

# Memo

**To: Mark Knudson**  
**From: Cheryl Welch**  
**Date: 5/30/14**  
**Re: TVWD Greenhouse Gas Emissions for Calendar Year 2013**

TVWD has made significant progress in reducing the environmental impact of the District’s operations; however, the District continues to use energy and other resources that result in, among other things, greenhouse gas (GHG) emissions. As part of the District’s commitment to improve the sustainability of its practices, TVWD staff annually reviews the greenhouse gas emissions generated directly and indirectly from District operations. This inventory does NOT include embodied emissions in material goods purchased and services contracted by TVWD (an optional Scope 3 source, as defined below), and is therefore considered a partial GHG inventory.

## Overview of Greenhouse Gas Emissions

GHG inventory protocols define emissions as either direct (owned) or indirect (shared). TVWD’s GHG inventory covers the direct and indirect emissions associated with all TVWD operations, including the headquarters facility, all reservoirs, pump stations and ancillary properties and equipment.

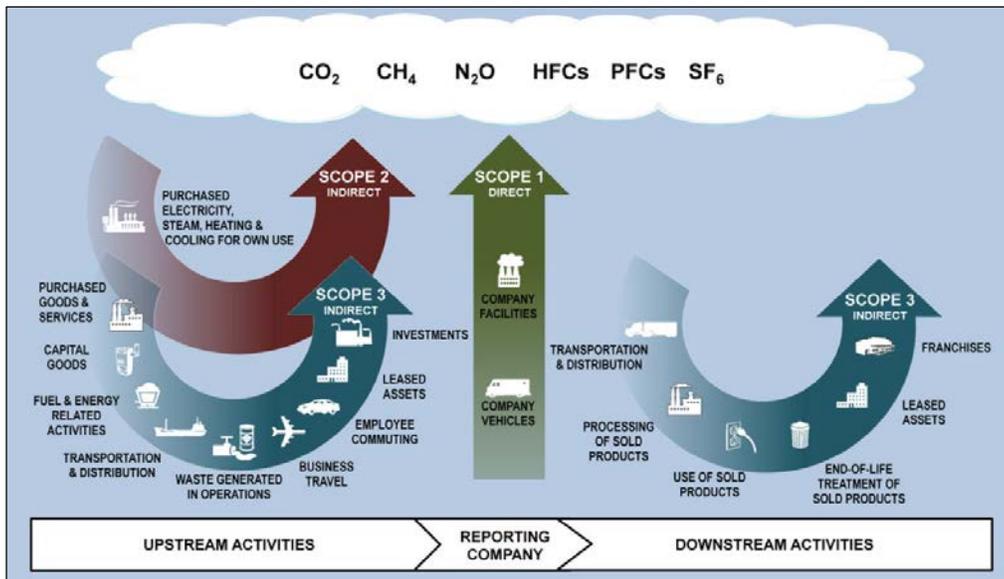
To distinguish direct from indirect emissions sources, three “scopes” are defined for traditional GHG accounting and reporting.<sup>1</sup>

**Scope 1:** All direct GHG emissions from equipment and facilities owned and/or operated by TVWD.

**Scope 2:** Indirect GHG emissions from purchased electricity.

**Scope 3:** All other indirect emissions sources that result from TVWD activities but occur from sources owned or controlled by another company or entity, including emissions associated with business travel and TVWD employee commuting. Emissions from TVWD suppliers could be shown here, but have not, to date, been included in TVWD GHG reporting.

Figure 1: Greenhouse Gases and Accounting and Reporting Scopes<sup>2</sup>



<sup>1</sup> Source: WRI/WBSCD Greenhouse Gas Protocol, Corporate Accounting and Reporting Standard (Revised Edition), Chapter 4.

<sup>2</sup> Source: WRI/WBSCD Greenhouse Gas Protocol, Corporate Value Chain (Scope 3) Accounting and Reporting Standard

### **TVWD History of GHG Inventory and Offset Purchases**

From 2002 to 2008, Sustainability Program staff annually estimated the GHG emissions produced from TVWD's major emissions sources through an Excel spreadsheet. In 2009, staff utilized the U.S. Environmental Protection Agency's (EPA) Climate Leaders calculation tool, as noted below. Electricity and natural gas usage data were available on a monthly basis. Fleet fuel usage was obtainable, but not completely accurate. Commuting data was acquired through employee surveys and business travel through manual recording, but estimates were necessary in these areas. Much of the data was, therefore rough, but it served the purpose of identifying the District's major sources of emissions. In 2002, for instance, purchased electricity contributed approximately 70% of District emissions; fleet another 16% and employee commuting about 11%. Remaining sources, such as stationary combustion (natural gas and generators) and business travel made up the remaining 3%. This is much the same today, as shown in Fig. 4.

Though it was known that supply chain related sources were a major contributor to District emissions, staff chose not to calculate them for two reasons. First, the District had much less control over these emissions than the other sources. Second, the calculation involved a great deal of work and usually included hiring a consulting firm. These calculations were typically done through an Economic Input-Output Life Cycle Analysis (EIO LCA). This involved estimating the amount of emissions based on the dollars spent on particular material categories, which resulted in an order of magnitude number, but nothing precise. Staff felt that there was not enough to be gained from this exercise to justify the cost.

In 2004, the Board reviewed the concept of Renewable Energy Credits (RECs) or Green Tags, as they were then called. These are tradable, non-tangible energy commodities in the United States that represent proof that one megawatt-hour (MWh) of electricity was generated from an eligible renewable energy resource. TVWD RECs generally support power created by wind. Rather than purchasing RECs from Portland General Electric, as homeowners often do, TVWD engaged in a competitive bidding process to acquire its RECs and offsets. This practice is still in place and enables the District to achieve its sustainability objectives while minimizing the cost for TVWD ratepayers.

RECs were initially purchased in an amount to counter the impact of 25% of Calendar Year (CY) 2003's required Scope I and II greenhouse gas emissions stemming from District operations, as well as some Scope III (optional) emissions – commuting, business travel and the emissions from the biomass portion of the biodiesel (B20) used in virtually all District diesel vehicles.

REC purchases increased from there, although TVWD's cost actually dropped dramatically as the cost of RECs decreased over the years (Fig. 2). The District purchased RECs (for purchased electricity) and carbon offsets (for the remaining types of emissions) from various third-party verified providers selected through the formal Request for Proposals process. All purchases are certified through *Green-e*, which certifies and verifies renewable energy and greenhouse gas mitigation products for virtually all of this market.

Figure 2: Cost and % of TVWD GHG Emissions Offset by RECS and Carbon Offsets

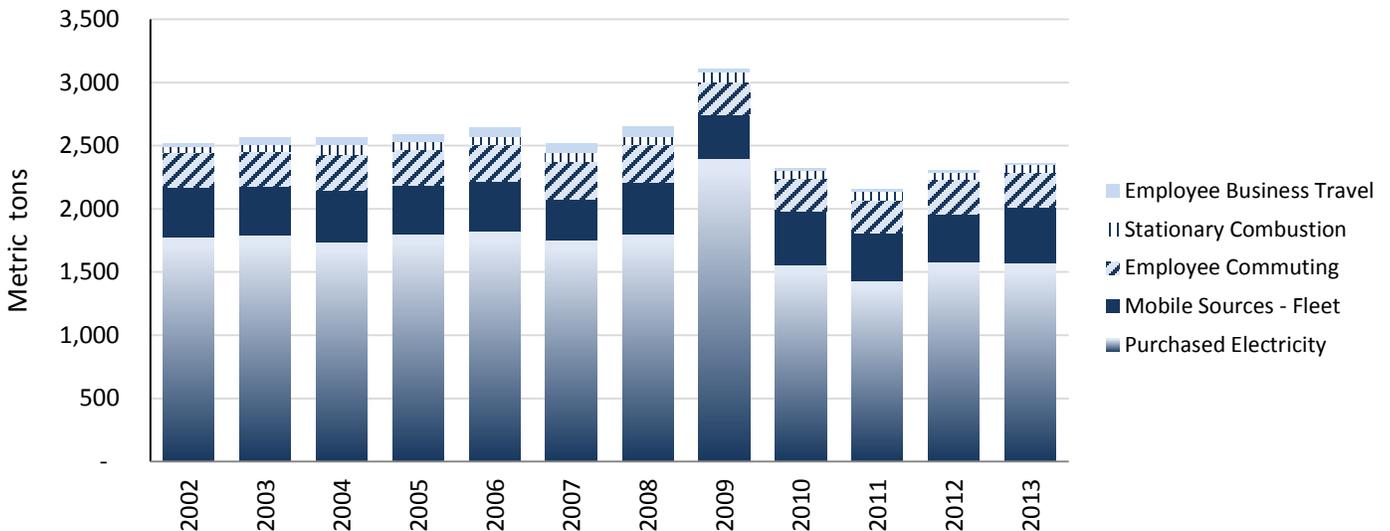


In 2009, the District’s GHG inventory was conducted for the first time through the EPA’s Climate Leaders calculation tool. A few other small emissions sources were added at that time, primarily fire suppression, air conditioning and refrigeration emissions. Utilizing this tool gave us up-to-date emissions factors and a standardized way to calculate our emissions. We utilized the tool as a Climate Leaders ‘Small Business and Low Emitter’ participant until 2011, when the EPA discontinued that program to focus on larger emitters. However, the District still uses that tool to calculate its emissions, updating emissions factors as they are revised by the EPA.

**2013 GHG Emissions**

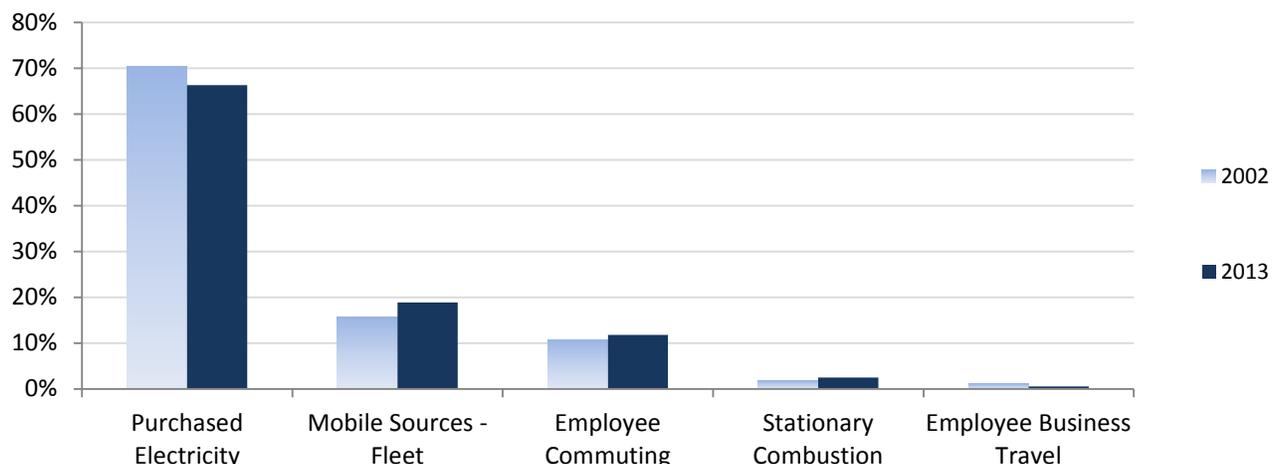
As shown in Fig. 3, GHG emissions for CY 2013 were relatively stable compared to 2012, though the decreases of 2010 and 2011 have reversed. Electricity usage increased 1.4% over last calendar year, primarily due to the addition of the Thompson Pump Station. Headquarters electricity usage increased 2.5%, though 19% of that was powered by the 115 kW onsite solar array. The Grabhorn Aquifer Storage and Recovery (ASR) well has consumed more than 500,000 kWh each of the last two years, roughly 13% of total District electricity usage. This is up from about 5% prior to Grabhorn ASR beginning operation in 2009.

Figure 3: TVWD Greenhouse Gas Emissions by Source



The composition of District emissions has shifted slightly over the years (see Fig. 4). The District has participated in several energy efficiency efforts and they seem to have paid off. Electricity usage has decreased 12% from 2002, significantly diminishing the part it plays in TVWD greenhouse gas production. Fleet emissions, on the other hand, have increased as a portion of total emissions. Though biodiesel is used and newer vehicles consume less fuel per mile driven, the fleet count has increased, and therefore so has the contribution of vehicle emissions.

Figure 4: Percentage of Total Emissions by Source



#### Current and Future Efforts to Reduce GHG Emissions

TVWD continually works to decrease its emissions, but water is a heavy commodity and it takes a great deal of energy to move it. Though District emissions have decreased more than 6% from an average of 2,500 metric tons in 2002 to an average of 2,360 in 2013 (Fig. 2), there is room for improvement and staff are hard at work to make further reductions in energy usage. Examples include:

- As one of the District's 2013-15 Key Initiatives, *Energy Efficiency Monitoring and Data Capture* pulls together staff from several departments to review opportunities and champion energy reduction measures. A cross-departmental Energy Team meets regularly to identify measures to reduce greenhouse gas emissions in all areas of District operations.
- Appropriate capital projects such as the Ridgewood View Pump Station and Reservoir and the Willamette Water Supply Program are being designed to the Institute for Sustainable Infrastructure's (ISI) Envision™ standards. One of the five sections of this public infrastructure project rating system addresses climate change and risk, assigning points for reducing GHG emissions in the construction and operation of projects.
- The District utilizes *Planet Footprint*, an 'energy and environmental scorekeeping' business – to continuously and independently monitor and report the energy, water and environmental performance of TVWD. They are able to devote their full attention to this scorekeeping and use the expertise gained from working with other companies to help TVWD staff recognize and analyze anomalies, track performance and modify practices.
- Fleet vehicles are evaluated through a life cycle analysis process that includes fuel efficiency and GHG emissions as criteria for vehicle decisions.
- Staff are continually encouraged to take public transportation or to ride bikes or walk whenever practical. Free TriMet passes, secure bike storage and shower facilities make this easy for employees so inclined.
- Events such as Westside Transportation Alliance's Carefree Commuter Challenge each summer provide opportunities to educate and involve employees in sustainable behaviors that may be new to them and that could result in decreases to the District's and their personal GHG footprint.
- The Information Technology staff continues to explore ways to provide needed services with less energy. They have reduced the number of physical servers needed to drive the District's information processing and are working on ways to power down computers and other equipment when not in use, among other measures.