These increases stem from increases in natural gas combustion, electricity consumption and the release of industrial gasses and refrigerants. On the bright side, EWEB's fleet continues to make strides in reducing fossil fuel consumption and has achieved nearly 19% reduction in GHG emissions since 2009.

EWEB has a goal of reducing operations GHG emissions by 25% below 2009-levels by 2020. Figure 8 below shows the trend in Scope 1 and Scope 2 emissions (the dashed red line) compared to historic GHG emission levels (the shaded blue area) and the GHG emission levels EWEB needs to meet to achieve this goal (the shaded green area). At the current rate of GHG emission reductions, EWEB would only achieve a 13% reduction by 2020, short of the 25% goal.

Figure 8: Scope 1 & 2 GHG Emissions Trend



In order to meet our 2020 goal, EWEB must persistently examine internal energy efficiency measures, develop a strategy to reduce and, where possible, eliminate the release of industrial gasses and refrigerants, and continue to transition fleet and equipment fuel consumption to lower carbon alternatives.