Technical Appendix

Accompanying the Greenhouse Gas Inventory and Preliminary Energy-Use Analysis of Tucson Unified School District

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Introduction

This document provides a detailed explanation of the methods implemented in the Greenhouse Gas Inventory and Preliminary Energy-Use Analysis of Tucson Unified School District: Fiscal Year 2024. It was prepared by Alyssa Fink, M.S. Architecture student, and Dr. Philip Stoker, Associate Professor of Planning, as a project within the Drachman Institute of the College of Architecture, Planning, and Landscape Architecture (CAPLA) at the University of Arizona.

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Greenhouse Gas Inventory Calculations

This section describes the process used to calculate greenhouse gas (GHG) emissions from seven Tucson Unified School District (TUSD) operational activities throughout the baseline year. This calculation process was designed in accordance with best practices from *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard* (hereafter called the *Corporate Standard*), with exceptions noted where it was not possible to abide by this standard (Ranganathan et al., 2004). The *Corporate Standard* outlines globally-recognized best practices for conducting GHG inventories.

This process generally involves 4 steps:

1. Calculate emissions by facility from each activity in terms of CO2, CH4, and N2O
2. Convert emissions to MT CO2e
3. Sum emissions from all activities for each facility/unit
4. Sum all emissions across the entire district

Three additional metrics are calculated to enable deeper understanding of TUSD's GHG emissions:

5. Convert emissions to quantities of other activities with similar scale of impact (e.g., # of trees planted)
6. Calculate carbon intensity
7. Calculate social cost of greenhouse gases
8. Comparison with similar institutions

1. Emissions by Facility and Activity

The purpose of this calculation is to estimate GHG emissions based on information available about TUSD operational activities. The results are measured across 7 operational activities for each facility in terms of metric tons of three GHGs: carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). Calculations are broken down by activity below.

Scope 1: Natural Gas Combustion

Facility-level emissions from natural gas combustion are calculated using the following formula:

GHG Emissions (MT) = Total Natural Gas Usage (Therms) × Natural Gas Emission Factors (g/MMBtu or kg/MMBtu) × 0.1 MMBtu/Therm × 0.001 MT/kg × 0.001 kg/g (if emission factor is in g/MMBtu)

Total Natural Gas Usage (Therms) is the sum of natural gas usage across each of the 12 months included in the reporting period. These data come from the district's energy management software, which stores information from utility bills. The utility billing period is almost identical to the division between calendar months, so usage does not need to be shifted.

Natural Gas Emission Factors (g/MMBtu or kg/MMBtu) are standard emission factors. There are three factors – one for carbon dioxide, one for methane, and one for nitrous oxide. Each factor is multiplied separately by total natural gas usage, resulting in separate emissions data for each greenhouse gas. For more information on the conversion factors used, see the data section of this report.

0.1 MMBtu/Therm is a standard unit conversion.

0.001 MT/kg is a standard unit conversion.

0.001 kg/g is a standard unit conversion.

Scope 1: District-Owned Transportation

Vehicle-level emissions from district-owned transportation are calculated using the following formula:

GHG Emissions (MT) = Total Fuel Usage (gallons or SCF) × Fuel-Specific Emission Factors (kg/gallon or kg/SCF) × 0.001 MT/kg

Total Fuel Usage (gallons or SCF) represents the sum of diesel, unleaded gasoline, or compressed natural gas (CNG) consumed by each fleet vehicle during the 12-month reporting period. Data provided by TUSD included total annual mileage and fuel consumption for each vehicle.

Fuel-Specific Emission Factors (kg/gallon or kg/SCF) are standard emission factors that convert fuel usage into metric tons of greenhouse gases. For more information on the conversion factors used, see the data section of this report.

0.001 MT/kg is a standard unit conversion.

Scope 2: Purchased Electricity – Solar

Facility-level emissions from electricity purchased through Solar Service Agreements (SSAs) are calculated using two methods: the market-based method and the location-based method. While both methods are included, this report utilizes the market-based method for goal setting, tracking, and goal achievement claims because it allows TUSD to take credit for the substantial amount of electricity that it has chosen to procure through SSAs. For more information on the two methods, see the *Corporate Standard* and associated Scope 2 Guidance (Ranganathan et al., 2004; Sotos, 2015).

Note that, because of a net metering agreement between TUSD and TEP, the district retains ownership of the environmental attributes of the electricity that is generated on-site and exported to the grid.

Market-Based Method:

GHG Emissions (MT) = Total Electricity Usage (kWh) × 0.001 MWh/kWh × Market-Based Emission Factors (lb/MWh) × 0.0004536 MT/lb

Total Electricity Usage (kWh) is the sum of electricity purchased through SSAs across each of the 12 months included in the reporting period. This includes electricity used on-site and electricity exported to the grid. These data come from the district's energy management software, which stores information from utility bills. The utility billing period is almost identical to the division between calendar months, so usage does not need to be shifted.

0.001 MWh/kWh is a standard unit conversion.

Market-Based Emission Factors (lb/MWh) are selected based on the most specific information available about the environmental attributes of the purchased electricity. While electricity generated solely through the use of solar panels innately has emission factors of 0 for each gas, the emission factors that should be used vary based on contractual agreements regarding the purchase of electricity. For example, TUSD has signed an agreement that, for some facilities, Trico Electric Cooperative has ownership of the environmental attributes of the electricity generated by solar panels on-site. For those facilities, the market-based emission factors are equal to the emission factors of the electric utility. The source of the relevant emission factors is known as the "market." There are three factors for each market – one for carbon dioxide, one for methane, and one for nitrous oxide. Each factor is multiplied separately by total electricity usage, resulting in separate emissions data for each greenhouse gas. For more information on the emission factors used, see the data section of this report.

Location-Based Method:

GHG Emissions (MT) = Total Electricity Usage (kWh) × 0.001 MWh/kWh × Location-Based Emission Factors (lb/MWh) × 0.0004536 MT/lb

Total Electricity Usage (kWh) is the sum of electricity purchased through SSAs across each of the 12 months included in the reporting period. These data come from the district's energy management software, which stores information from utility bills. The utility billing period is almost identical to the division between calendar months, so usage does not need to be shifted.

0.001 MWh/kWh is a standard unit conversion.

Location-Based Emission Factors (lb/MWh) are the same for all electricity sources and across all contractual agreements. They are assigned based on the grid region within which that electricity is purchased. There are three factors – one for carbon dioxide, one for methane, and one for nitrous oxide. Each factor is multiplied separately by total electricity usage, resulting in separate emissions data for each greenhouse gas. For more information on the emission factors used, see the data section of this report.

0.0004536 MT/lb is a standard unit conversion.

Scope 2: Purchased Electricity – Grid

Facility-level emissions from electricity purchased from the electrical grid are calculated using two methods: the market-based method and the location-based method.

Note that, because of the previously mentioned net metering agreement between TUSD and TEP, data reflect net grid electricity usage rather than gross grid electricity usage.

Market-Based Method:

GHG Emissions (MT) = Total Electricity Usage (kWh) × 0.001 MWh/kWh × Market-Based Emission Factors (lb/MWh) × 0.0004536 MT/lb

Total Electricity Usage (kWh) is the sum of electricity purchased from the electrical grid across each of the 12 months included in the reporting period. These data come from the district's energy management software, which stores information from utility bills. The utility billing period is almost identical to the division between calendar months, so usage does not need to be shifted.

0.001 MWh/kWh is a standard unit conversion.

Market-Based Emission Factors (lb/MWh) are selected based on the most specific information available about the environmental attributes of the purchased electricity. The source of the relevant emission factors is known as the "market." There are three factors for each market – one for carbon dioxide, one for methane, and one for nitrous oxide. Each factor is multiplied separately by total electricity usage, resulting in separate emissions data for each greenhouse gas. For more information on the emission factors used, see the data section of this report.

0.0004536 MT/lb is a standard unit conversion.

Location-Based Method:

GHG Emissions (MT) = Total Electricity Usage (kWh) × 0.001 MWh/kWh × Location-Based Emission Factors (lb/MWh) × 0.0004536 MT/lb

Total Electricity Usage (kWh) is the sum of electricity purchased from the electrical grid across each of the 12 months included in the reporting period. These data come from the district's energy management software, which stores information from utility bills. The utility billing period is almost identical to the division between calendar months, so usage does not need to be shifted.

0.001 MWh/kWh is a standard unit conversion.

Location-Based Emission Factors (lb/MWh) are the same for all electricity sources and across all contractual agreements. They are assigned based on the grid region within which that electricity is purchased. There are three factors – one for carbon dioxide, one for methane, and one for nitrous oxide. Each factor is multiplied separately by total electricity usage, resulting in separate emissions data for each greenhouse gas. For more information on the emission factors used, see the data section of this report.

0.0004536 MT/lb is a standard unit conversion.

Scope 3: Electricity Transmission and Distribution Losses

Facility-level emissions from electricity that is generated at a plant but lost in the transmission and distribution system on its way to the end-user are calculated using the following formula, which

is set in accordance with Technical Guidance for Calculating Scope 3 Emissions (Barrow et al., 2013):

GHG Emissions (MT) = Total Grid-Purchased Electricity Usage (kWh) × 0.001 (MWh/kWh) × Electricity Life Cycle Emission Factors (lb/MWh) × 0.0004536 MT/lb × T&D Loss Rate (%)

Total Grid-Purchased Electricity Usage (kWh) is the sum of (net) electricity purchased from the electrical grid across each of the 12 months included in the reporting period. These data come from the district's energy management software, which stores information from utility bills. The utility billing period is almost identical to the division between calendar months, so usage does not need to be shifted.

0.001 MWh/kWh is a standard unit conversion.

Electricity Life Cycle Emission Factors (lb/MWh) include emission rates from all activities involved in the electricity production process, including upstream emission from the extraction, production, and transportation of fuel in addition to the emissions produced during electricity generation (Barrow et al., 2013). There are three factors – one for carbon dioxide, one for methane, and one for nitrous oxide. Each factor is multiplied separately by total electricity usage, resulting in separate emissions data for each greenhouse gas. For more information on the emission factors used, see the data section of this report.

0.0004536 MT/lb is a standard unit conversion.

T&D Loss Rate (%) is the percentage of electricity that is lost in the process of transmission and distribution between electricity generation sites and TUSD facilities. A T&D loss rate of 4% is assumed, in alignment with the rate reported in TEP's 2023 annual report to the corporation commission (Tucson Electric Power, 2023). Although this number does not cover 2024, it is generally consistent with the national average from 2018 to 2022, which was around 5% (Frequently Asked Questions (FAQs) - U.S. Energy Information Administration (EIA), n.d.).

Scope 3: Refuse and Recycling

Due to data availability, facility-level emissions from the third-party disposal and treatment of waste generated by district operations were calculated by the average data method using the following formula. Emissions from refuse and recycling were calculated separately. For more information on the different methods for calculating emissions from waste, refer to Barrow et al. (2013).

Emissions from Refuse and Recycling (MT) = Waste Volume (cubic yards) × Waste Volume to Weight Conversion Factor (pounds/cubic yard) × 0.0005 (short tons/pound) × Waste Emission Factor (MT CO2e/short ton)

Waste Volume (cubic yards) is the sum of all refuse/recycling generated across the 12 months included in the reporting period. These data come from the district's energy management software, which stores information from utility bills. It is important to note that this includes billed volume, not actual waste volume, because TUSD pays a pre-scheduled rate for each facility based on the number of containers of waste provided for use.

Waste Volume to Weight Conversion Factors (pounds/cubic yard) are selected based on the average of available information about the weight of different types of waste. For more information on these conversion factors, see the data section of this report.

0.0005 (short tons/pound) is a standard unit conversion.

Waste Emission Factors (MT CO2e/short ton) are assigned based on the approximate material composition of each waste stream and the respective disposal method. For more information on the waste emission factors used, see the data section of this report.

2. Converting Emissions to CO_2e

The purpose of this calculation is to convert emissions data regarding three separate greenhouse gases into a single number that

represents the total greenhouse gas impact of those emissions – metric tons of carbon dioxide equivalent (CO2e). This is accomplished using the following formula:

Greenhouse Gas Emissions (MT CO2e) = Carbon Dioxide Emissions (MT CO2) × CO2 GWP + Methane Emissions (MT CH4) × CH4 GWP + Nitrous Oxide Emissions (MT N2O) × N2O GWP

Carbon Dioxide, Methane, and Nitrous Oxide Emissions (MT) are those calculated by facility activity (and by vehicle for transportation emissions) in the steps above.

GWP is the 100-Year Global Warming Potential for each gas. These numbers, based on the best available science and widely accepted by the scientific community, communicate the climate impact of a metric ton of each gas over a 100-year period relative to the climate impact of carbon dioxide. For more information on GWP values, see the data section of this report.

3. Totaling Facility-Level Emissions

To calculate facility-level emissions, emissions from each operational activity were added together. As facility-level transportation data were not available, transportation emissions were kept separate.

4. Totaling District-Wide Emissions

To calculate district-wide emissions, emissions from each facility and transportation type were added together.

5. Converting to Emissions Equivalents

The purpose of this calculation is to enable deeper understanding of the scale of various levels of greenhouse gas emissions compared to other activities with impacts on the climate which readers may be more familiar with. To convert greenhouse gas emissions (MT CO2e) to quantities of activities that would produce either similar emissions or emissions reductions, this report relies on the conversion factors supplied by the EPA's Greenhouse Gas Equivalencies Calculator (United States Environmental Protection Agency, 2025).

6. Calculating Carbon Intensity

To calculate carbon intensity, which is also referred to as emissions intensity or greenhouse gas emissions intensity, greenhouse gas emissions are divided separately by square foot of building area and student enrollment numbers. This produced two metrics of carbon intensity. Data on building area at each facility were provided by TUSD. Data on student enrollment came from publicly-available data reports (Tucson Unified School District, n.d.). Whenever this metric is used, it either refers to the carbon intensity across all activities included in the report, or a more specific set explicitly listed.

7. Calculating Social Cost of Greenhouse Gases

The purpose of this calculation is to estimate the total monetary damages associated with TUSD's GHG emissions. The result, expressed in 2020 U.S. dollars, reflects the estimated economic cost to society from climate-related impacts such as property damage, health effects, and agricultural losses resulting from the release of each greenhouse gas.

The social cost of greenhouse gases (SC-GHG) is calculated separately for carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) and then summed to determine total costs. The following formula is used:

SC-GHG (2020$) = CO2 Emissions (MT) × CO2 Emissions Cost Value ($/MT) + CH4 Emissions (MT) × CH4 Emissions Cost Value ($/MT) + N2O Emissions (MT) × N2O Emissions Cost Value ($/MT)

CO2, CH4, and N2O Emissions (MT) are the total district-wide emissions of each greenhouse gas.

CO2, CH4, and N2O Emissions Cost Values ($/MT) are the respective social cost values (in 2020 $/MT) corresponding to the fiscal year of emissions. For more information on the values used, see the data section of this report.

8. Comparison with Similar Institutions

TUSD emissions were compared with those of six other school districts across the U.S. for which a greenhouse gas inventory was publicly available for a recent year:

- Portland Public Schools (Presberg et al., 2022)
- Fairfax County Public Schools (FCPS Energy Management Section, n.d.)
- Oyster River Cooperative School District (Gray & Lichtenwalner, 2020)
- Montgomery County Public Schools (Iyer, 2023)
- Ann Arbor Public Schools (Ann Arbor Public Schools, n.d.)
- Long Beach Unified School District (Long Beach Unified School District, 2024)

The comparison included emission totals across three categories that were available across all districts (stationary combustion, district-owned transportation, and purchased electricity), which were normalized based on student enrollment and total building area for all district facilities in order to enable meaningful comparison across districts of different sizes. For some districts, only one method of normalization was possible according to available data.

Preliminary Building Energy-Use Analysis

This section is designed to enable a high-level evaluation of the energy and cost-efficiency of TUSD buildings. This evaluation includes the identification of energy use patterns and irregularities within each facility in addition to comparison across similar facilities in TUSD and elsewhere in the same climate zone. The insights produced by the identification of patterns and comparison across facilities then inform whether and where future analysis might be beneficial to inform the selection of measures that may meaningfully improve building energy performance.

The methods implemented here are designed in accordance with best practices for a Preliminary Energy-Use Analysis (PEA) as outlined in the ASHRAE publication, *Procedures for Commercial Building Energy Audits, Second Edition* (Kelsey et al., 2011).

There are eight steps:

1. Collect facility and utility billing data
2. Review utility data for patterns and irregularities
3. Calculate energy use intensity (EUI)
4. Calculate energy cost intensity (ECI)
5. Compare EUI and ECI across TUSD and other similar facilities
6. Select target EUI
7. Compare energy and cost savings for reaching target EUI
8. Determine where future analysis is recommended

Site and source EUI values representing the median for similar facilities in the same climate zone (ASHRAE 2B) come from the Building Performance Database (LBNL, 2022).

DATA

This section details the numerical values – conversion rates, emission factors, etc. – that are utilized in one or more of the sections above to perform the greenhouse gas inventory or preliminary building energy-use analysis. It also explains the source of these numbers, as applicable.

Source-Site Energy Use Ratios

Energy Source	Ratio
Electricity (Grid Purchase)	2.80
Electricity (Onsite Solar or Wind - regardless of REC ownership)	1.00
Natural Gas	1.05

These values come from the ENERGY STAR Portfolio Manager Technical Reference on Source Energy (2023). They are based on "national average ratios for the conversion to source energy to ensure that no specific building will be credited (or penalized) for the relative efficiency of its energy provider(s)" (ENERGY STAR, 2023).

100-Year Global Warming Potential (GWP)

Greenhouse Gas	Chemical Formula	100-Year GWP
Carbon dioxide	CO2	1
Methane	CH4	27
Nitrous oxide	N2O	273

These 100-Year GWP values are sourced from the IPCC Sixth Assessment Report (Smith et al., 2021).

Fuel-Specific Emission Factors(GWP)

Fuel	Emission Factor	Emission Factor Units
Diesel	10.21	kg CO2e/gallon
Unleaded Gasoline	8.78	kg CO2e/gallon
Compressed Natural Gas (CNG)	0.05444	kg CO2e/SCF

The EPA Greenhouse Gas Emissions Factors Hub (EPA, 2025) provided these emission factors. Emission factors for CH4 and N2O are not included because these are more contingent on vehicle-specific characteristics such as engine design and emission control systems as opposed to fuel consumption (Office of Transportation and Air Quality, 2023). Emissions of CO2 alone are expected to account for 95-99% of the total impact of greenhouse gas emissions from fossil fuel-powered transportation (Office of Transportation and Air Quality, 2023).

Stationary Combustion Emission Factors

Fuel Type	CO2 Factor (kg/MMBtu)	CH4 Factor (g/MMBtu)	N2O Factor (g/MMBtu)
Natural Gas	53.06	1.0	0.10

These values are sourced from EPA's Emission Factors Hub (U.S. Environmental Protection Agency, 2025).

Thermal Energy Conversion Factors

Energy Source	Original Units	New Units	Conversion Factor
Electricity	kWh	kBTU	3.412
Natural Gas	Therms	kBTU	100

These values are sourced from the ENERGY STAR Portfolio Manager Technical Reference on Thermal Energy Conversions (2015). They are standard multipliers. Note that the electricity conversion factor applies to all types of electricity, including grid purchases and on-site solar generation because it relates to the energy content of one unit of electricity, which is the same regardless of how that electricity is generated.

Electricity Emission Factors

Market-Based Emission Factors

Electricity Source	CO2 Factor (lb/MWh)	CH4 Factor (lb/MWh)	N2O Factor (lb/MWh)
Tucson Electric Power	1620.712	0.179	0.026
Trico Electric Cooperative	740.810	0.041	0.006
REC	0	0	0

Market-based emission factors for electricity purchased from Tucson Electric Power (TEP) come from Output Emission Rates from 2023 eGRID data for Tucson Electric Power (U.S. Environmental Protection Agency, 2025). An emission factor adjusted for the residual mix was not available. This may result in double counting between electricity consumers. Emissions data from 2023 is used for the entire 2023-2024 fiscal year to which this report applies because 2024 data was not yet available at the time of calculation. These grid average emission factors do not include biogenic CO2 emissions, which the *Corporate Standard* requires to be reported separately from the scopes (Sotos, 2015).

As supplier-specific emission factors were not available for Trico Electric Cooperative, location-based emission factors were substituted. See the description of location-based emission factors below.

Market-based emission factors for electricity procured through SSAs are derived from the net metering agreement between TUSD and TEP. While this agreement does not explicitly confer environmental attributes, a TEP representative clarified by email that TUSD retains ownership of the zero-emission factor for all electricity exchanged with the grid through the net metering agreement.

Location-Based Emission Factors

Electricity Source	CO2 Factor (lb/MWh)	CH4 Factor (lb/MWh)	N2O Factor (lb/MWh)
All Sources	740.810	0.041	0.006

Location-based emission factors for each electricity source are identical by definition (Sotos, 2015). These factors are provided by the EPA's 2023 eGRID Subregion Total Output Emission Rates, released in 2025 (U.S. Environmental Protection Agency, 2025). Tucson Unified School District is included in eGRID subregion AZNM, which is also referred to as WECC Southwest. Emissions data from 2023 is used for the entire 2023-2024 fiscal year to which this report applies because 2024 data was not yet available.

These grid average emission factors do not include biogenic CO2 emissions, which would typically be reported separately from the scopes (Sotos, 2015).

Electricity Life Cycle Emission Factors

Electricity Source	CO2 Factor (lb/MWh)	CH4 Factor (lb/MWh)	N2O Factor (lb/MWh)
Tucson Electric Power	1620.712	0.179	0.026
Trico Electric Cooperative	740.810	0.041	0.006
REC	0	0	0

The emission factors used here are identical to the standard market-based emission factors described above. Typically, life cycle emission factors would also account for upstream emissions from the extraction, transportation, and processing of fuel. Because that information was unavailable at the time of this report, these numbers likely underestimate actual emissions.

Waste Volume to Weight Conversion Factors

Material	Conversion Factor (lb/cubic yard)
Mixed Municipal Solid Waste (MSW) – Residential, Institutional, Commercial - Uncompacted	275
Commingled Recyclable Material – Containers (Food/beverage, Glass) Corrugated Containers and Paper – No glass – Campus Recyclables	139

These conversion factors are selected from an EPA report detailing volume-to-weight conversion factors for a variety of material categories based on assumptions regarding the content of district refuse and recycling streams (U.S. Environmental Protection Agency Office of Resource Conservation and Recovery, 2016). Where some original conversion factors are presented as a range, the average of that range is used.

Waste Emission Factors

Waste Stream	Content and Disposal Assumptions	Emission Factor (MT CO2e/short ton)
Refuse	Mixed MSW, sent to landfill	0.59
Recycling	Mixed recyclables, sent to recycling facility	0.09

These values are derived from the EPA Emission Factors Hub, based on the assumed material content and disposal locations listed in the table above. Emission factors were not available for CH4, N2O, or any other greenhouse gases.

Social Cost of Greenhouse Gases Values

Year of Emissions	SC-GHG Values (2020$/MT) CO2	CH4	N2O
FY2022 (2021-2022)	198.5	1,761.0	55,977.0
FY2023 (2022-2023)	202.0	1,836.5	57,203.0
FY2024 (2023-2024)	206.0	1,912.0	58,428.5
FY2025 (2024-2025)	210.0	1,987.5	59,654.0
FY2026 (2025-2026)	213.5	2,063.0	60,879.5
FY2027 (2026-2027)	217.0	2,138.5	62,105.0
FY2028 (2027-2028)	221.0	2,214.0	63,331.0
FY2029 (2028-2029)	225.0	2,289.5	64,556.5
FY2030 (2029-2030)	228.0	2,365.0	65,782.0

The values used to calculate the social cost of greenhouse gases are based on those published by the EPA in 2023 (U.S. Environmental Protection Agency, 2023), which are broadly endorsed by the scientific community and rely on the "best available science and economics" (Sarinsky & Weatherford, 2024). These numbers represent an estimate of the total financial impact of the damages linked to the emission of each metric ton (MT) of greenhouse gas in 2020 dollars, including property damage from floods and increased mortality (Sarinsky & Weatherford, 2024). The SC-GHG values for each of three greenhouse gases (CO2, CH4, and N2O) vary based on the year in which emissions occur because "a discount rate is used to translate impacts that occur at different times into a common present value" in 2020 dollars (2020$) (Sarinsky & Weatherford, 2024).

While the EPA provides discount rates ranging from 1.5% to 2.5%, this report utilizes a discount rate of 2% in accordance with federal recommendations and scientific consensus (Sarinsky and Weatherford, 2024). As TUSD data are aggregated to the fiscal year and the EPA's SC-GHG values are calculated for the calendar year, the SC-GHG values listed above were averaged across two calendar years (i.e., 2023 and 2024) to generate values to be used for an entire fiscal year (i.e., FY24).

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