



## **Transportation Emissions Baseline Guidance**

### **Background**

Unlike energy, each individual 2030 District develops its own water and transportation emission baselines that reflect regional conditions.

The Philadelphia 2030 District convened working groups to assist with the developing baselines and data tracking methods for both the water and transportation emissions metrics in advance of the June 2019 reporting deadline. The working groups are comprised of both subject matter experts and property partners.

### **Transportation Working Group**

The Philadelphia 2030 District Transportation Working Group met quarterly for over a year to address the following action items:

- Defining an appropriate baseline and tracking method to measure progress toward the goal of reducing transportation emissions by 50% by 2030 districtwide
- Promoting strategies that can be executed by building owners and managers to engage tenants and employees on reducing carbon emission from their commutes
- Supporting policy solutions that advance the aggregate districtwide goal

### **Transportation Emissions Baseline**

From the outset of the yearlong process, the Transportation Working Group determined that the transportation emissions baseline would be established and measured at the district scale as opposed to on the building level. The actions of individual, participating buildings will certainly have an effect of the success of the district in reaching its goal but calculating transportation emissions at the individual building scale was determined to be both imprecise and impractical with available data.

To address the challenge of assessing district transportation patterns and related carbon emissions through an initiative that is oriented around building-level buy-in, the Transportation Working Group relied up existing regional survey data and travel models to establish a district baseline.

The Transportation Working Group was aided by Sarah Reinheimer, who completed a Master of Public Policy at Duke University's Sanford School of Public Policy in 2018. Reinheimer's master's thesis explored various publicly available datasets to determine a baseline measure of carbon emissions per

commuter per day traveling in and out of the Philadelphia 2030 District boundary. The thesis also evaluated baseline methodologies of five other 2030 Districts and put forth recommendations for the standardization of data and process for transportation emissions across districts.

Ultimately, Reinheimer, with assistance from Transportation Working Group member Delaware Valley Regional Planning Commission (DVRPC), chose to use the 2010 Census Transportation Planning Products (CTPP) with the DVRPC Distance Matrix Data to calculate a carbon emissions per commuter baseline metric for the district. Reinheimer built a calculator that took into account distance and mode share in and out of the Philadelphia 2030 District via approximately 90 traffic analysis zones (TAZs) that overlapped with the district boundary. From there, Reinheimer applied the appropriate regional carbon emissions factor to each transit mode to calculate an average kilograms of carbon dioxide per commuter per day (kg CO<sub>2</sub>/commuter/day.). The Transportation working group annualized this baseline to align with the metric used by other 2030 Districts by assuming a 250 day work year (50 work weeks with 5 working days each.)

The calculator determined that the Philadelphia 2030 District has a transportation emissions baseline of 1182 kg CO<sub>2</sub>/commuter/year. The 50% reduction goal for the district is **591 kg CO<sub>2</sub>/commuter/year** by the year 2030.

Further information on the [baseline calculator](#) methodology may be found in Reinheimer's [thesis](#) along with a comparative analysis of Philadelphia's transportation emissions baselines against other cities' 2030 District baselines.

## **Transportation Emissions Measurement**

The Philadelphia 2030 District will track its progress toward meeting its transportation emissions goal in two ways.

The first is to update the baseline calculator with new CTPP data as it is released to gauge how trends in transportation are progressing and whether commuters in and out of the district are utilizing less carbon-intensive modes of transit. DVRPC has agreed to assist the Philadelphia 2030 District in updating the calculator. This will not require any additional information sharing from participating property partners.

The second is to conduct a survey of all buildings in the district to address the limitations of our current baseline calculator by:

- Creating an opportunity to evaluate the performance of participating buildings relative to all buildings in the Philadelphia 2030 District boundary;
- Clarifying multi-modal data that is not available through CTPP data;
- And allowing for an understanding of the rationale behind transit choices including the impact of programs and policies on these choices.

The Transportation Working Group recommends the Philadelphia 2030 District undertake a surveying effort by every two years in conjunction with local and regional partners to both increase capacity and complement any ongoing survey efforts and information needs. Property partner participation is encouraged but is not mandatory.