San Pedro Bay Ports
1990 Greenhouse Gas Emissions
Baseline Report

Prepared for:

THE PORT OF LOS ANGELES

Port of LONG BEACH
The Green Port

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INTRODUCTION

The San Pedro Bay Ports Clean Air Action Plan (CAAP) 2017 update calls for reductions in greenhouse gas (GHG) emissions from port-related mobile sources to 40% below 1990 levels by 2030, and 80% below 1990 levels by 2050, which mirrors the State's GHG reduction goals. Although the Ports track GHG emissions from port-related sources in their annual emissions inventories, these inventories began in 2005, and as a result, the Ports do not know their GHG emissions from 1990. Thus, the Ports needed to develop a methodology to estimate their 1990 GHG baseline emissions levels; this methodology is the subject of this report.

The California Air Resources Board (CARB) is the only agency within California that has estimated GHG emissions in 1990 for all energy sectors. However, CARB has developed their GHG estimates only at the state level and more detailed allocations of GHG emissions at regional, county, or air district levels are not available. Therefore, the ports have developed a methodology for establishing the ports' baseline emission levels from available and credible sources of historical information. This methodology and its underlying assumptions were reviewed by and discussed with CARB staff, who agreed that they are appropriate. The information sources include the SPBP's own emissions inventories, developed annually for the calendar years between 2005 and 2017, and state-wide mobile emission source GHG estimates developed and published by CARB.[1] The most recent CARB estimates available at the time the SPBP baseline was established have been used as the basis for the calculations.

The CARB GHG emission estimates are provided for 1990, 2000, and annually thereafter and are segregated into emission source categories that reflect the variety of emissions-producing activities in the state, including the five mobile source categories covered by the SPBP EIs: ocean-going vessels, harbor vessels, cargo handling equipment, locomotives, and heavy-duty trucks. GHG estimates are available from the port EIs from 2005 through 2017, with preparation of the 2018 GHG emission estimates under way. The ports will continue to publish annual EIs in order to track progress in meeting CAAP goals, including the reduction of GHG emissions.[2]

[1] *https://www.arb.ca.gov/app/ghg/1990_1990/ghg_sector.php*
https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2015/ghg_inventory_ipcc_sum_2000-15

[2] Note: The annual emissions inventories use a different methodology for calculating GHG emissions from port sources. This methodology can be found in each Port's emissions inventory reports published on their respective websites.

METHODOLOGY

The methodology to estimate the ports' 1990 baseline emission levels involves calculating the difference between CARB's GHG estimates for 1990 and 2005, and then back-casting the ports' 2005 GHG emissions to 1990. For example, if the CARB statewide GHG emissions from a particular emission source category in 1990 were one-half (50%) of the statewide emissions in 2005 then the ports' 2005 GHG emissions would be multiplied by 50% to establish the ports' 1990 GHG level for that emission source category. A separate similar calculation was performed for each of the five emission source categories. This method assumes that the changes in GHG emissions from the various port-related emission sources mirrored the changes in GHG emissions from analogous emission sources statewide. Given the scarcity of available information on levels of activity from the five emission source categories and GHG emissions in 1990, this is a reasonable assumption. In addition, the ports compared the changes in emissions over the 2005-to-2017 timeframe between CARB's annual estimates and the ports' annual emissions inventories and found reasonable correlations for each of the emission source categories. As noted above, CARB was consulted and agreed with this conclusion.

The following steps were taken to estimate the 1990 baseline emissions of port-related GHGs:

1. CARB's historical statewide GHG emission estimates were segregated into emission source categories that encompass the five port-related emission source categories. The CARB emission source categories that most closely correspond with the ports' emission source categories were selected.

    a. For ocean-going vessels: The category reflecting international, interstate, and intrastate transit and in-port activity of ocean-going vessels within state waters (transportation/waterborne/ international, interstate, intrastate/port activities, transit in CA waters)

    b. For harbor craft: The category reflecting harbor craft engaged in intrastate waterborne transportation (transportation/water borne/intrastate/harbor craft)

    c. For cargo handling equipment: The category reflecting off-road industrial transportation equipment (transportation/off-road/industrial equipment)

    d. For locomotives: The category reflecting rail transportation (transportation/rail)

    e. For heavy-duty trucks: The category reflecting heavy-duty on-road trucks (transportation/on road/heavy duty vehicles/heavy duty trucks)

2. For each of the selected categories of CARB's statewide estimates, the ratio of 1990 emissions to 2005 emissions was calculated. For example, for locomotives the 1990 estimate is 2.33 million metric tons of CO_2e and the 2005 estimate is 3.34 million metric tons of CO_2e, for a ratio of 2.33/3.34 = 0.698.

3. The ratio calculated as above for each emission source category was multiplied by the relevant GHG estimate for 2005 from the ports' EIs to estimate the 1990 emission levels from each port emission source category. Continuing the locomotive example, the ratio of 0.698 was multiplied by the 2005 port GHG emissions of 142,780 metric tons to estimate the 1990 baseline of 99,661 metric tons of CO_2e.

4. The San Pedro Bay Ports' 1990 GHG baseline is the sum of each of the GHG estimates for the five emission source categories calculated as described above and shown in Table 1 below. Table 1 also lists the 2017 GHG emissions reported in the ports' 2017 emissions inventories for comparison.

Table 1: SPBP CO_2e in Metric Tons

Emission Source Category	CO_2e, metric tons			
	2017	2005	1990/2005 Ratio	1990
OGVs	513,763	682,438	0.382	260,691
Harbor craft	103,998	101,671	0.636	64,663
CHE	288,738	238,331	1.963	467,844
Locomotives	126,630	142,780	0.698	99,661
HDV	686,781	856,316	0.723	619,116
Totals	**1,719,910**	**2,021,536**		**1,511,975**

CONCLUSION

The GHG goals included in the CAAP 2017 update reflect the GHG emission reduction goals established by the State of California and the City of Los Angeles. As a first step in tracking progress towards GHG emission reductions, the SPBP have established their 1990 GHG baseline. The SPBP 1990 GHG emissions baseline has been estimated to be 1,511,975 metric tons of CO_2e. The CAAP calls for reductions in GHG emissions from port-related mobile sources to 40% below 1990 levels by 2030, and 80% below 1990 levels by 2050. To meet these reductions the ports will need to reach GHG emissions of no more than 907,185 metric tons of CO_2e by 2030 and 302,395 metric tons of CO_2e by 2050.

The SPBP will periodically assess their progress toward meeting these goals through methods including the annual air emissions inventories and through additional assessments at milestone points such as 2030 and 2050, and when significant GHG emission reduction measures are developed and implemented.