

Green Commute

Human-induced climate change and the catastrophic effects from global warming demand action at every level. Reducing greenhouse gas (GHG) emissions is an environmental and societal imperative and the reason why many cities in the North Bay have declared a Climate Emergency.

Transportation is the single biggest source of GHG emissions. By shifting to low carbon transportation modes, we can prevent millions of pounds of emissions annually. SMART is a **green commute** alternative to the one-person-in-one-car model of sitting in traffic idling on the Hwy 101 corridor, emitting tons of GHGs. The 1.72 million people who have ridden on SMART prevented 8.1 million pounds of CO₂ emissions, compared to the same trip in a car.



8.1 million pounds CO₂ prevented on SMART
equal to 4,770 acres of forest carbon sequestration



SMART Runs Clean Diesel Trains

SMART's clean-diesel trains have modern, efficient engines that meet the EPA's Tier 4 emission standards, cutting particulate matter emissions by **96%** and NO_x emissions by **93%** compared to regular diesel engines.

SMART riders have a lower carbon footprint

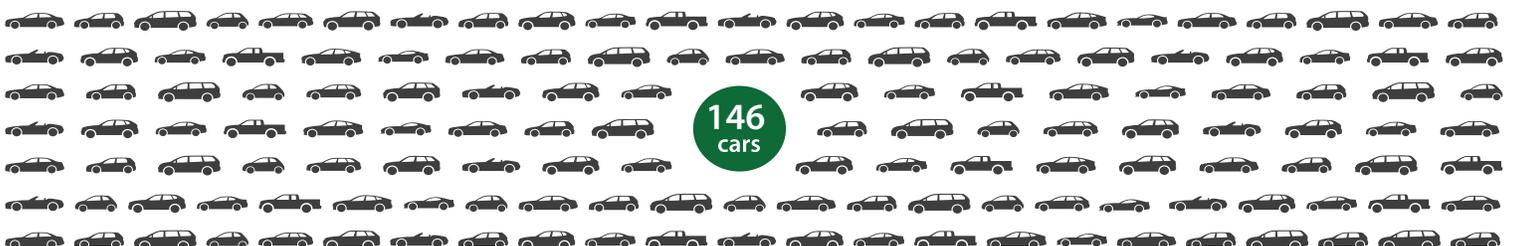
People who ride SMART emit **33%** fewer CO₂ per mile than if they drive.

And they get to and from the train using low emission forms of travel such as walking, biking and other types of public transit.

- 50% walk or take other public transit
- 14% ride a bicycle

SMART riders reduce traffic congestion

A SMART train carries 158 seated passengers. Cars during the commute carry an average of 1.08 passengers. This means that each SMART train can take 146 cars off the road, reducing traffic congestion and the number of cars idling in traffic. SMART's commuters free up 12.8 miles on roadways every weekday.





#climatecrisis
#climateaction

Green Commute

NORTH BAY GREEN PRIORITIES

- The Sonoma County Regional Climate Protection Authority and 8 of 10 Sonoma County jurisdictions have declared a Climate Emergency.
- Reducing emissions from transportation in the North Bay is a good way to address global climate change. Transportation is the #1 source of greenhouse gas emissions in the North Bay making up 53% of the total emissions.
- SMART provides a green choice for commuters and residents who need to travel the corridor for work or any other reason.
- SMART trains have modern, efficient engines that meet the EPA's Tier 4 emissions standards, cutting Particulate Matter (PM) emissions by **96%** and nitrogen (NOx) emissions by **93%** over regular diesel engines. And, in the future, as train technology improves, so will SMART's.

SMART IS THE GREENER CHOICE

- Choosing a trip on SMART means emitting **33%** less CO2 per passenger mile than driving.
- Car commuting in Sonoma and Marin generates 0.5937 pounds of CO2 emissions per passenger mile while traveling on SMART generates 0.3991 pounds of CO2 emissions per passenger mile*.
- If SMART's 1.72 million riders had driven their cars to their destination, they would have emitted 8.1 million more pounds of CO2 into the environment.
- SMART riders also choose low emission methods for their first and last mile connections to or from the train. **50%** walked, bicycled or took public transit and **14%** of riders carry bikes onboard the train.
- In addition to emitting less CO2 per passenger mile, SMART trains carry more people and take up less space than cars, which frees up space on our roads and freeways.
 - Average car length is 14 feet, plus an additional one car length of buffer, totaling 28 feet per car.
 - SMART's average weekday ridership is currently 2,600. If these passengers drove, with an average of 1.08* people per car, there would be 2,407 additional cars on the road, consuming over 12.8 miles of roadway.

CAR vs. TRAIN EMISSIONS



Car Commuting - North Bay car commuters average fewer than 1.08* people per car. California Air Resources Board Emission FACTor (EMFAC) emissions model says that in Sonoma County vehicles emitted an average of 0.6412 pounds per mile driven for 2017-2019 vehicles.

$$0.6412 \div 1.08 = 0.5937 \text{ pounds CO}_2 \text{ per passenger mile}$$



SMART Commuting - SMART has consumed 735,868 total gallons of fuel, including ALL fuel consumed for passenger service and rail systems testing. The US EPA says that 22.44 pounds of CO2 emitted per gallon of diesel can be expected.

$$22.44 \times 735,868 = 16,512,878 \text{ pounds CO}_2$$

SMART has carried 1.72 million riders traveling an average of 24 miles per trip on SMART, not including first/last mile trips.

$$1.72 \text{ M passengers} \times 24 \text{ miles} = 41.38 \text{ M passenger miles traveled}$$

$$16,512,878 \text{ pounds CO}_2 \div 41.38 \text{ M passenger miles} = 0.3991 \text{ pounds CO}_2 \text{ per passenger mile}$$



Car Travel Emissions

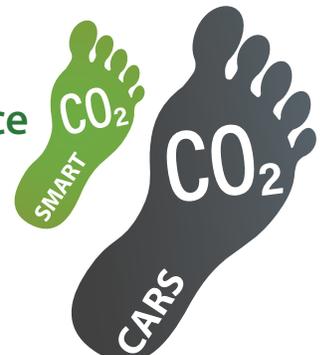
	1,724,088 people
x	24 miles
x	0.5937 pounds
<hr/>	
	24,566,185 pounds of CO2



SMART Travel Emissions

	1,724,088 people
x	24 miles
x	0.3991 pounds
<hr/>	
	16,514,005 pounds of CO2

That's a difference
of **8,052,180**
pounds of CO2!



* American Community Survey 2013-2017 and California Air Resources Board Emission FACTor 2017, 2018, 2019 Sonoma County data