

## EXPLANATION OF DIFFERENCES IN INVENTORY METHODOLOGY, 2005-2017

Mountain View's 2018 collaboration with Google, through their Civic Leadership Program, resulted in a streamlined workflow process that enabled City staff to conduct the 2017 greenhouse gas (GHG) inventory in-house. Additionally, the new workflow process facilitated better integration with an online inventory software platform (ClearPath) developed by ICLEI, the same organization that developed the standardized Community GHG Inventory Protocol (Protocol) used by the City to conduct its emissions inventories. Prior to 2017, inventories had been completed by different consultants using an Excel-based format for calculations. While these inventories were generally Protocol-compliant, there are some slight differences in methodology that led to minor inconsistencies in calculating emissions for inventory subsectors across the four official inventory years (2005, 2012, 2015, and 2017). This document explains any differences that impacted the three affected subsectors: Direct Access (DA) electricity, waste, and water. Moving to in-house inventories completed primarily by City staff, as well as utilizing the new workflow process and online ClearPath tool, will ensure standardization in methodology that will prevent similar issues from occurring in the future.

The switch to the new GHG inventory workflow process created some minor inconsistencies between emissions reporting in some categories that account for a very small percentage of total communitywide emissions. Previous inventories were not officially recalculated to account for these differences because the impact on total communitywide emissions was extremely small. While this does not greatly affect year-to-year comparisons for total communitywide emissions due to the small scale of change, it does complicate the ability to track year-to-year changes in each subsector. This document presents the adjusted numbers for previous years, where these calculations were possible, to enable a more accurate comparison of changes in emissions between the 2015 and 2017 inventories.

It is important to note that some degree of uncertainty is inherent in the inventory process because any attempt to quantify GHG emissions at the community level will involve many assumptions and estimations. The Protocol includes several different estimation methodologies for each sector, depending on what data is available to a given jurisdiction. Locally specific data is always preferred, but in the absence of local data, downscaled regional estimations or Protocol-supplied default average values can be used. In some cases, the availability of locally specific data can vary year to year, as is the case with Direct Access electricity use. This document explains the specific data availability challenges unique to each GHG inventory subsector.

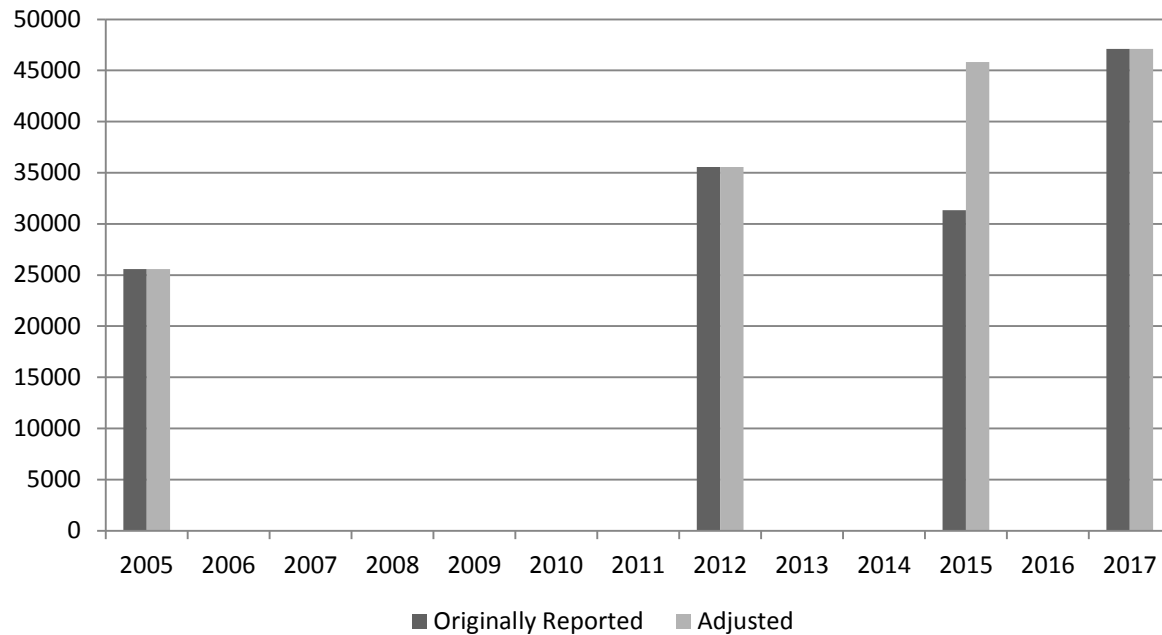
## Direct Access Electricity

Direct Access electricity is any electricity that is purchased directly from competitive electric service providers rather than from a utility. Because DA customers execute individual energy purchase contracts with electric service providers, DA energy is not generated by the same sources as electricity provided by a local utility and is, therefore, reported separately. Public disclosure of energy usage data is subject to the aggregation rules created by the California Public Utilities Commission, including what is commonly referred to as the “15/15 Rule.” This rule requires that any publicly disclosed energy usage data must be aggregated so that it has 15 or more customers, with no single customer’s usage constituting more than 15 percent of the total consumption reported. Because there are far fewer DA customers than customers of local electric utilities, and DA customers are more likely to be large entities, it is much easier for DA electricity usage to fail the aggregation test required by the 15/15 Rule.

Generally, measured annual usage data is available for DA electricity in Mountain View and can be used to directly calculate GHG emissions. In years where DA data for Mountain View does not comply with the 15/15 Rule, the Protocol has an alternative estimation methodology that allows for downscaling County-level DA data to estimate the total for Mountain View. As DA electricity use is not evenly distributed within the County, however, this method is not as accurate as measured usage. In 2012, DA electricity failed the 15/15 Rule test, so the alternative methodology was used. In 2015, however, measured usage data was available for DA electricity use, but the downscaled County usage methodology was incorrectly utilized for the inventory.

Figure 1 compares the originally reported DA electricity use for the 2005-2017 inventories and the adjusted values based on the measured rather than estimated DA data for 2015. As demonstrated, *the adjusted values show a much smaller increase in emissions between 2015 and 2017.* The downscaled County methodology used in the originally reported 2015 inventory significantly underestimated DA electricity usage in that year.

**Figure 1: Originally Reported and Adjusted DA Emissions, 2005-2017**

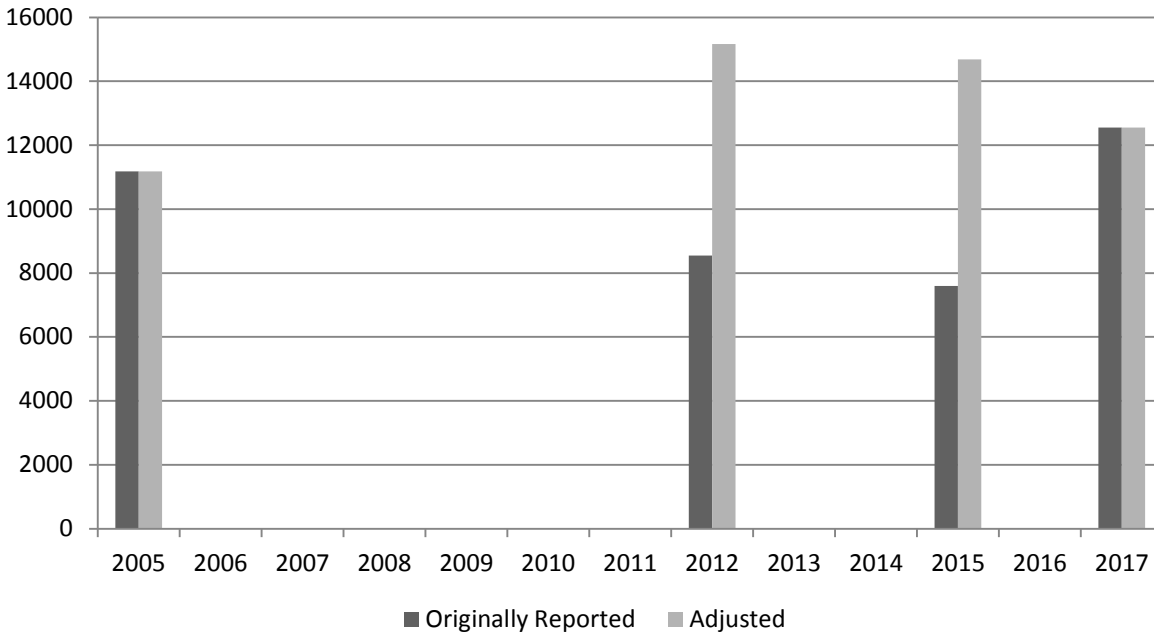


## Waste

The 2012 and 2015 inventories excluded several reportable categories of solid waste (primarily compostable paper) that contribute to GHG emissions from this sector. As a result, emissions from solid waste appeared to decline by 24 percent from 2005 to 2012 despite an increase in the amount of waste disposed. To allow for better comparison between years, a corrected waste characterization percentage, including all reportable categories, was applied to the 2012 and 2015 inventories, using data from a 2012 study<sup>1</sup> of SMaRT® Station residuals (waste sent to the landfill after sorting). Figure 2 displays the originally reported and adjusted solid waste emissions. The adjusted numbers represent a more accurate picture of the change in waste emissions over time. As indicated in Figure 2, solid waste emissions in 2017 show a significant decrease from 2015 levels, rather than a significant increase. This is consistent with the reported decrease in amount of solid waste disposed and decrease in the percentage of organic material in the landfilled waste stream.

<sup>1</sup> <https://www.cityofpaloalto.org/civicax/filebank/documents/33681>

**Figure 2: Originally Reported and Adjusted Solid Waste Emissions, 2005-2017**



## Water

Estimated GHG emissions from the water supply result from the energy used in extracting, conveying, treating, and distributing potable water. Previous inventories used Protocol-supplied average default values for the energy intensity of each of these processes. However, Mountain View's water comes from sources with a relatively low energy intensity because the majority of its imported water is supplied by a gravity-fed water system. For the 2017 inventory, energy intensity values specific to the City's sources of water were used in the calculations. These values were obtained from the San Francisco Public Utilities Commission (SFPUC) and Santa Clara Valley Water District (SCVWD), the two suppliers of imported water to Mountain View. This provides a more accurate picture of GHG emissions resulting from the potable water supply, but these values are not available for all previous inventory years. The values were available for 2015, however, so a more accurate comparison of change is possible between the 2015 and 2017 inventories. Using the locally specific energy intensity values reduces the 2015 emissions from 1,633 MT CO<sub>2</sub>e to only 110 MT CO<sub>2</sub>e. The reported value for 2017 is 108 MT CO<sub>2</sub>e. This is consistent with the similar levels of water usage and water sources reported between these two years.

Additionally, emissions from wastewater treatment were adjusted in 2015 to include new sources of GHG emissions that had not been previously reported. However, the adjusted totals incorrectly included the biogenic emissions reported by the Regional Water Quality Control Plant (RWQCP) in addition to reported anthropogenic emissions, as well as some emissions that were unrelated to operation of the RWQCP,

which is inconsistent with the Protocol. At this time, detailed RWQCP emissions reports are not available to provide adjusted estimates for all previous inventories, but making appropriate adjustments to the 2015 numbers reduces the estimated wastewater emissions significantly from 7,281 to 1,702 MT CO<sub>2</sub>e. The reported 2017 wastewater emission value of 1,725 MT CO<sub>2</sub>e, therefore, represents a slight increase from 2015 levels rather than a significant decrease. This is consistent with the small increase in volume of wastewater treated between 2015 and 2017.

#### Impact on Reported Communitywide GHG Emissions

The net impact of applying the full 2017 methodology to the 2015 data results in an extremely small impact of 0.2 percent of total reported GHG emissions. Therefore, the adjusted numbers are helpful for more accurately examining changes over time within each sector and measuring the impact of sector-specific initiatives on those emissions. *However, the adjusted numbers do not result in a significant impact on Mountain View's progress toward its adopted GHG reduction goals.*