GHG Inventory and Impact Graph Documentation

# Purpose

To provide a high level overview of the methodology used in the GHG graphs prepared for Chapter 1 of the SB 350 filing. The summary will outline the data sources and the methodology selected.

# Summary

The graphs shown in the Vision & Policy chapter compare estimates of SDG&E’s service territory’s:

* Historical GHG estimates,
* Forecasted emissions under approved programs,
* Estimated GHG reduction goals for the on-road and off-road transportation sectors,
* GHG reductions from proposed programs, and
* GHG reductions from increasing program size to 10x and 20x proposed sizes.

## Chart 1 – Illustrative: California and San Diego Regional Green House Gas Reduction Goals

**SDG&E**

Historical: Estimated as a percentage of CA historical emissions.

Goals: Estimated as a percentage of statewide emission goals

Forecast: Calculated as a percentage of the “Projection to Goal” forecast for California.

**California**

Historical: ARB 2014 Scoping Plan

Goals: ARB 2014 Scoping Plan

Forecast: Calculated using difference between historical emissions and goals.

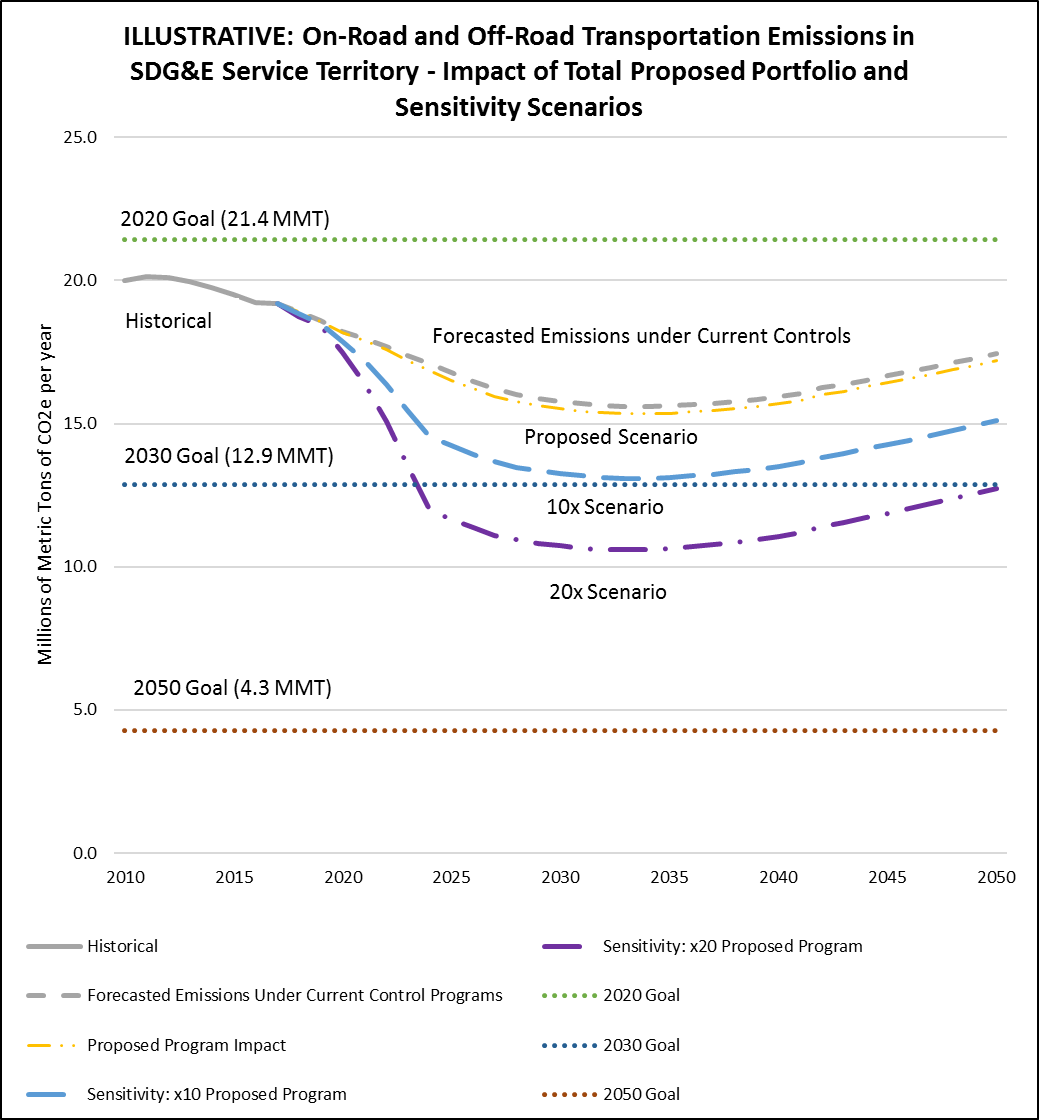
### Key Assumptions

* Assumes SDG&E service territory represents 9.4% of California’s emissions.[[1]](#footnote-1)

### Methodology for SDG&E Estimates

**Historical** - SDG&E’s historical emissions are estimated using an allocation factor of 9.4%. This method assumes that SDG&E’s relative emission levels mirror the emissions patterns of the state.

## Chart 2 – Illustrative: On-Road and Off-Road Transportation Emissions



Forecasted Emissions Under Current Controls: ARB Vision 2.1 and Vision 2.0 Models

Goals: ARB 2014 Scoping Plan and EPIC San Diego County GHG Inventory

Program Impact: E3 results

Historical and forecasted emissions under current control programs represent trends based on the ARB’s most recent Vision models.[[2]](#footnote-2) Sensitivities to program impact at 10x and 20x the proposed size are used to demonstrate the need for decisive, aggressive action.

### Key Assumptions

* Assumes that transportation emissions must fall to 40% and 80% below 1990 levels.
* Emissions reductions are tank to wheels CO­2 estimates based on E3 results. Assumes that all benefits from proposals are attributable to the program.
* Sensitivity scenarios scale up program impact using a factor. Any vehicles that are within the scope of a program but are not included in the benefit calculations are not captured.[[3]](#footnote-3)
* Historical and forecasted scenario N2O emission estimates are calculated internally using an ARB approximation.

### Methodology for Estimates

**Historical and Forecasted Emissions Under Current Control Programs** – This scenario aggregates results from three different ARB Vision models and adjusts San Diego county emissions to represent the SDG&E service territory. The ARB’s model for off-road equipment is still in development and San Diego region emissions have not been isolated from the rest of California. For this analysis, regional off-road emissions were estimated using allocation factors from the ARB’s In-Use Off Road Emissions Inventory model.

**On-Road/Off-Road GHG Goals** –

1. Find SDG&E territory’s share of GHG emissions in 1990
2. Use EPIC data to find the amount of emissions from on-road and off-road transportation in 1990.
3. Apply statewide emissions goals to 1990 On-Road and Off-Road GHG levels.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDG&E Service Territory On-Road and Off-Road Emissions Calculation | | | | |
|  |  |  |  |  |
| Line |  |  |  | Source |
| 1 | CA 1990 Goal |  | 431 | [California ARB](http://www.arb.ca.gov/cc/inventory/1990level/1990level.htm) |
| 2 |  |  |  |  |
| 3 | EPIC % On-Road & Off-Road of Total Emissions in 1990 |  | 53% | [EPIC (pg. 10)](http://catcher.sandiego.edu/items/usdlaw/EPIC-GHG-2013.pdf) |
| 4 |  |  |  |  |
| 5 | % of Service Territory Share Load |  | 9.4% | CalETC |
| 6 |  |  |  |  |
| 7 | 1990 Service Territory Emissions |  |  |  |
| 8 | (Line 1 x Line 5) |  | 40.6 |  |
| 9 |  |  |  |  |
| 10 | 1990 On-Road and Off-Road GHG Levels |  |  |  |
| 11 | (Line 3 x Line 8) |  | 21.4 |  |
| 12 |  |  |  |  |
| 13 | 2020 Goal |  |  |  |
| 14 | (Line 11) |  | 21.4 |  |
| 15 |  |  |  |  |
| 16 | 2030 Goal |  |  |  |
| 17 | (Line 11 x 60%) |  | 12.9 |  |
| 18 |  |  |  |  |
| 19 | 2050 Goal |  |  |  |
| 20 | (Line 11 x 20%) |  | 4.3 |  |

**Proposed Program Impact** – This scenario calibrates E3 results by making assumptions about vehicle replacements from 2028 – 2050 in order to provide an illustrative view of program impact out to 2050.

**Sensitivity Scenarios** – Applies a factor to proposed program impact results (see above). Programs cannot be scaled beyond their known population. All proposals are scaled in the sensitivity scenarios except for the Airport GSE pilot. The San Diego airport does not have enough diesel/gasoline powered GSE to support a program 10x larger than proposed. Additional locations must be considered in order to support a substantially larger program.

1. This is based on a customer population comparison performed by CalETC for the California Transportation Electrification Assessment (Cal TEA). [↑](#footnote-ref-1)
2. Current control program examples include Advanced Clean Cars and the Low Carbon Fuel Standard [↑](#footnote-ref-2)
3. For example, forklifts and yard tractors are both within the scope of the MD/HD port electrification project, but because only benefits from forklifts are estimated in the proposal, only forklift benefits are considered in the sensitivity scenarios. [↑](#footnote-ref-3)