

# Caltrain 2021 Sustainability Report



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# Acronym List

APTA	American Public Transportation Association	ICT	Innovative Clean Transit
BART	Bay Area Rapid Transit	JPB	Peninsula Joint Powers Board, which owns and operates Caltrain
BEB	battery electric bus	kBtu	thousand British thermal units
CAP	criteria air pollutants	kWh	kilowatt-hours
CARB	California Air Resources Board	LCFS	Low Carbon Fuel Standard
CCAG	City/County Association of Governments of San Mateo County	MTC	Metropolitan Transportation Commission
CEMOF	Central Equipment & Maintenance Facility	MTCO <sub>2</sub> e	metric tons of carbon dioxide equivalent
CEQA	California Environmental Quality Act	NEPA	National Environmental Policy Act
CH <sub>4</sub>	methane	N <sub>2</sub> O	nitrous oxide
CNG	compressed natural gas	NTD	National Transit Database
CO <sub>2</sub>	carbon dioxide	PCE	Peninsula Clean Energy
COVID	SARS-CoV-2, commonly referred to as COVID-19 or Coronavirus	PG&E	Pacific Gas and Electric
CPAU	City of Palo Alto Utilities	p.p.	percentage points
District	San Mateo County Transit District	SFMTA	San Francisco Municipal Transportation Agency
eGRID	emissions and grid resource integrated database	SJCE	San Jose Clean Energy
EMFAC	CARB emission factor GHG emission tool	SMCEL JPA	San Mateo County Express Lanes Joint Powers Authority
FY	fiscal year	SVP	Silicon Valley Power
GGE	gallons of gasoline equivalent	TA	San Mateo County Transportation Authority
GHG	greenhouse gas	TCR	The Climate Registry
GREET	Argonne National Laboratory greenhouse gases, regulated emissions, and energy use in technologies model	UPT	unlinked passenger trips, also called “boardings”
HVAC	heating, ventilation, and air conditioning	VM	vehicle miles
		VTA	Santa Clara Valley Transportation Authority

## Message from Acting Executive Director

Prior to the pandemic, Caltrain's daily ridership averaged over 60,000 customers along the San Francisco Peninsula. To help support the Bay Area reopening, Caltrain has increased its weekday service from 70 to 104 trains. As a result, we are providing more train service than ever before, continuing to reduce traffic congestion and air pollution within our cities. We have always been a transportation agency committed to providing accessible, sustainable transportation to move people within our communities. In addition, Caltrain is committed to protecting the environment, embracing social responsibility, and improving the quality of life for all people we serve in our communities.

The Peninsula Corridor Electrification Project (PCEP) involves electrifying over 52 miles of track between the Fourth and King Street Station in San Francisco to south of the Tamien Caltrain Station in San Jose. The electrification of Caltrain will replace the majority of its aging diesel fleet with modern electric multiple-unit (EMU) trains. As a result, the EMU trains will be faster, more reliable, more frequent, safer, quieter, and will increase comfort for our commuters resulting in a more sustainable alternative to driving. The electrification of the corridor and the new high-performance trains will increase the system's capacity by nearly 50%. This capacity increase would remove the equivalent of nearly 40,000 cars off the road and eliminating 176,000 tons of carbon dioxide by 2040. Electrification will also improve air quality by lowering generated criteria air pollutants by up to 97%.

At Caltrain we are proud of the truly transformative electrification program that will improve the quality of life for Bay Area communities as well as Caltrain passengers. The program is foundational for many other programs that will build on its success including service to the future Transbay Terminal and future High Speed Rail.

I am pleased to share this sustainability report, which summarizes our performance between fiscal years (FY) FY2019 and FY2020, discussing key accomplishments and walking you through some of the initiatives we're working on.

Sincerely,



Michelle Bouchard  
Acting Executive Director, Caltrain



# INTRODUCTION

About the San Mateo County Transit District

About this Report

Sustainability Performance Summary

## About the San Mateo County Transit District

The San Mateo County Transit District (“District”) provides public transportation services within and outside of San Mateo County, California, a 455 square-mile area with a population of approximately 773,200 in 2020. The District leads the planning, development and management of a multi-modal public transportation system that includes buses, trains, shuttles, and paratransit services. The District is the managing agency operating four business units:



### SamTrans

SamTrans provides fixed-route bus service including local and express service, paratransit, and shuttle services in San Mateo County. As of August 2021, SamTrans currently operates 306 fixed-route revenue buses, 70 paratransit vehicles, and administers a shuttle program to and from Caltrain and BART stations.



### Caltrain

Caltrain provides commuter rail service serving thirty-two stations in three counties from San Francisco to Gilroy. Before the COVID-19 pandemic, Caltrain operated approximately 90 weekday trains, which included express, limited, and local trains. Caltrain is owned and operated by the Peninsula Corridor Joint Powers Board (JPB), which is comprised of three member agencies: The District, the City and County of San Francisco, and the Santa Clara Valley Transportation Authority (VTA).



### San Mateo County Transportation Authority

The San Mateo County Transportation Authority (TA) administers the countywide sales tax dedicated to transportation-related projects and programs in the County. In 2004 San Mateo County passed Measure A, a half-cent sales tax to support transportation and infrastructure investment. In 2018 voters passed a half-cent sales tax (Measure W). The TA administers 50% of Measure W funds and SamTrans administers the other 50%.

### San Mateo County Express Lanes Joint Powers Authority

The TA and the City/County Association of Governments of San Mateo County (C/CAG) formed the San Mateo County Express Lanes Joint Powers Authority to manage and operate the US-101 Express Lanes Project, which will provide express lanes in north and southbound directions of US-101 in San Mateo County.

## About this Report

This is Caltrain's third sustainability report. This report shares Caltrain's FY2019 and FY2020 sustainability performance, including key metrics and information about sustainability achievements.

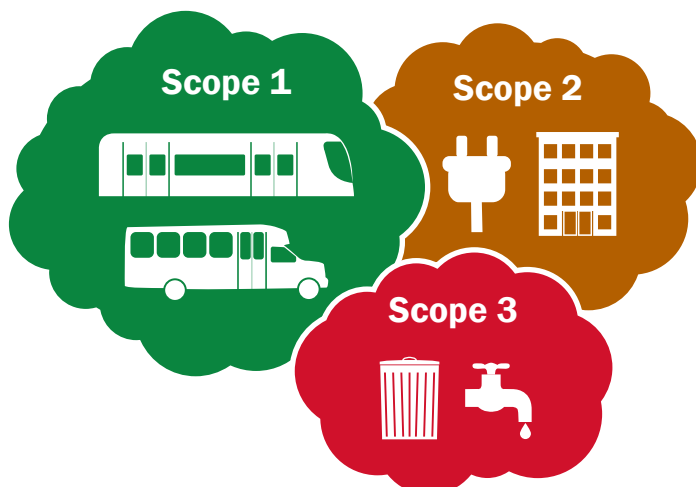
The report scope only encompasses facilities, commuter rail, and shuttle services under the operational control of Caltrain. This report does not include information for non-revenue vehicles and employee commuting, which are included in SamTrans' separate sustainability report to avoid double-counting.

The GHG emissions data in the report include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). They are presented in this report as metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e). Other GHGs, such as sulfur hexafluoride and refrigerants, are excluded from this inventory.

GHG emissions are divided into three different categories, called "scopes". Scope 1 includes all emissions directly emitted by sources owned or controlled by Caltrain (e.g., revenue vehicle diesel, gasoline, and CNG fuel use and facility natural gas use); Scope 2 includes all indirect emissions from purchased electricity, heat, and/or steam; Scope 3 includes all other indirect emissions (e.g., GHG emissions from water, waste, and displaced passenger trips).

Consistent with The Climate Registry (TCR) and APTA, Caltrain reports all Scope 1 and 2 GHG emissions. Caltrain also reports Scope 3 GHG emissions associated with waste generation and diversion, water usage, and avoided/displaced customer trips.

### GHG Emissions Generated by Caltrain



This report includes the following sustainability indicators:

- GHG emissions
- GHG displacement
- Criteria air pollutant emissions
- Energy use from revenue vehicles
- Energy use from facilities
- Water use
- Waste generation and diversion
- Train miles
- Unlinked passenger trips (boardings)
- Displaced or avoided customer trips

Sustainability indicators are normalized by total Caltrain ridership based on the total number of trains boardings. Boardings represent the number of times passengers board Caltrain rail service. Normalizing by boardings enables Caltrain to evaluate improvements in vehicle productivity and operational efficiency.



Caltrain is a signatory of the American Public Transportation Association's (APTA's) Sustainability Commitment. The Commitment provides a framework for transit agencies to manage sustainability within their agency and includes a set of key performance metrics for tracking sustainability performance. In April 2018, APTA recognized Caltrain with silver-level status for the agency's continued achievements in sustainability.

# Sustainability Performance Summary<sup>1</sup>

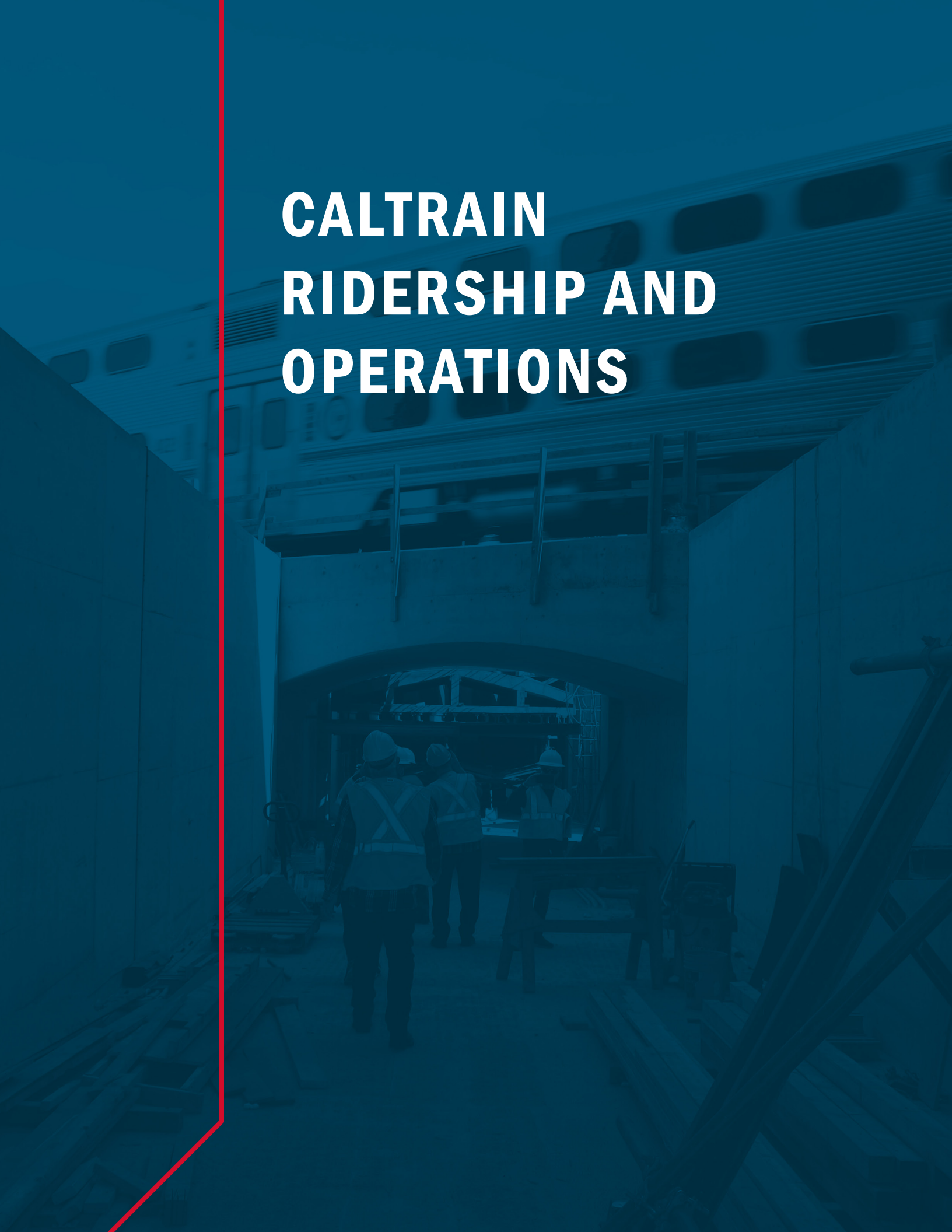
The following table provides information on Caltrain's sustainability performance since the publication of the previous sustainability report, which covered through FY2018. Information on data sources and methodology are included as end notes.

Indicator	Unit	FY2018	FY2019	FY2020	FY2018–FY2020 % Change
<b>Greenhouse Gas Emissions</b>					
Generated <sup>d</sup>	MTCO <sub>2</sub> e	45,311	43,253	40,411	-11%
Displaced/ Avoided <sup>h</sup>	MTCO <sub>2</sub> e	-60,551	-55,471	-42,228	-30%
Net Total <sup>h</sup>	MTCO <sub>2</sub> e	-15,240	-12,218	-1,787	88%
<b>Criteria Air Pollutant Emissions</b>					
Generated <sup>iv</sup>	tons	838	804	755	-10%
Displaced/ Avoided <sup>v</sup>	tons	-311	-264	-190	-39%
Net Total <sup>iv</sup>	tons	527	539	565	7%
<b>Facility Energy Use</b>					
Electricity <sup>vi</sup>	kWh	7,264,948	7,460,747	6,779,832	-7%
Natural Gas <sup>viii</sup>	therms	8,020	11,148	9,041	13%
Total Facility Energy Use <sup>x</sup>	kBTU	25,577,147	26,561,511	24,039,505	-6%
<b>Revenue Fleet Vehicle Energy Use</b>					
Diesel <sup>x</sup>	gallons	4,234,870	4,062,971	3,815,352	-10%
Gasoline <sup>xi</sup>	gallons	99,406	93,977	91,237	-8%
CNG <sup>xii</sup>	GGE	6,324	1,487	0	-100%
Total Vehicle Energy Use <sup>xiii</sup>	kBTU	597,873,380	572,972,737	538,286,568	-10%
<b>Water</b>					
Consumed <sup>xiv</sup>	gallons	14,914,911	14,780,343	14,533,797	-3%
<b>Waste and Recycling</b>					
Generated <sup>xv</sup>	tons	591	512	480	-19%
Diverted (by weight) <sup>xvi</sup>	Percentage or Percentage Points	73%	74%	74%	1 p.p.

<sup>1</sup>Totals may not add due to rounding. A small number of past performance figures published in our 2019 report have been restated due to changes in emissions factors or more accurate information received after the publication of our 2019 report.



# CALTRAIN RIDERSHIP AND OPERATIONS

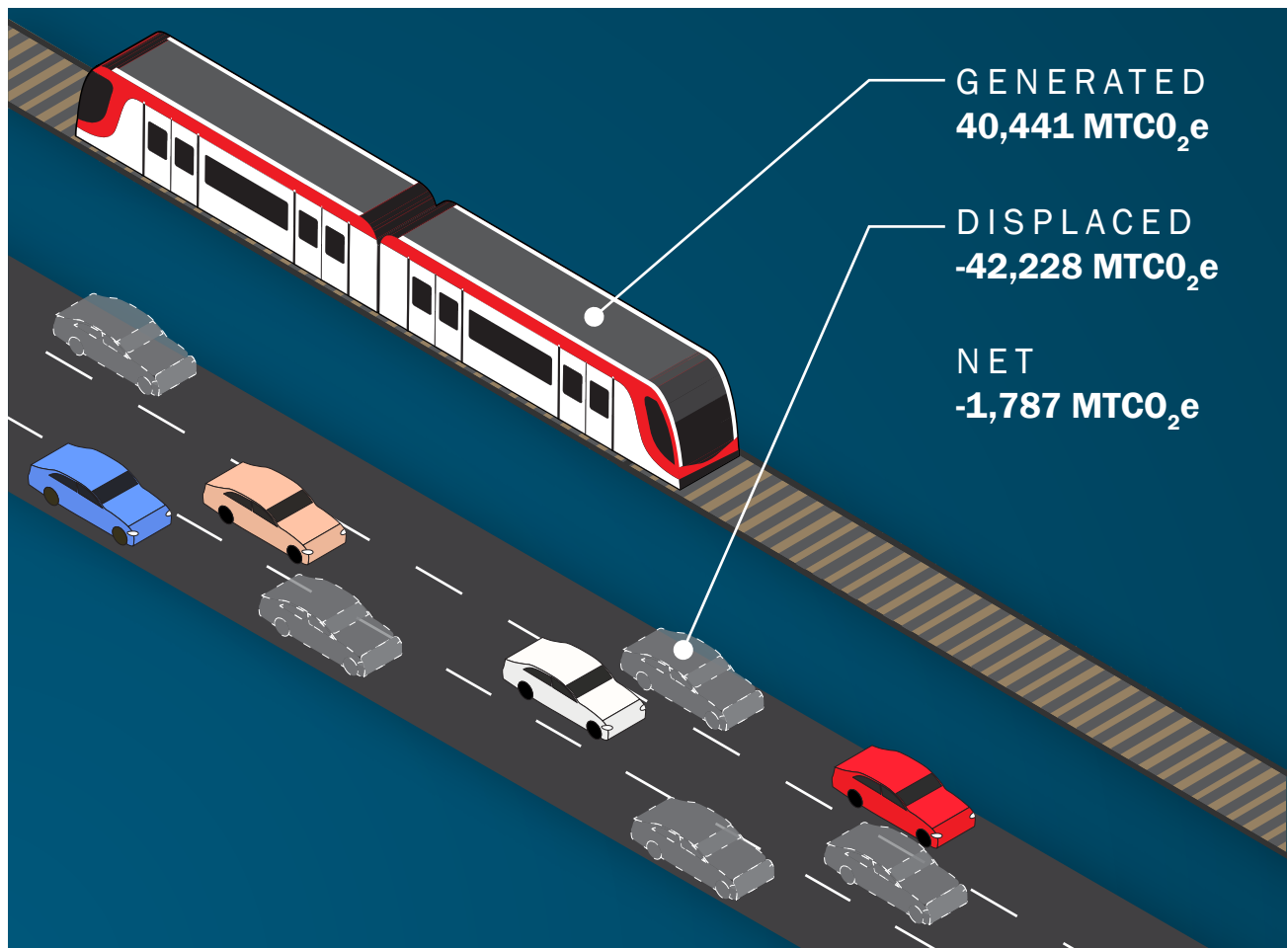


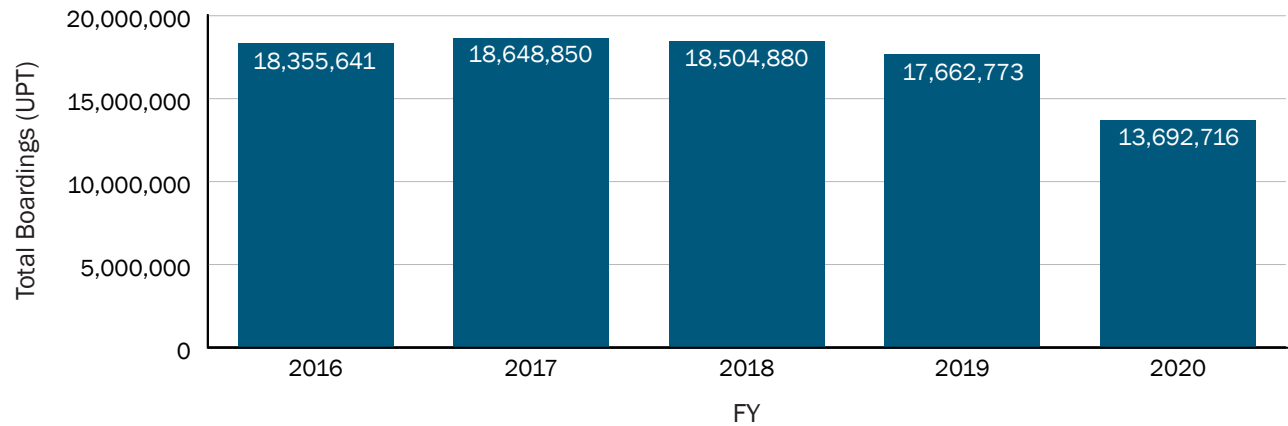
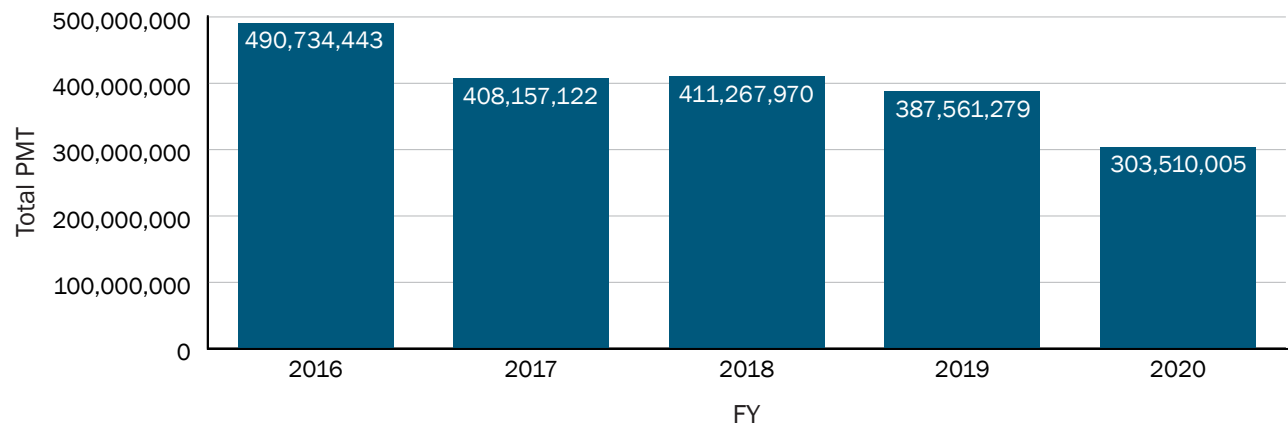
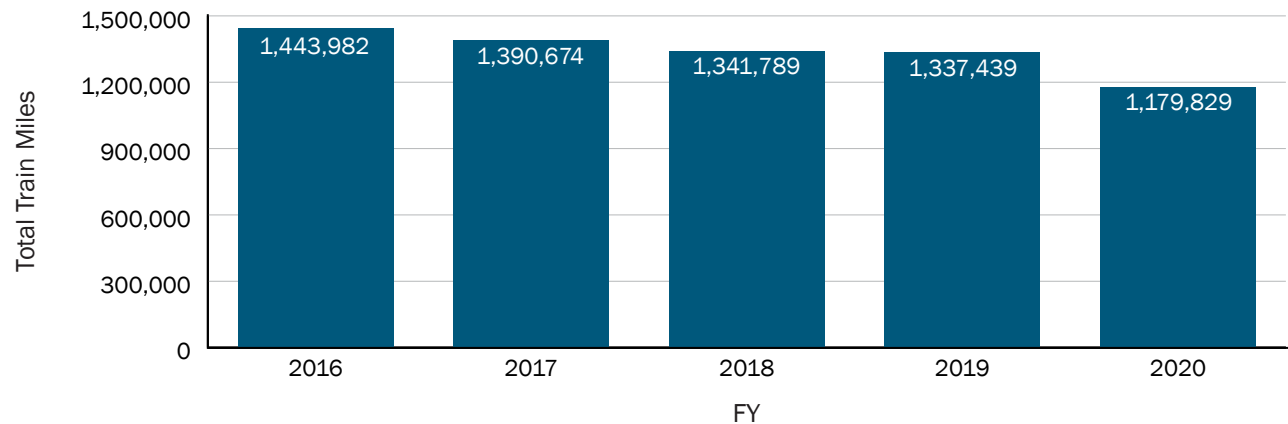
## Ridership and Operations

When California prudently responded to COVID-19 with shelter-in-place orders, companies moved their digital operations online so that home-bound employees could continue to work. This trend profoundly depressed Caltrain ridership, which dropped by 95% in the initial months of the pandemic. Overall FY2020 train boardings decreased by about 22.5% compared to FY2019 and passenger miles traveled (PMT) decreased by 22% in this same time frame (Figure 1 and Figure 2). This ridership decline also slashed farebox revenue, depriving Caltrain of operational revenue. Caltrain service, though it remained operational throughout COVID-19, was significantly reduced during the weekdays in response. This caused a 12% decline in train miles between FY2019 and FY2020 (Figure 3).

This loss of ridership is not only detrimental to Caltrain, but to the entire Bay Area, whose residents rely on Caltrain to reduce air pollutants and GHG emissions from transportation. Caltrain significantly contributes to reductions in regional GHG emissions by displacing more emissions than it emits. In FY2019, prior to COVID-19, Caltrain removed approximately 1.5 pounds of GHG emissions per boarding by displacing emissions that would have occurred if the trip were taken in a single-occupancy vehicle. As the COVID-19 pandemic continues, further impacts to ridership are expected.

While train miles overall declined during COVID-19, Caltrain put equity at the center of its recovery plan and took several steps to support essential workers and low-income riders including running more frequent midday and weekend service to better serve these customers and enable coordinated transfers with other transit providers.



**Figure 1: Total Annual Unlinked Passenger Trips (UPT)<sup>2</sup>****Figure 2: Total Annual Passenger Miles Traveled (PMT)<sup>3</sup>****Figure 3: Total Annual Train Miles<sup>4</sup>**

<sup>2</sup>Boardings used for normalization represent train boardings only and exclude boardings on Caltrain-operated shuttles. Data from Federal Transit Administration, National Transit Database, FY 2016 to FY 2020 Reporting.

<sup>3</sup>Passenger miles traveled used for normalization represent train and shuttle mileage. Federal Transit Administration, National Transit Database, FY 2016 to FY 2020 Reporting.

<sup>4</sup>Federal Transit Administration, National Transit Database, FY 2016 to FY 2020 Reporting.



# DIVERSITY AND EQUITY

## Diversity and Equity

Caltrain's work at the intersection of equity and environmental impacts is critical as it strives to be a more sustainable and effective public transportation agency. Caltrain is working to grow its service in an equitable way. Caltrain has previously addressed equity through environmental justice analyses and compliance with legislation such as the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). This year, Caltrain took a series of significant steps towards increasing the equity of its service so that all can have access to clean and efficient transit options.

### Means Based Fares through the Clipper START Pilot Program

Beginning in July 2020, Caltrain joined the Metropolitan Transportation Commission and other regional transit agencies in offering means-based fares to Bay Area adults within 200% of the poverty line. This represented a discount of 50% on Caltrain's one-way Adult Clipper Card fares for adults enrolled in the pilot program.

### Caltrain Framework for Equity, Connectivity, Recovery and Growth

Not content to stop with the Means-Based Fares program, Caltrain adopted its Framework for Equity, Connectivity, Recovery and Growth. This important framework sets forth principles to guide Caltrain in prioritizing and expanding equitable outcomes on the rail corridor, especially in terms of system access and distribution of railroad impacts. The Framework centers equity throughout the Caltrain system and seeks to ensure that the recovery from COVID-19 occurs in an equitable manner. The Framework's principals include:

- Enhance service to increase access for historically underserved communities
- Take steps to ensure that Caltrain is affordable to all
- Administer projects along the corridor in a way that recognizes the historical harm that transportation development has had on low-income communities
- Ensure that Caltrain interacts with its customers equitably
- Sustain and deepen Caltrain's equitable engagement through organizational development
- Maximize connectivity to other systems such that public transportation better meets the needs of customers without access to an alternative vehicle



## GARE (Government Accountability on Race and Equity)

Also, in September 2020, Caltrain joined the GARE network to provide staff resources on how to address racial equity both internally and externally. Staff can utilize training opportunities and resources to compare best practices and to recognize various ways to incorporate equity into their work. These equity considerations can help inform Caltrain's operations and policies as it implements the Caltrain Business Plan.

## Go Pass Expansion to Lower-Income Commuters

Caltrain expanded its Go Pass program, a program that allows businesses to purchase passes for their staff, to include part-time and contract employees, significantly increasing the businesses and employees that are eligible. Caltrain also allows businesses to donate their unused 2021 Go Passes (passes that their staff do not use) to nonprofits to increase access for low-income people through its Go Pass Donation Program.

## Monthly Pass Fare Reduction

In March 2021, Caltrain reduced the price of its monthly pass by 20% as part of its effort to provide financial relief to its riders during the pandemic, which has disproportionately harmed low-income communities, women, and communities of color. Caltrain further instituted long-term delays on increases for several fare categories to help facilitate the recovery from COVID-19.



# CALTRAIN SUSTAINABILITY PERFORMANCE

Sustainability Program Achievements

Air Quality

Energy Use

Water Use

Waste and Diversion

# Sustainability Program Achievements



## -11%

GHG emissions generated decreased by 11% between FY2018 and FY2020

### Completion of System-Wide LED Upgrade

Caltrain upgraded the lighting throughout its system during the reporting period. This project replaced over 2,500 lights at 20 Caltrain stations and upgraded them to LED. The project was completed in 2021 and will achieve a return on investment in approximately 3 years. The LED upgrade will generate over \$250,000 in energy savings annually.



## 100%

Caltrain is now powered by 100% renewable and GHG-free electricity

### Energy Procurement Study

In March 2020, Caltrain launched an Energy Procurement Strategy Study (“Energy Study”) to support its electrification. As Caltrain transitions from diesel to electric-powered trains, electricity and electricity procurement will become an increasingly important component of the agency’s fuel spend, environmental impacts, and ability to participate in revenue-generating opportunities such as the Low Carbon Fuel Standard (LCFS) market. The Energy Procurement Study evaluated Caltrain’s short- and medium-term energy procurement options. The study considered options for power resilience in the event of a sustained power outage (such as a climate-related or natural disaster emergency), especially relevant due to planned outages California utilities have used to reduce wildfire risk. The Energy Study will help Caltrain make informed decisions on vital infrastructure and plan holistically for new and emergent technologies. The Caltrain Board is expected to approve an energy policy before the end of 2021.



## -10%

Revenue vehicle energy use decreased by 10% between FY2018 and FY2020





# Air Quality

## GHG Emissions

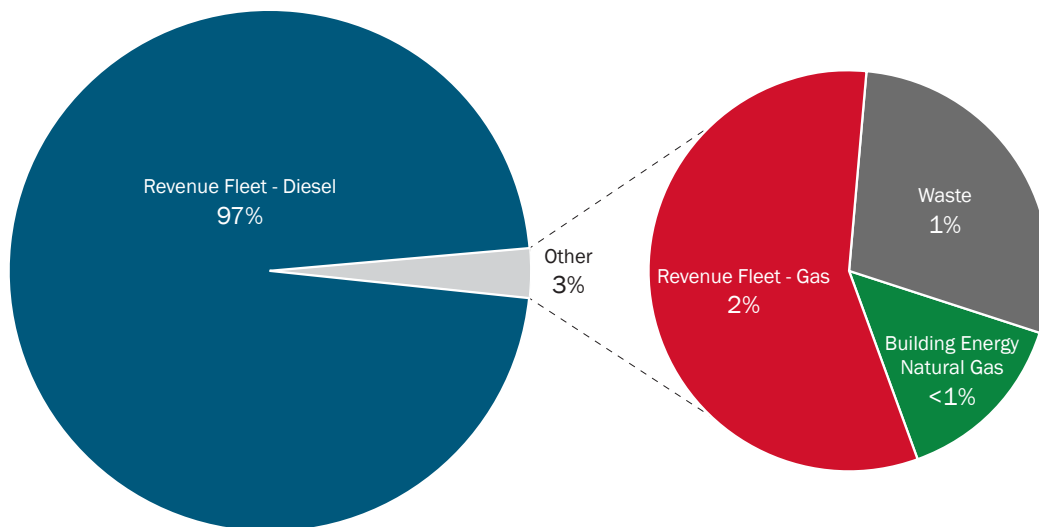
Caltrain directly generates GHG emissions through the operation of its revenue fleet (i.e., locomotives and shuttles), which is powered by diesel fuel, gasoline, and a small amount of other fuels (e.g., compressed natural gas). Less than 1% of Caltrain's GHG emissions are directly generated from natural gas used for facility heating. As of FY2020, Caltrain has fully transitioned to 100% GHG-free and renewable electricity as a customer of three Community Choice Energy (CCE) providers and two municipal-owned utilities. Caltrain only generated a small amount of GHG emissions associated with electricity in FY2019 from meters located in San Jose. These meters were transitioned to San Jose Clean Energy (SJCE) during the second half of FY2019. Therefore, Caltrain did not generate any GHG emissions from electricity in FY2020.

Caltrain generates a small amount of indirect GHG emissions from waste disposal and water consumption. Caltrain also displaces emissions that would have occurred if travelers chose to travel by private automobile and calculates these as "avoided emissions". **Figure 4** shows Caltrain's GHG emissions by source. Emissions from diesel fuel represent the vast majority of GHG emissions.

Caltrain's net GHG emissions equal its generated emissions minus emissions displaced by Caltrain. **Figure 5** shows a line graph of Caltrain's net GHG emissions, with generated and displaced emissions highlighted as bars for each fiscal year.

In FY2019 and FY2020 Caltrain generated approximately 43,253 and 40,441 MTCO<sub>2e</sub>, respectively. Generated emissions declined approximately 11% between FY2018 and FY2020 largely due to a corresponding 12% reduction in train miles. Caltrain's transition to 100% renewable energy for San Jose meters with San Jose Community Energy also contributed to the reduction in GHG emissions. During this same time frame, Caltrain displaced approximately 30% fewer GHG emissions due to a 22% decrease in PMT due to COVID-19. The Caltrain electrification project, which will initially transition 75% of the fleet from diesel to electric will, once complete, eliminate the majority of generated GHG emissions as the electrified trains will be powered by GHG-free electricity.

**Figure 4: FY2020 GHG Emissions by Source<sup>5</sup>**

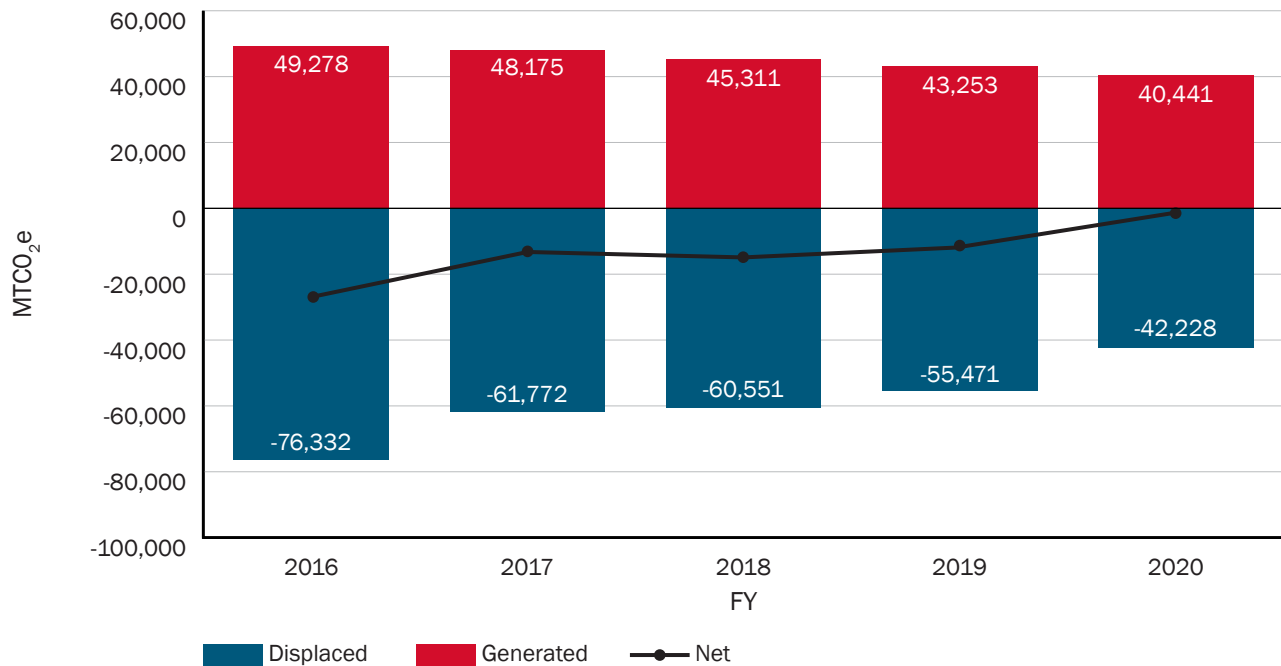


<sup>5</sup>No emissions from water were generated in FY2020. All values are rounded to the nearest whole number.

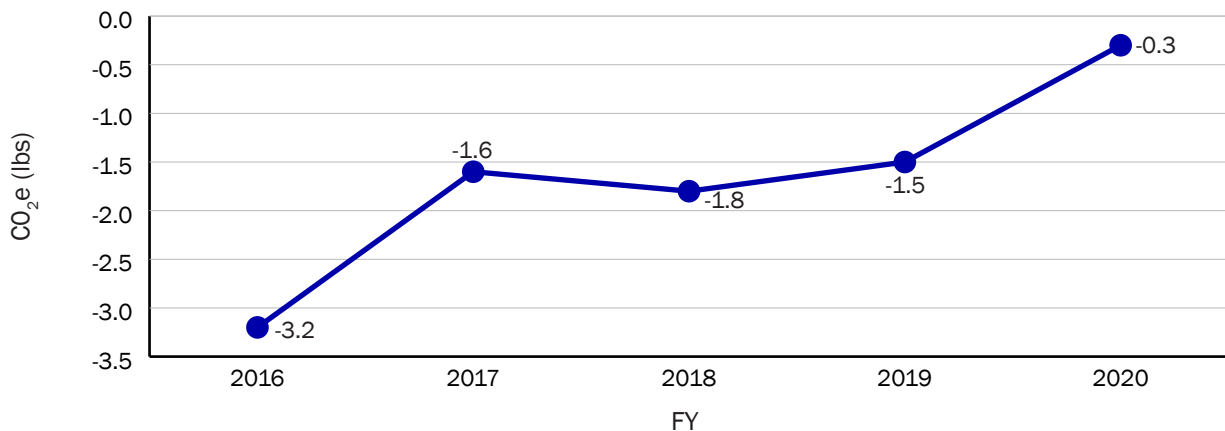
Despite the decline in ridership due to COVID-19, Caltrain's net emissions in FY2020 were still carbon negative at -1,787 MTCO<sub>2</sub>e, meaning that Caltrain removed more emissions than it generated. Caltrain's net GHG emissions displacement is equivalent to taking 389 passenger cars off the road for one year.

**Figure 6** shows net GHG emissions per boarding. In FY2019, the average Caltrain rider helped eliminate 1.5 pounds of GHG emissions with each train trip. This number dropped to 0.3 pounds of GHG emissions per trip in FY2020 due to ridership impacts of COVID-19.

**Figure 5: GHG Emissions - Generated, Displaced and Net (MTCO<sub>2</sub>e)**



**Figure 6: Net GHG Emissions per Boarding**



### Criteria Air Pollutants

Criteria air pollutants (CAPs) include pollutants that cause smog and acid rain and have been linked to negative health effects. Caltrain’s current fleet emits CAPs when it burns fossil fuels like diesel, but as noted earlier, Caltrain service also displaces CAPs that otherwise would have been emitted if passengers had chosen to drive alone instead of taking public transit. Nearly all Caltrain’s CAPs are from the diesel-powered locomotives and will be substantially reduced once 75% of the fleet has electrified.

are shown in bars above and below the line. Between FY2018 and FY2020, CAPs generated and displaced by Caltrain decreased approximately 10% and 39% respectively due to COVID-19. Because ridership declined more significantly than train miles, Caltrain’s net CAPs increased by approximately 7% during this timeframe.

Figure 8 shows Caltrain’s generated CAP emissions normalized by boardings. CAPs per boarding increased approximately 22% due to the decline in ridership during FY2020.

In Figure 7, the net reduction in CAPs is shown in a line graph, where the generated and displaced CAPs

Figure 7: Criteria Air Pollutants - Generated, Displaced and Net

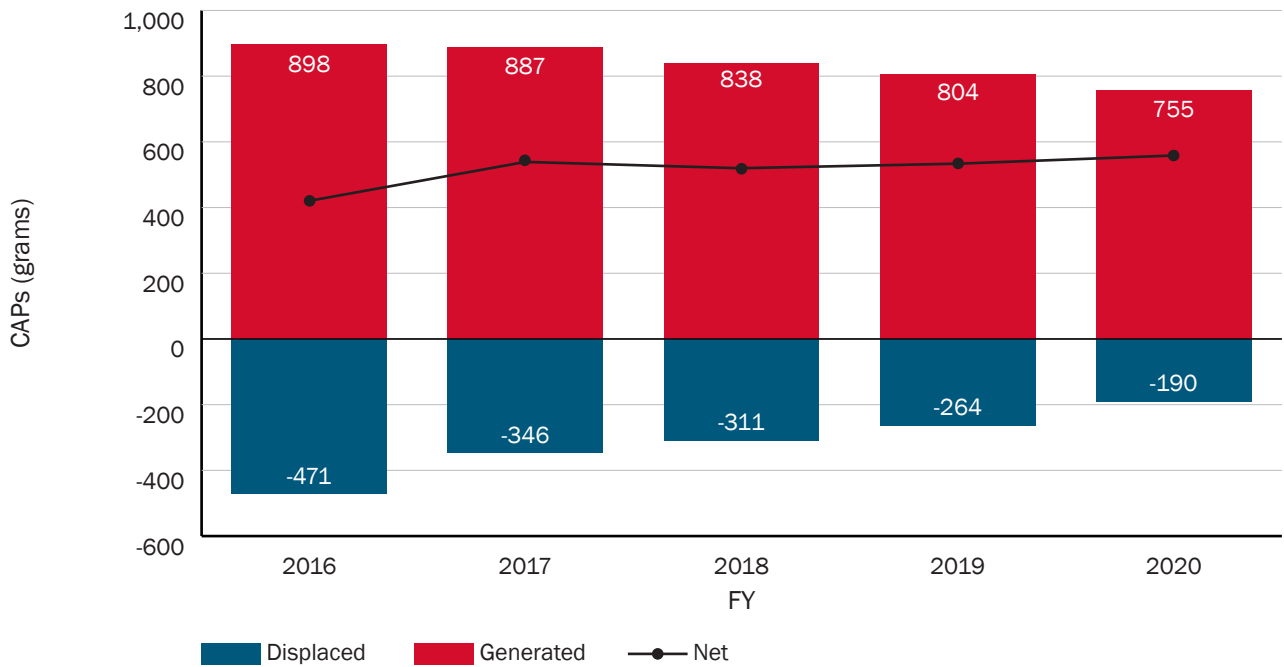
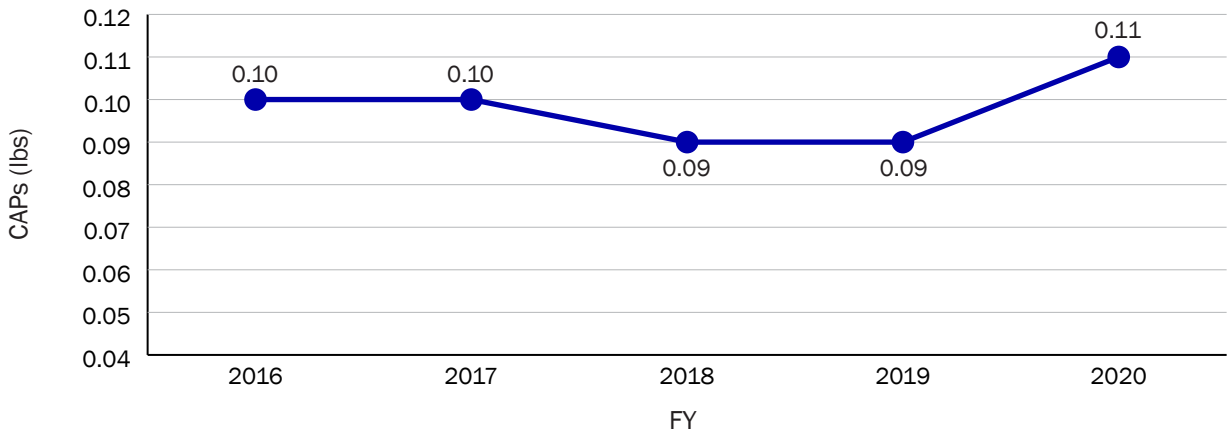


Figure 8: Criteria Air Pollutants Generated per Boarding



# Energy Use

## Revenue Fleet

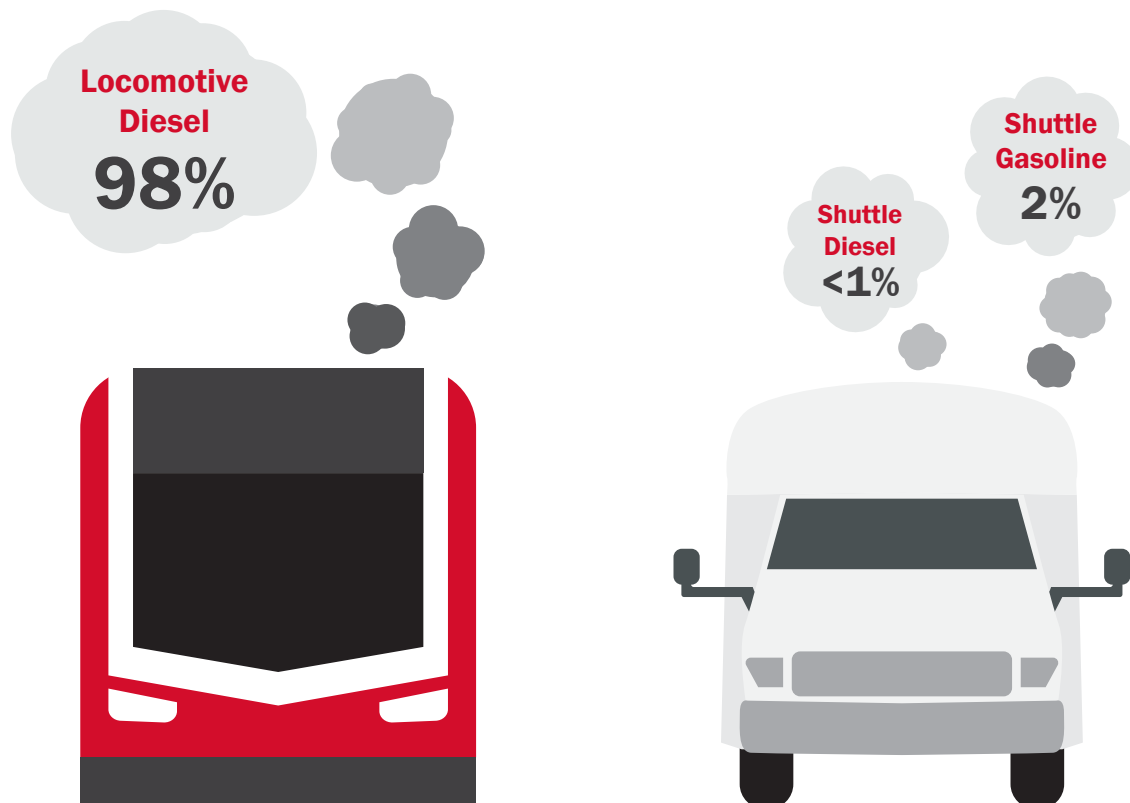
Caltrain's revenue vehicle fleet operates on diesel, gasoline, and compressed natural gas (CNG). Currently, commuter rail (i.e., Caltrain trains) use only diesel fuel, though modernization of the corridor will initially transition 75% of the trains to electric beginning in 2024. Caltrain plans to eventually transition to 100% electric trains. The transportation shuttle services use diesel, gasoline, and CNG. Only ultra-low sulfur diesel is used in Caltrain operations, according to California fuel standards.

Energy use by fleet vehicles makes up 96% of Caltrain's overall energy use, as measured in thousand British thermal units (kBTU). As shown in [Figure 9](#), diesel fuel in locomotives accounts for approximately 98% of the fuel used by the Caltrain revenue fleet, with more than 3.8 million gallons consumed in FY2020 ([Figure 10](#)). Caltrain shuttle operations predominantly use gasoline, and a small amount of CNG in FY2019, but none in FY2020.

As shown in [Figure 10](#), fuel consumption dropped by 10% between FY2018 and FY2020 largely because of reduced service during COVID-19

[Figure 11](#) shows revenue vehicle energy use per boarding in kBTU, which reflects energy efficiency per passenger. This figure had been declining between FY2016 and FY2019 as Caltrain's ridership increased. Revenue vehicle energy use per boarding increased by approximately 21% between FY2019 and FY2020 as ridership dropped during COVID-19, however prior to this Caltrain's fuel use ([Figure 10](#)) was already declining through fewer train miles and increasing efficiency.

**Figure 9: FY2020 Revenue Fleet Energy Use by Source**



Note: These emissions will be dramatically reduced by Caltrain's electrification

Figure 10: Fuel Use by Type

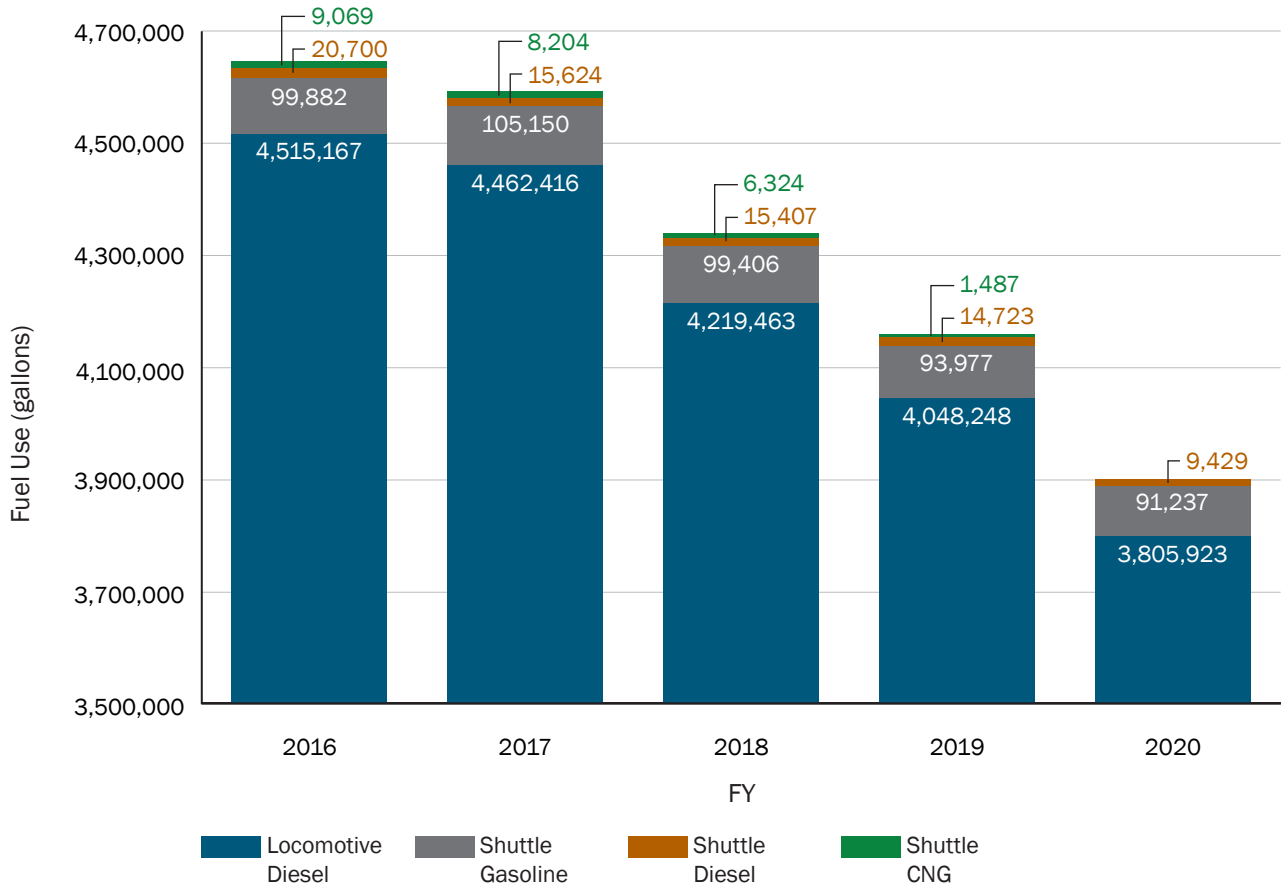
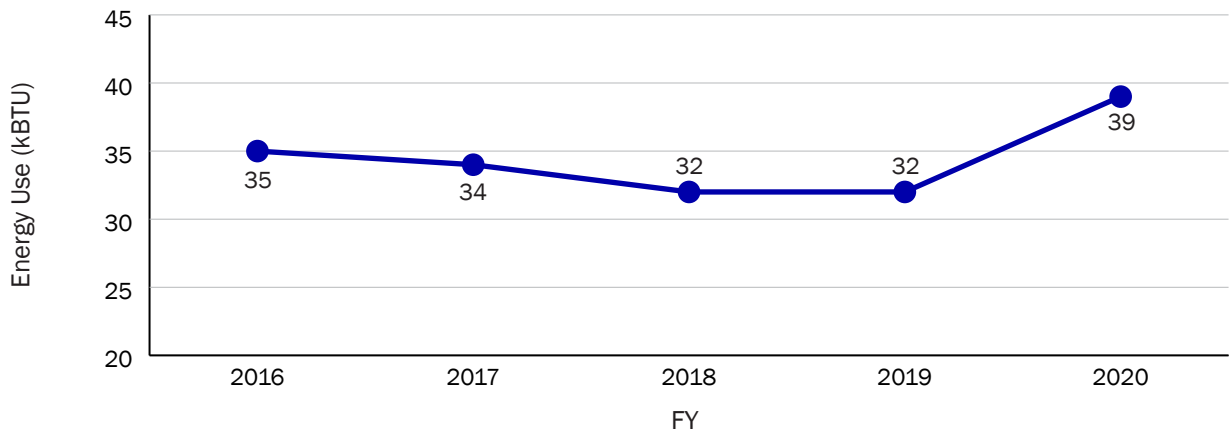


Figure 11: Revenue Vehicle Energy Use per Boarding



# Facilities

Caltrain uses electricity for lighting, equipment, and amenities at its stations, at its Centralized Equipment Maintenance and Operations Facility (CEMOF), and for signals along the right-of-way. Certain facilities also use natural gas for space heating. In addition, Caltrain administration operates out of the Central Administrative Offices (Central) located in San Carlos. Energy use and emissions associated with the San Carlos building, which is owned and managed by the San Mateo County District, are included in the SamTrans sustainability inventory and report.

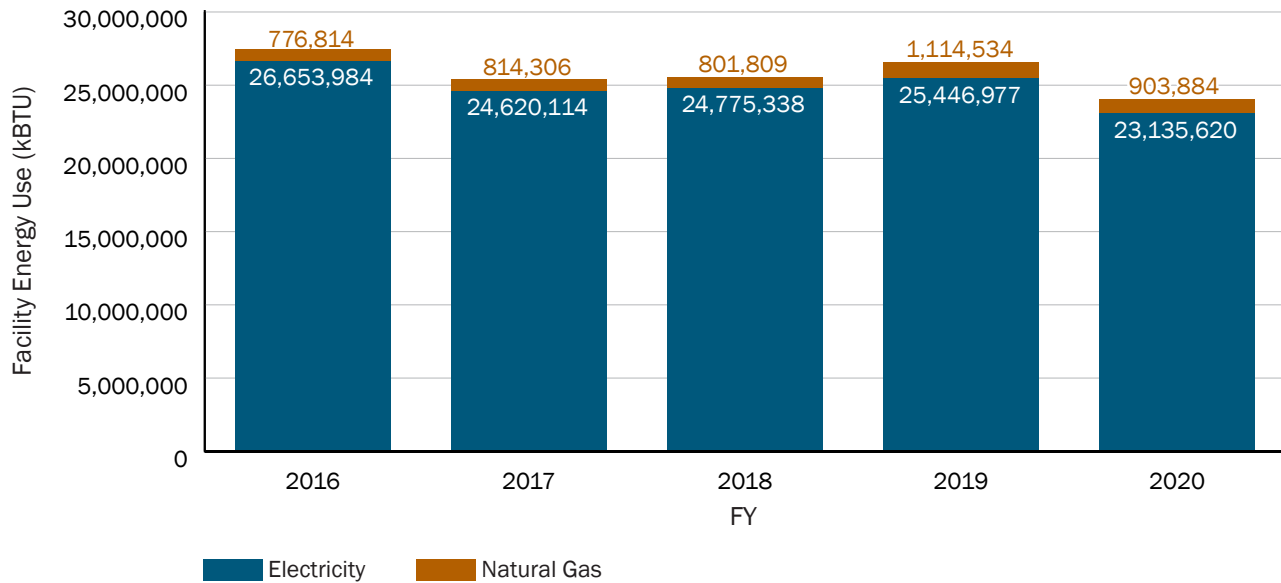
Energy use by facilities represents a small share of the total energy consumed by Caltrain, as measured in kBtu. Natural gas and electricity made up only 4% of Caltrain’s total energy use in FY2020. During FY2020, Caltrain

purchased nearly 6.8 million kWh of electricity and just over 9,000 therms of natural gas, equivalent to over 24 million kBtu for both resources.

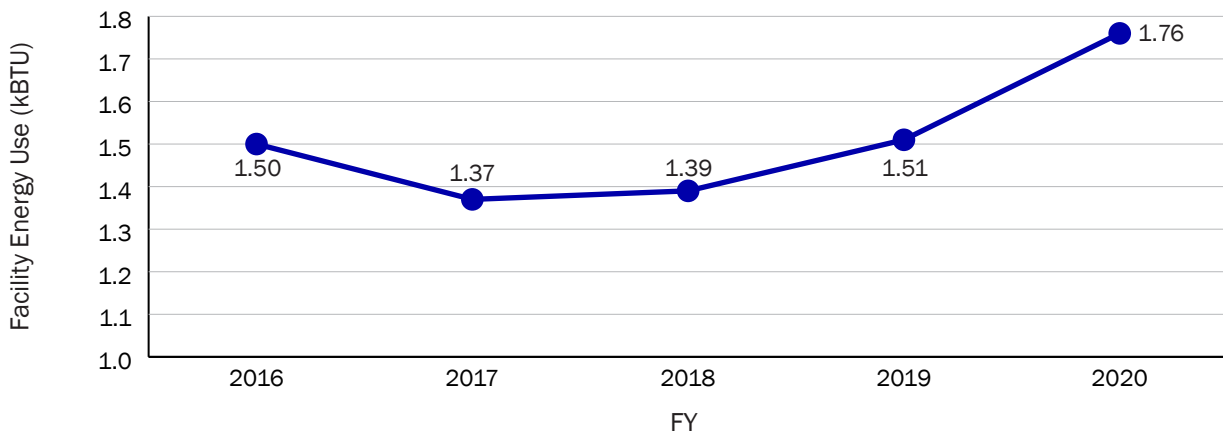
**Figure 12** shows total facility energy usage in kBtu. Between FY2018 and FY2020, electricity usage decreased by approximately 7% and natural gas usage increased by approximately 13%. As of FY2020, 100% of Caltrain’s electricity is GHG-free and renewable. Electricity consumption will significantly increase as Caltrain transitions 75% of the rolling stock to electric beginning in 2024.

**Figure 13** shows facility energy use per boarding in kBtu. Between FY2018 and FY2020, energy use per boarding increased by approximately 27% due to the decline in ridership during COVID-19.

**Figure 12: Facility Energy Use**



**Figure 13: Facility Energy Use per Boarding**



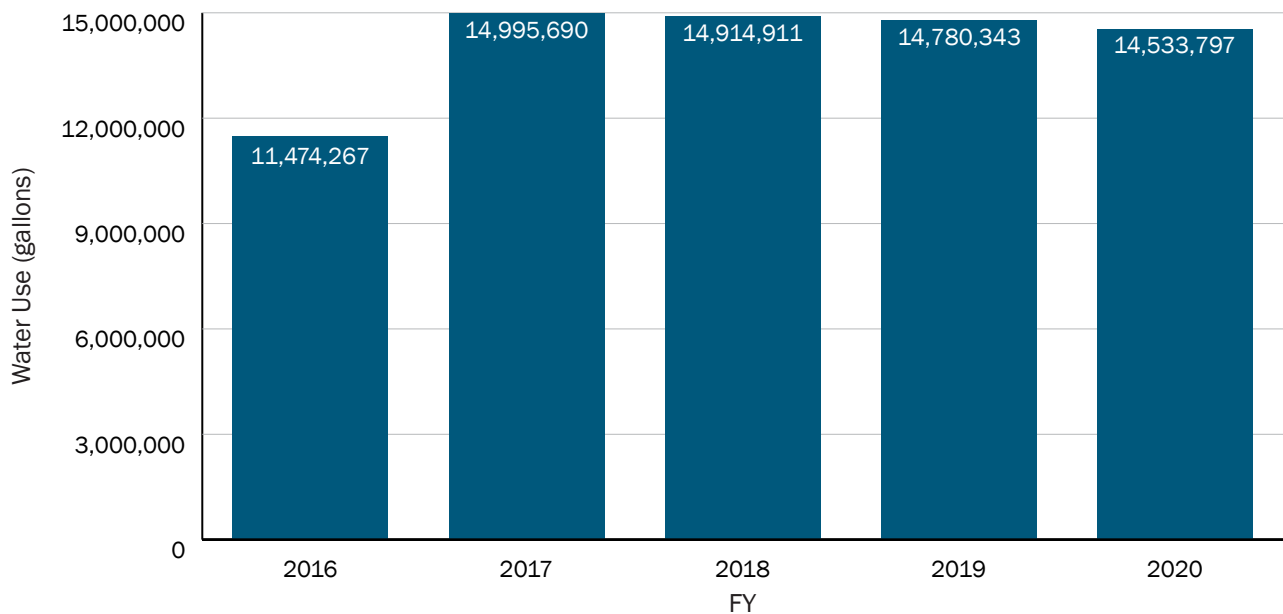
## Water Use

Caltrain uses water for irrigation of outdoor landscaping at its stations, train washing at the CEMOF and indoor uses such as passenger and employee restrooms and crew showers at select stations. Caltrain minimizes water use wherever possible. Emissions are generated indirectly through the combustion of fossil fuels in electricity generation that provides electricity for water delivery, conveyance, and treatment. Although Caltrain does not directly control these emissions, they are included in this inventory because any emissions are a consequence of Caltrain's use of the water.

**Figure 14** shows Caltrain's total water usage per year. Caltrain consumed over 14.7 million gallons of water in FY2019 and over 14.5 million gallons of water in FY2020. Water usage declined approximately 3% between FY2018 and FY2020



**Figure 14: Total Annual Water Consumption**



# Waste and Diversion

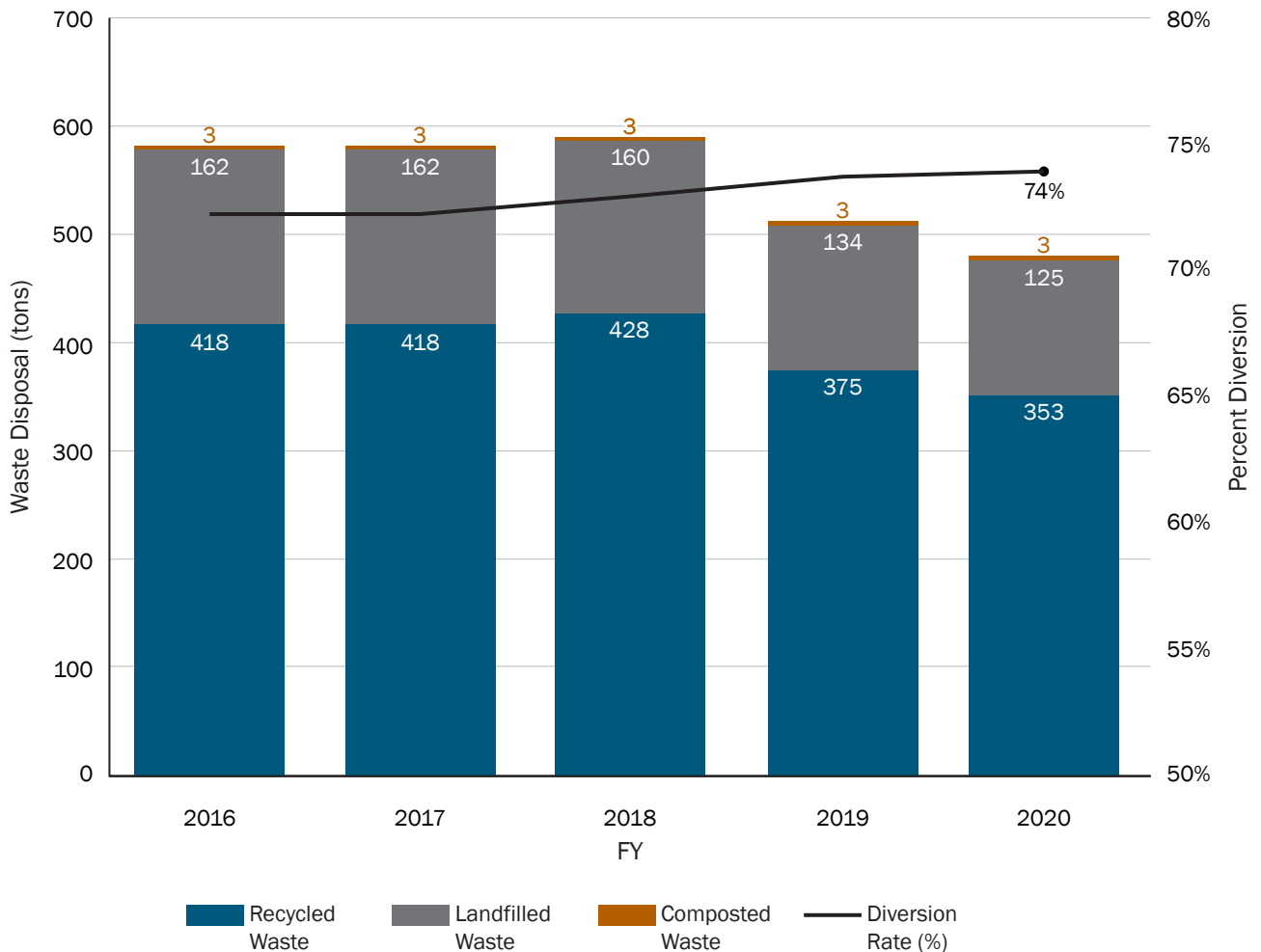
Caltrain-generated waste consists of municipal waste from passengers (paper, food scraps, bottles, cans, and other common recyclables) and employees (typical office activities and select low-impact maintenance activities). Emissions from waste sent to landfill are included in this inventory, but industrial waste (such as hazardous waste and large metal scrap recycling), construction, and demolition waste are accounted for by the construction company performing the work, and hence are not included in the graph below.

The waste and diversion (recycling and composting) rates are estimated through invoices from Caltrain's waste service providers. In select cases, Caltrain's waste service provider can provide information on landfill, recycling, and organics collection by weight. For all

other cases, Caltrain assumes that all landfill, recycling, and organics collection containers are 80% full when collected each week for the purposes of this inventory.

Figure 15 shows total landfilled, recycled, and composted waste as bars per fiscal year. The total diversion rate, measured as the percentage of total waste diverted as recycling or compost, is shown as a blue line. Caltrain's total generated waste decreased by approximately 19% between FY2018 and FY2020 and the agency's diversion rate increased by 1.5%.

Figure 15: Waste Disposal by Type







# **CURRENT AND PLANNED INITIATIVES**

**PRIORITY SEATING**  
Seniors Should Vacate These Seats  
for Seniors and Persons With

## Current and Planned Initiatives

The Caltrain Electrification Project will convert Caltrain's diesel operations to an electric system, dramatically reducing operational GHG emissions and engine noise. Electrification will also help to improve local and regional air quality, service frequency, and capacity for Caltrain riders.

Caltrain has started testing its first all-electric trainsets in Utah and Colorado, which will have enhanced amenities for riders including two dedicated bike cars per each seven-car trainset for bike storage, more power sources for chargers, onboard displays with trip information, an ADA compliant restroom and baby-changing stations in each restroom, and additional luggage storage space.

Caltrain electrification construction is currently underway between 4th and King Station in San Francisco and Tamien Station in San Jose. This work includes locating

underground utilities, testing soil conditions, pruning, or removing trees along the corridor, inspecting signal/communication equipment, and laying foundations in preparation for installation of the Overhead Contact System that will power the trains. Passenger service for the upgraded, electrified system is anticipated in 2024. For more information on the Electrification project, click [here](#).

In 2021, Caltrain reopened its Hillsdale Station, which has been renovated to expand amenities, add parking, and increase accessibility. Caltrain is also preparing to reopen the South San Francisco station, which features increased safety, pedestrian access, and accessibility. With these renovations, Caltrain is ensuring its riders enjoy the safest, most convenient transit experience possible.





## Data Sources and Methodology

See the Caltrain Sustainability Inventory Technical Report (internal document) for more information on data sources and methodologies applied.

<sup>i</sup> Calculated locomotive emission factors using emission factors taken from Table B2-20 of the Peninsula Corridor Electrification Project Final Environmental Impact Report; GREET 2016 for compressed natural gas (CNG) and biodiesel; Pacific Gas & Electric (PG&E), Peninsula Clean Energy (PCE), Silicon Valley Power (SVP), the City of Palo Alto Utilities (CPAU), San Jose Clean Energy (SJCE) and Clean Power SF power content labels, the EPA Emissions & Generation Resource Integrated Database (eGRID); California Energy Commission's California's Water-Energy Relationship (2005); and the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions Appendix E: Solid Waste Emission Activities and Sources (2012).

<sup>ii</sup> GHG emission displacement calculations based on APTA mode shift calculation [displaced/avoided trips (VM) = PMT (miles) x 0.42] and EMFAC 2014 emissions factors.

<sup>iii</sup> Generated emissions less displaced/avoided emissions.

<sup>iv</sup> Calculated locomotive emission factors using emission factors taken from Table B2-20 of the Peninsula Corridor Electrification Project Final Environmental Impact Report adjusted for use of California ultra-low sulfur diesel fuel per Table 11-3 and 11-4 in CARB's Carl Moyer Guidelines (CARB 2011).

<sup>v</sup> Calculated displaced/avoided emissions based on APTA mode shift calculation [displaced/avoided trips (VM) = PMT (miles) x 0.42] and EMFAC 2014 emissions factors.

<sup>vi</sup> Total net CAPs calculated by taking generated CAPs less displaced/avoided CAPs.

<sup>vii</sup> Electricity data collected from PG&E, Silicon Valley Power, and the City of Palo Alto Utilities.

<sup>viii</sup> Natural gas data collected from PG&E.

<sup>ix</sup> Standard conversion factors used to convert kWh and therms to kBtu to calculate total energy use.

<sup>x</sup> Data collected from the Federal Transit Administration (FTA) National Transit Database (NTD) Form A-30 (revenue fleet).

<sup>xi</sup> Ibid.

<sup>xii</sup> Ibid.

<sup>xiii</sup> Standard conversion factors used to convert all fuels to kBtu.

<sup>xiv</sup> Water use data for 21 cities along Caltrain corridor collected by Caltrain.

<sup>xv</sup> Waste and diversion data collected from Recology and Republic Services invoices and/or waste data. Gallons converted to pounds using San Francisco Department of Environment (SFDOE) calculator; cubic yards converted to tons using California Department of Resources Recovery and Recycling facility information (FacIT) conversion factors.

<sup>xvi</sup> Ibid.

