

San Diego Unified School District

**Greenhouse Gas Inventory Results
Climate Mitigation and Adaptation Goals**

August 25, 2017



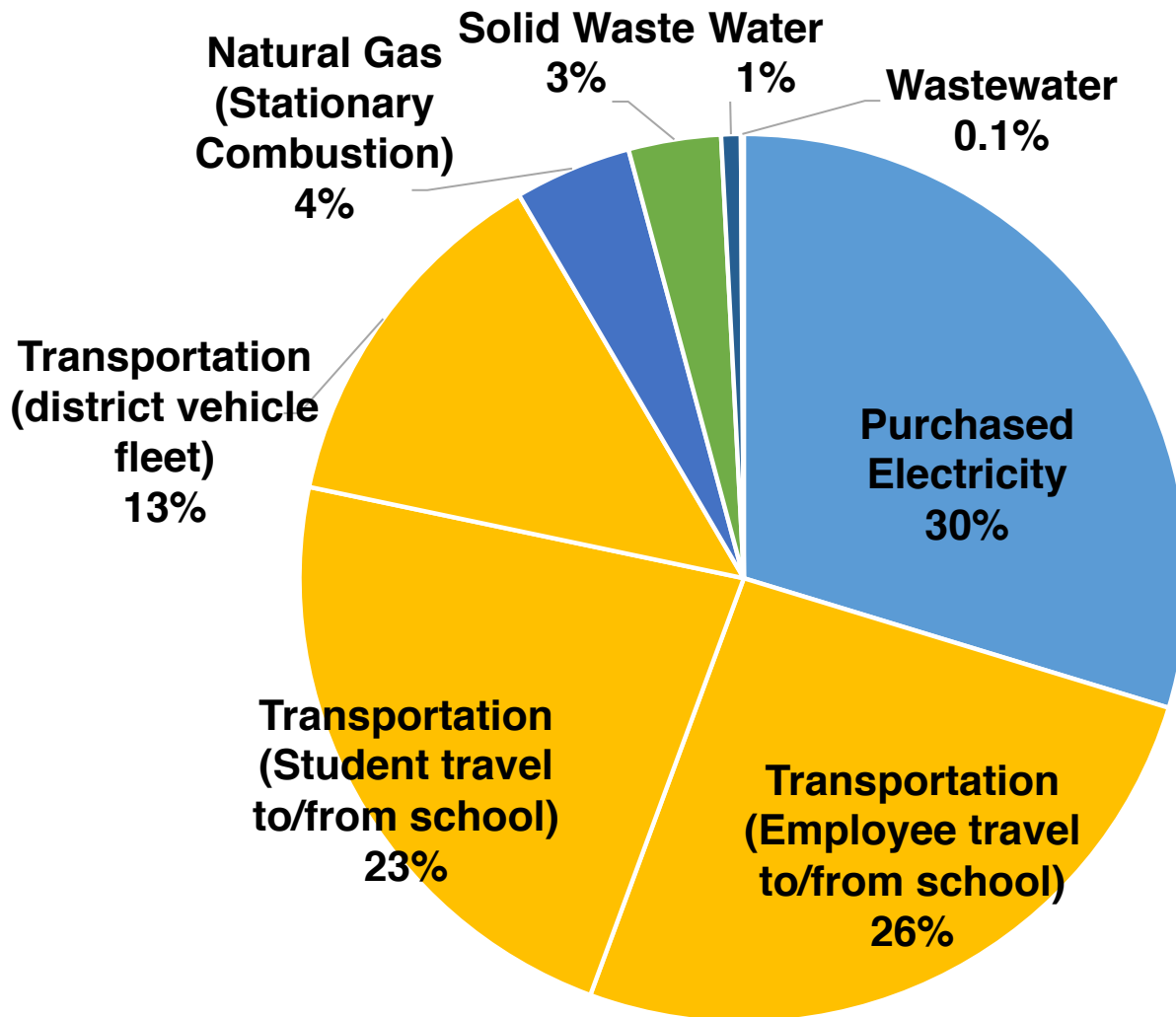
Overview

- 1. 2015 Greenhouse Gas (GHG) Inventory**
- 2. Employee and Parent Commute Survey Results**
- 3. GHG Emission Projections to 2050, Targets and Reduction Potential**
- 4. Basis of Reduction Calculations**

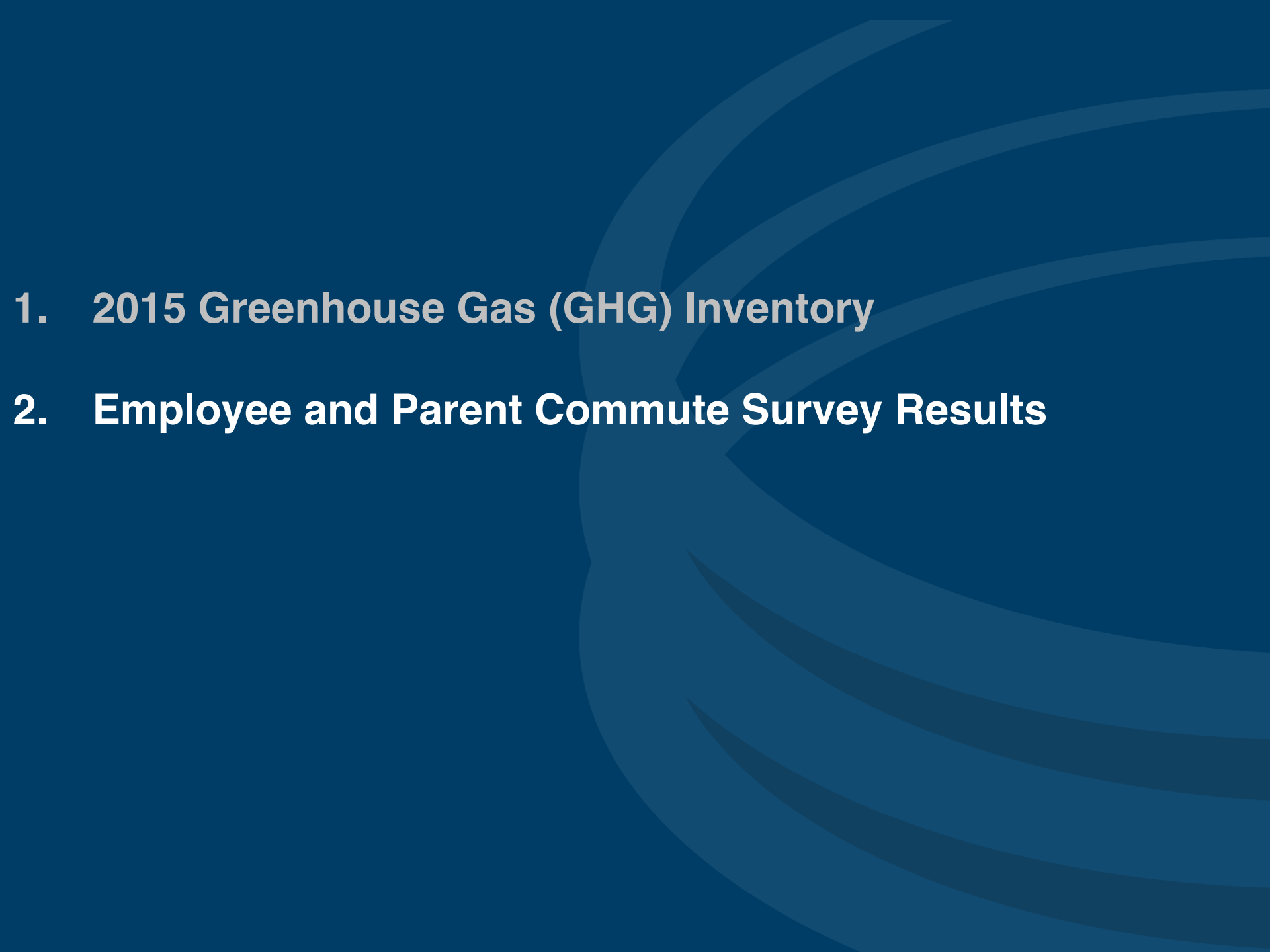
Overview

1. 2015 Greenhouse Gas (GHG) Inventory

Greenhouse Gas Emissions Inventory SDUSD FY 2015

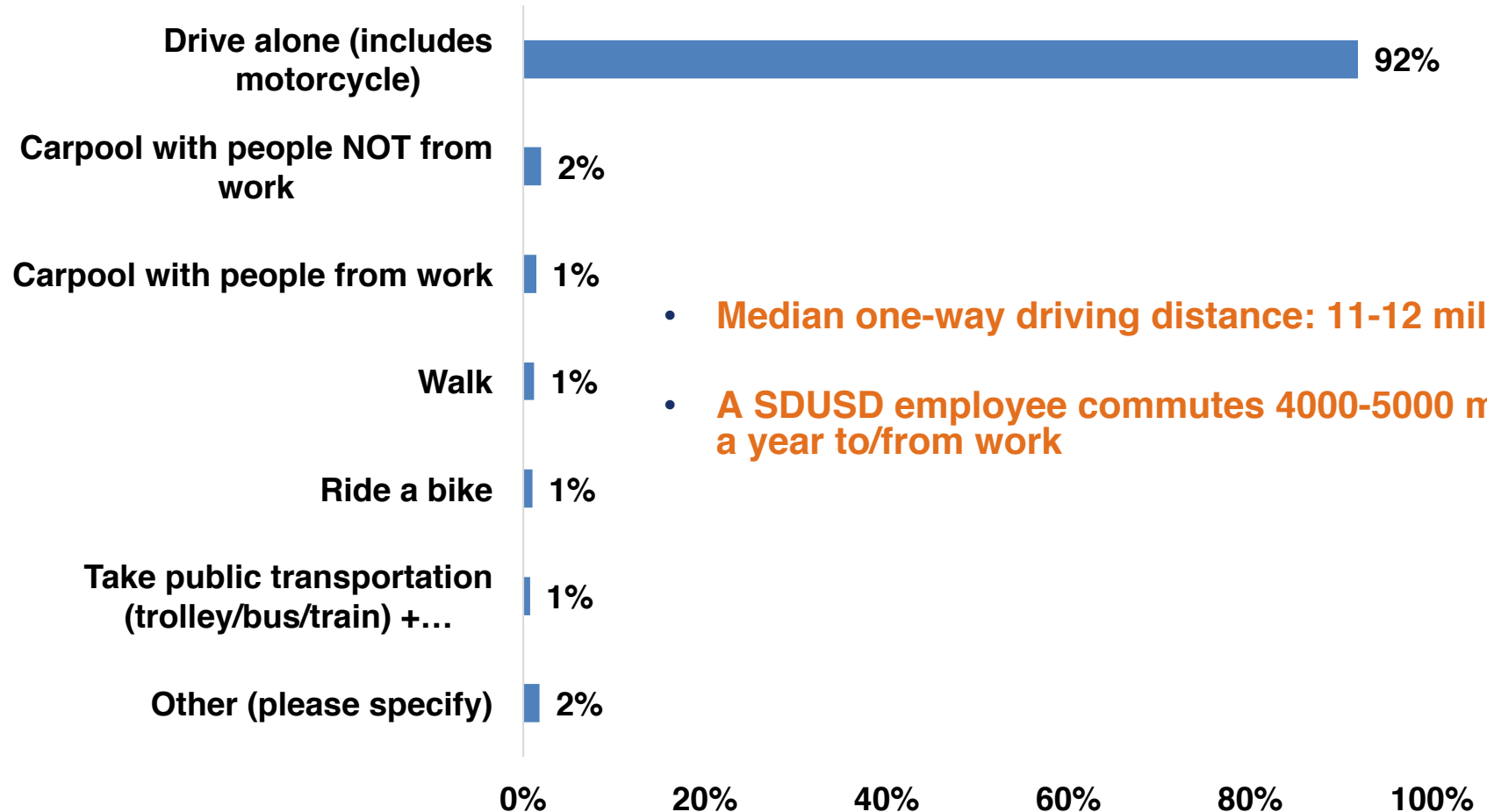


**Total Emissions:
74,742 metric
tons CO₂e**

- 
- The background is a solid dark blue color. On the right side, there are several overlapping, curved, lighter blue shapes that resemble stylized waves or abstract brushstrokes, creating a sense of movement and depth.
- 1. 2015 Greenhouse Gas (GHG) Inventory**
 - 2. Employee and Parent Commute Survey Results**

Employee Survey Results

What is your primary mode of transportation (used most often) to/from work?

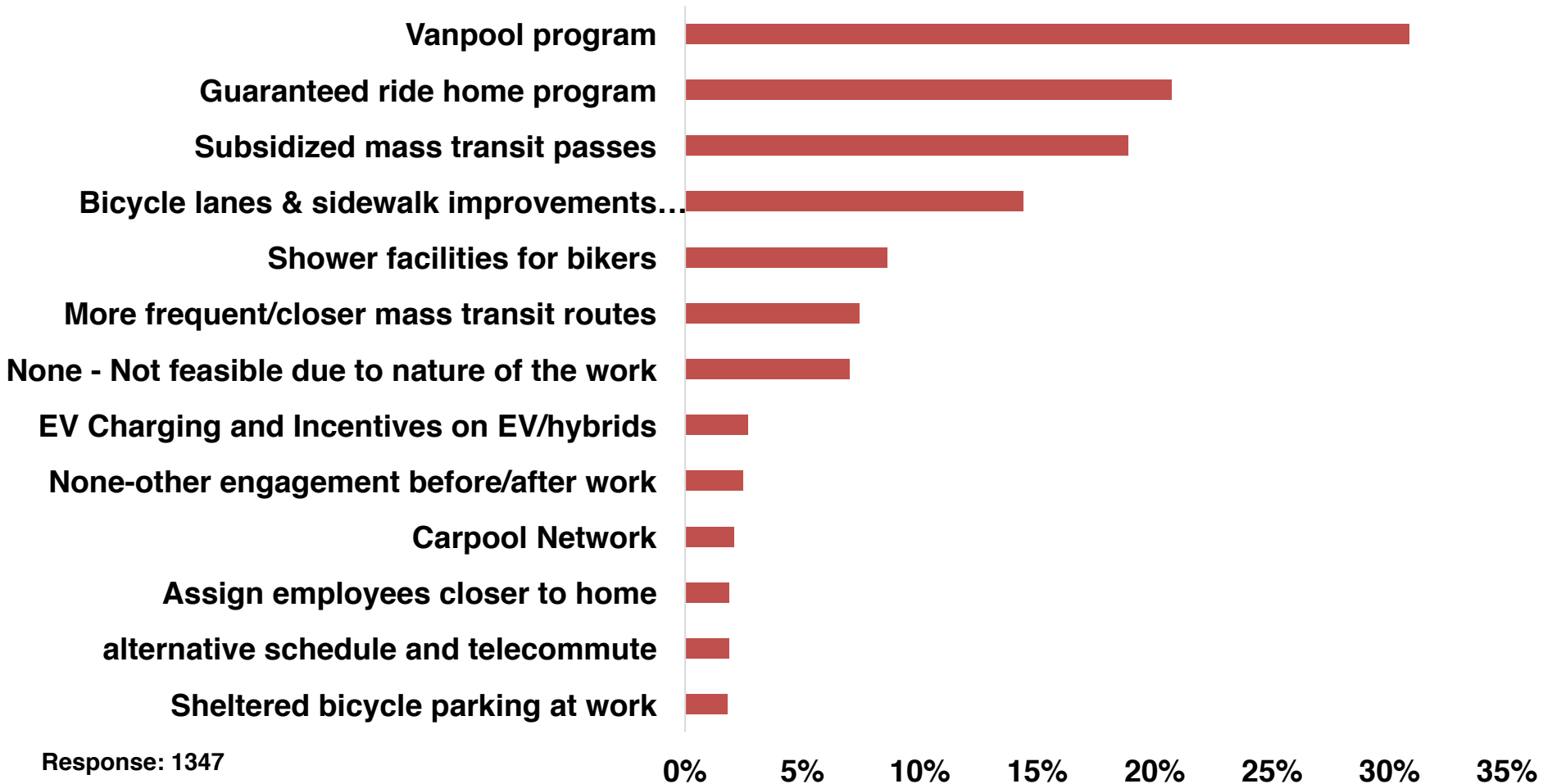


- Median one-way driving distance: 11-12 miles
- A SDUSD employee commutes 4000-5000 miles a year to/from work

Other: Mostly carpool or splits two modes half/half
Response: 2212

Employee Survey Results

Which program would be most effective in increasing use of alternative transportation?

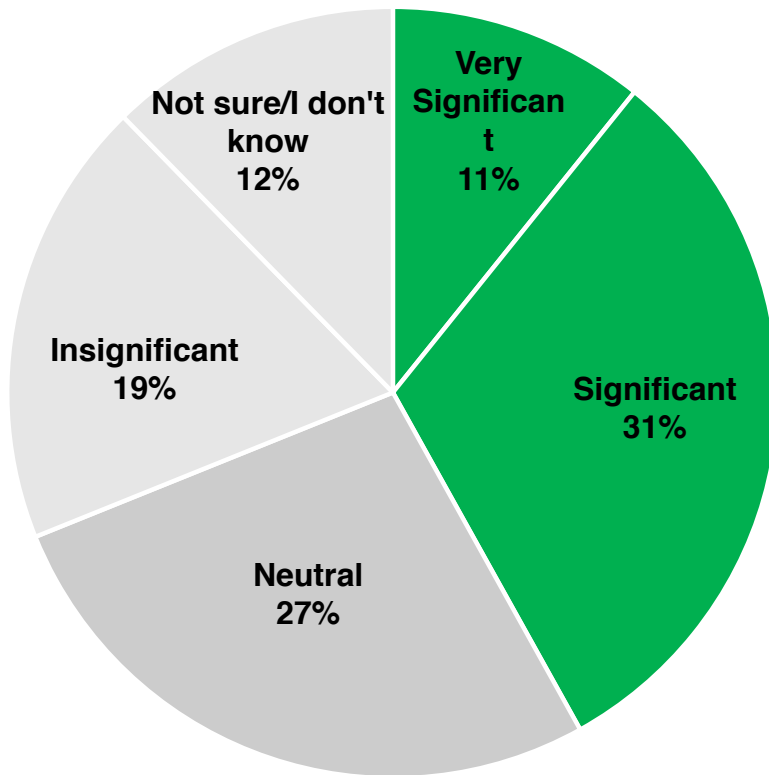


Response: 1347

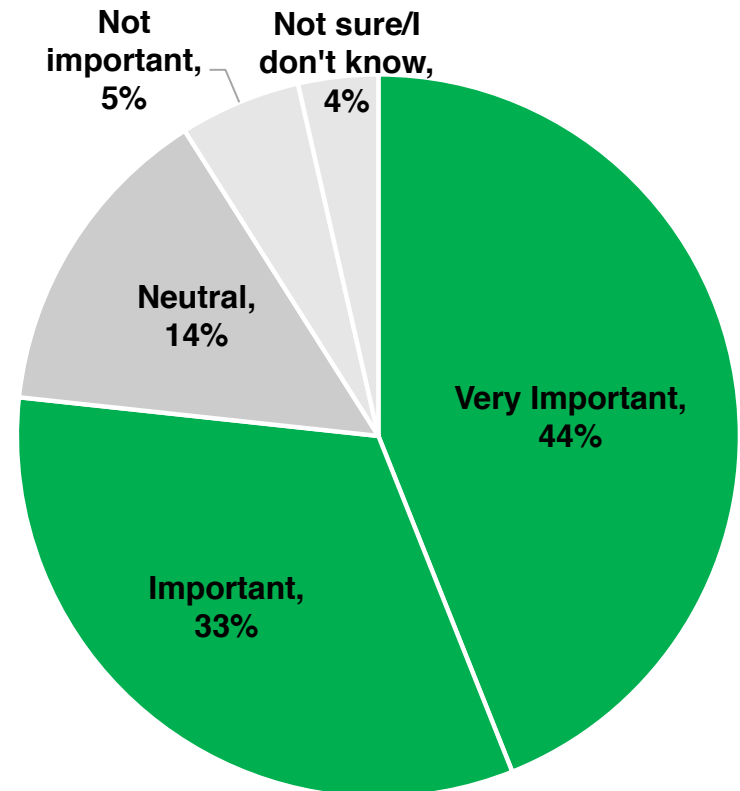
0% 5% 10% 15% 20% 25% 30% 35%

Employee Survey Results

How much of an impact do you think your commuting has on SDUSD's carbon footprint?

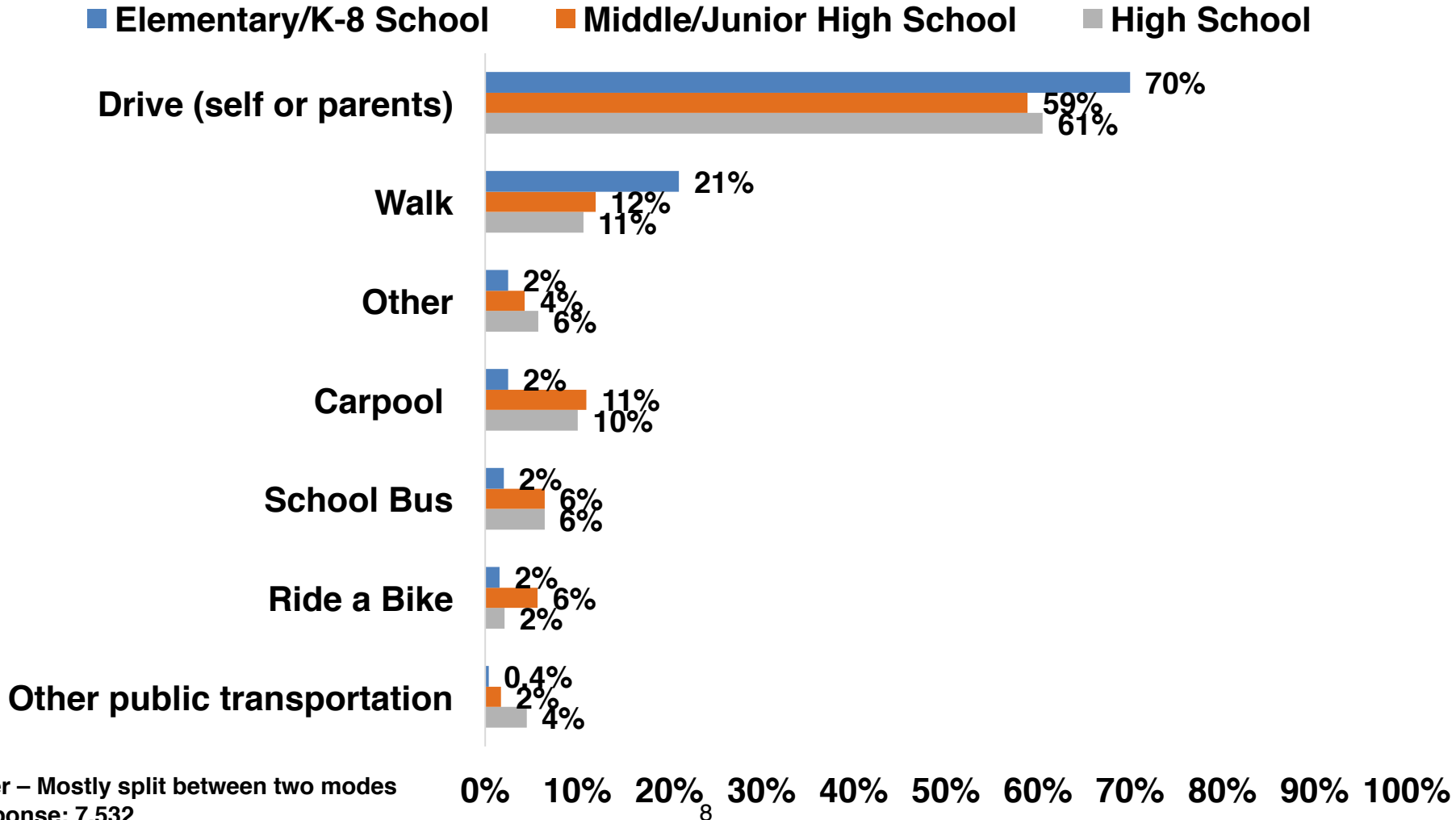


How important is it that SDUSD reduces its carbon footprint or impact on the environment?



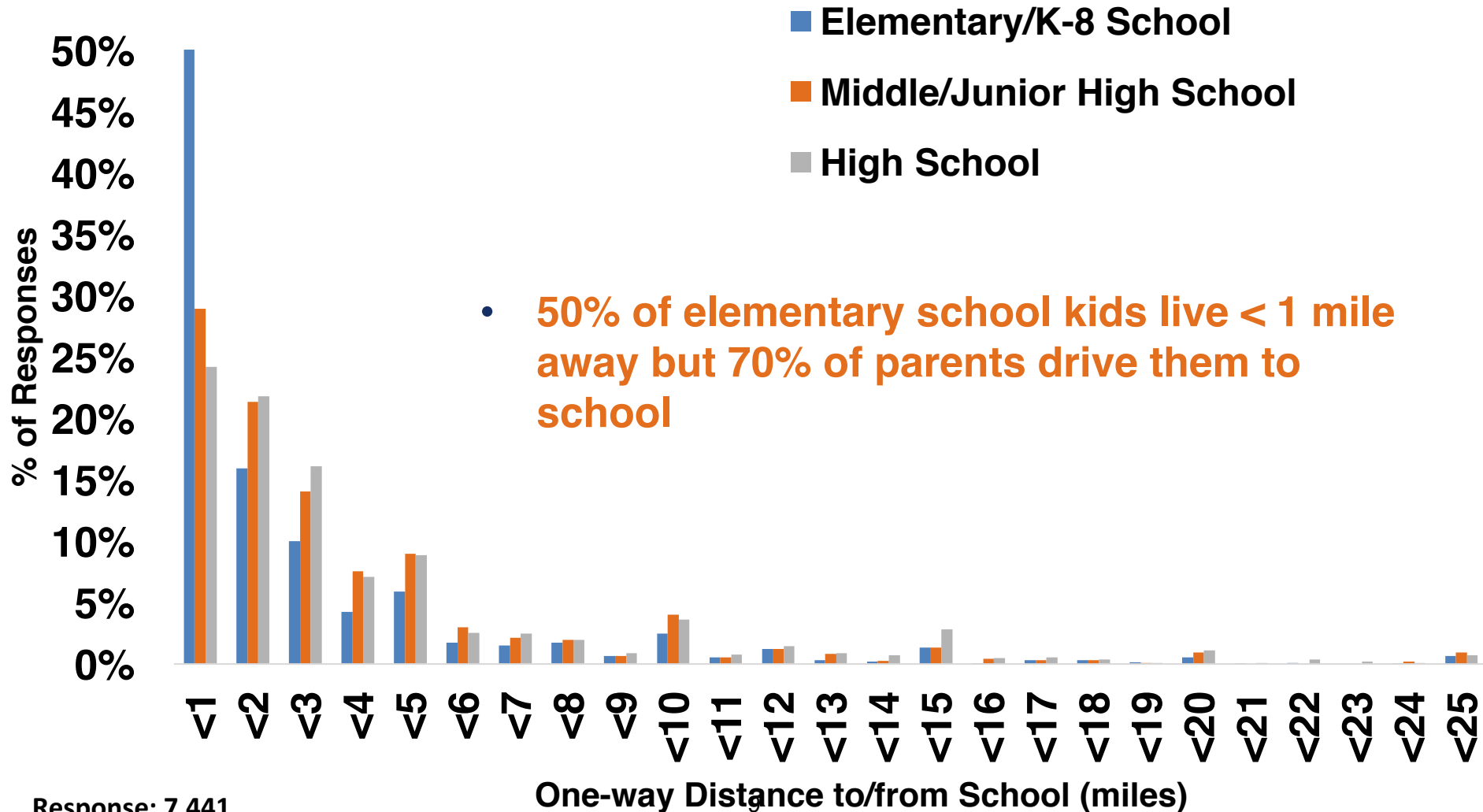
Parent Survey Results

What is the most frequent way your child(ren) travels to/from school?



Parent Survey Results

What is the one-way distance your child(ren) travels to/from school?

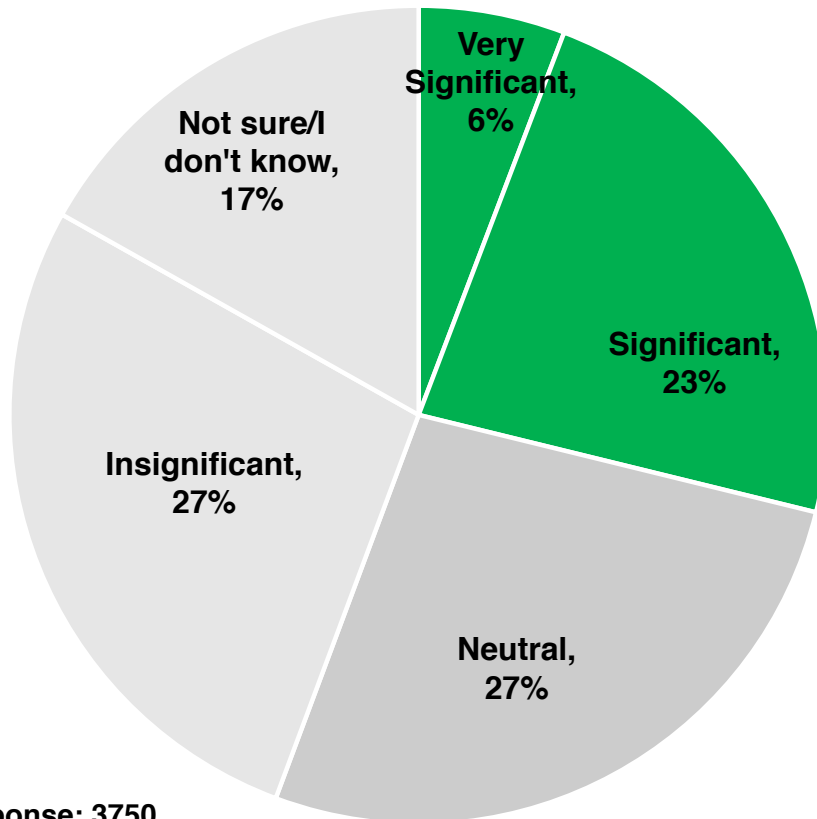


- 50% of elementary school kids live < 1 mile away but 70% of parents drive them to school

Response: 7,441

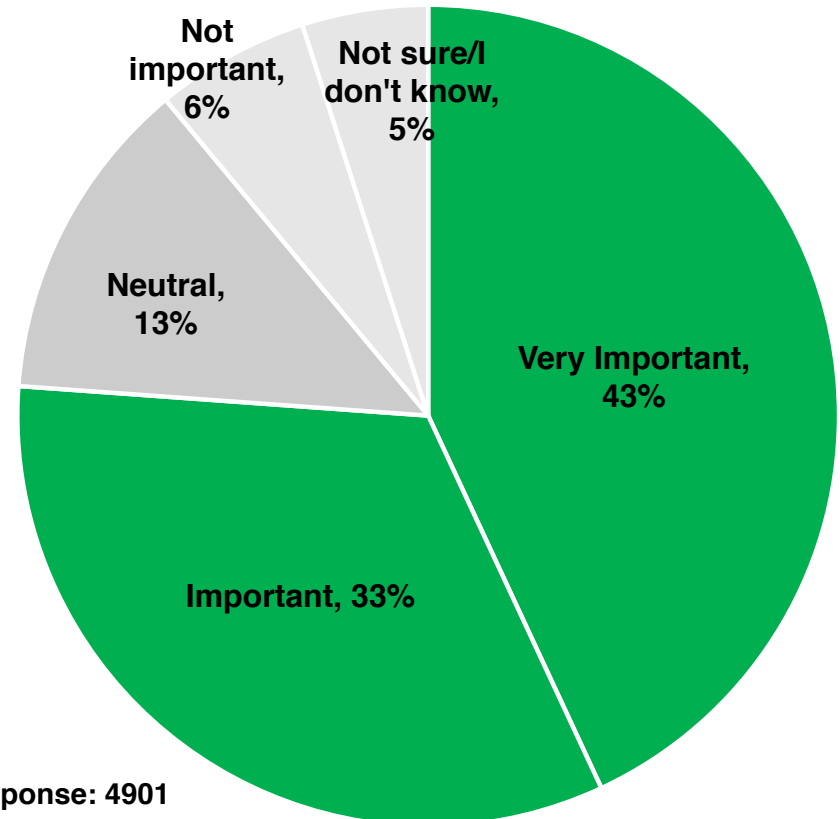
Parent Survey Results

How much of an impact do you think your child(ren) commuting has on SDUSD's carbon footprint?



Response: 3750

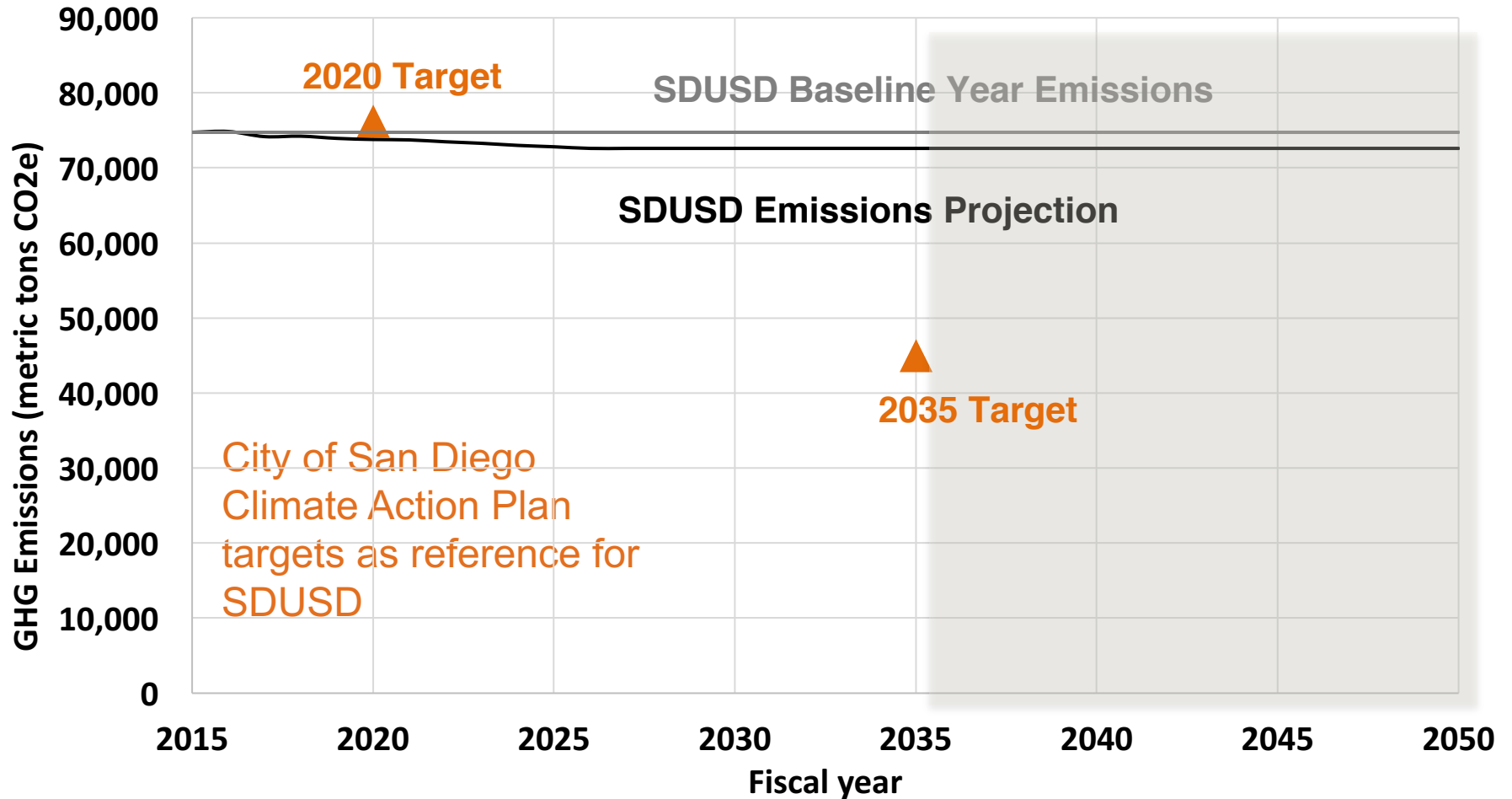
How important is it that SDUSD reduces its carbon footprint or impact on the environment?



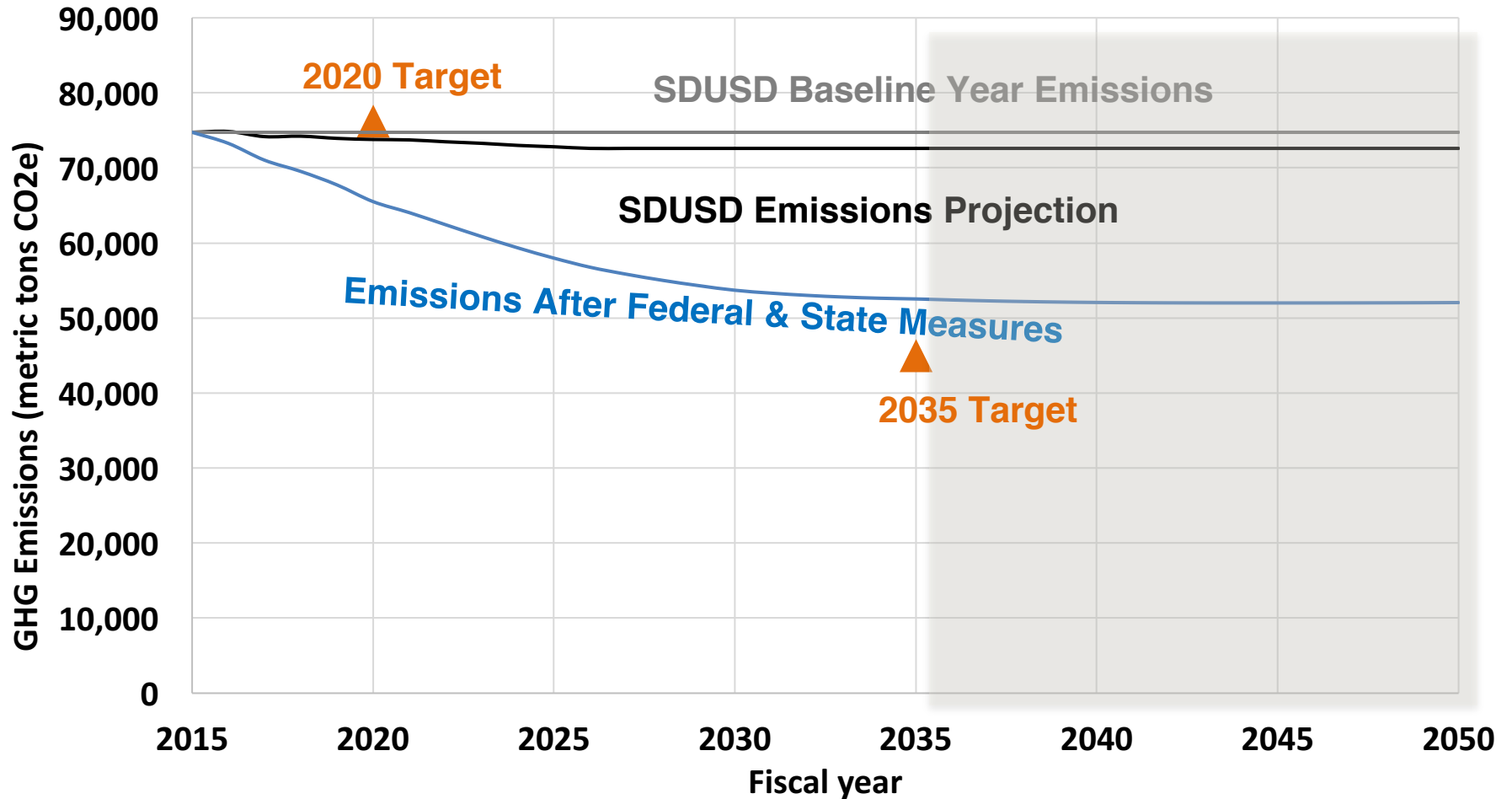
Response: 4901

- 1. 2015 Greenhouse Gas (GHG) Inventory**
- 2. Employee and Parent Commute Survey Results**
- 3. GHG Emission Projections to 2050, Targets and Reduction Potential**

Projections and Potential Targets for GHG Reduction



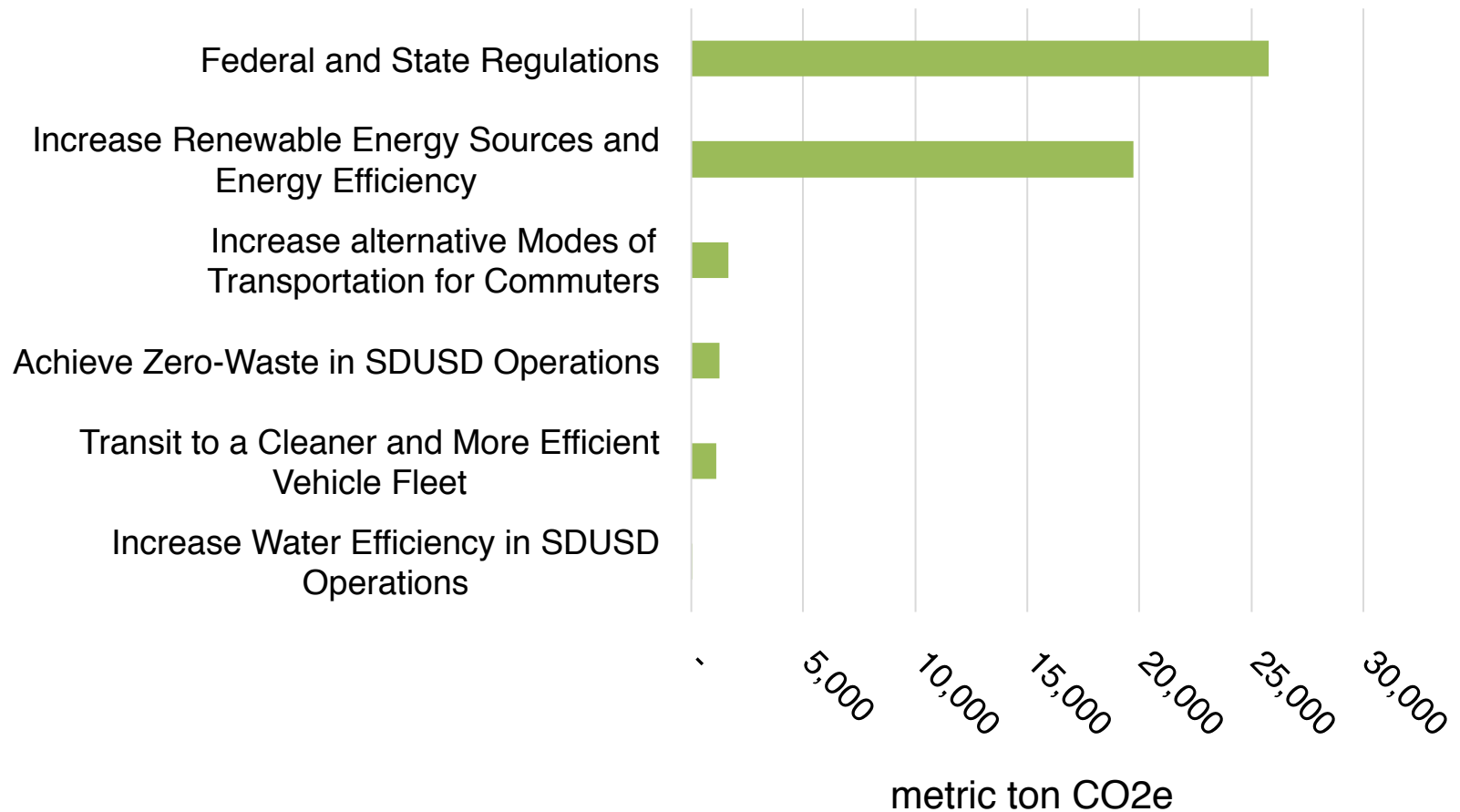
Projections and Potential Targets for GHG Reduction



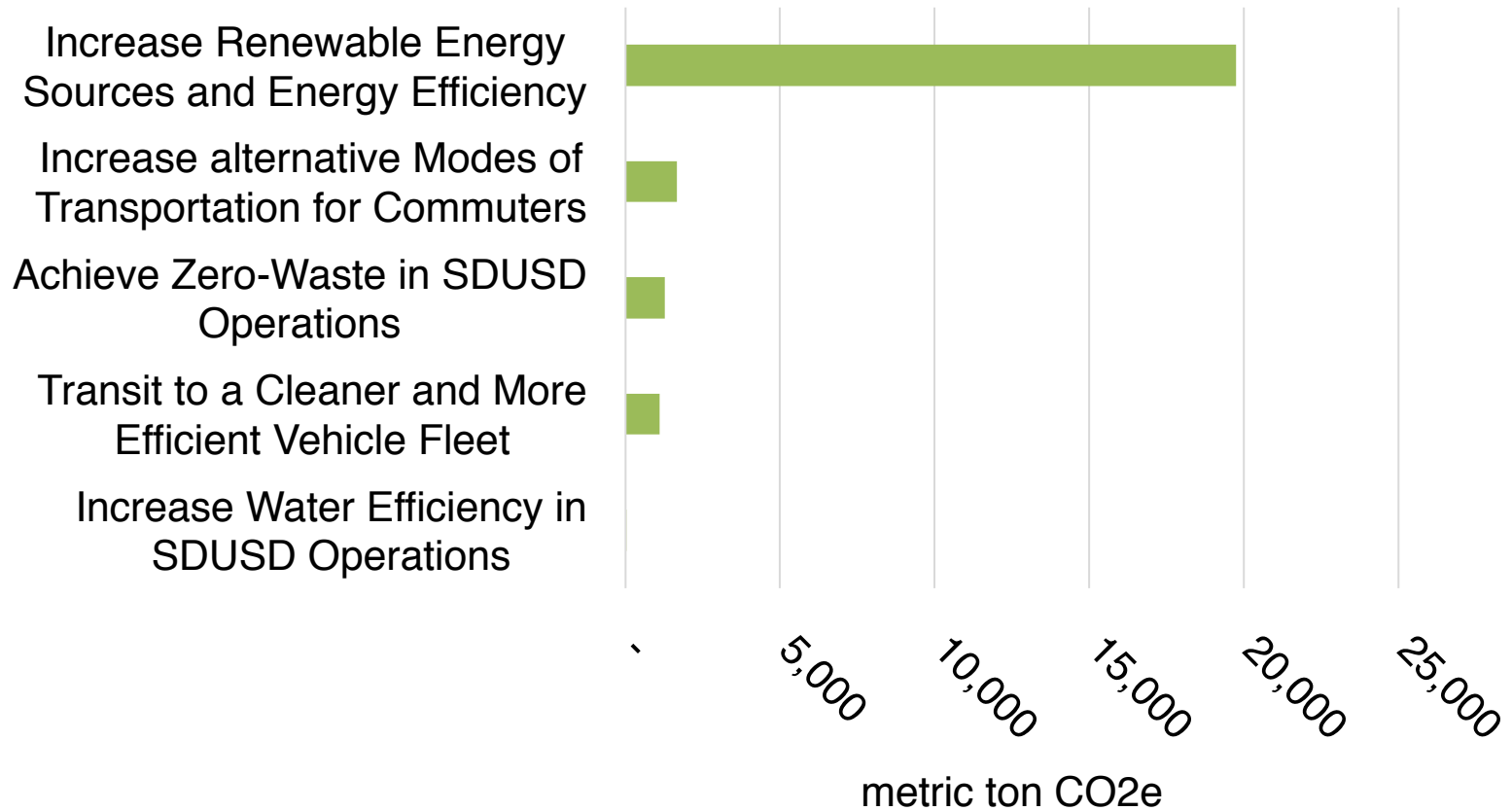
- 1. 2015 Greenhouse Gas (GHG) Inventory**
- 2. Employee and Parent Commute Survey Results**
- 3. GHG Emission Projections to 2050, Targets and Reduction Potential**
- 4. How to Potentially Achieve Targets: Assumptions for Reduction Calculations**

Overall Reduction Strategies

Reduction Strategies (2035)



SDUSD Potential Reduction Strategies



Assumptions for SDUSD GHG Reduction Calculations

Strategies and Goals	Current Conditions	EPIC's Assumptions for GHG Reduction Goals	Reduction Potential (metric tons CO ₂ e)	
			2020	2035
Increase Energy Efficiency and Renewable Energy Sources				
Encourage Reduction of average Energy Use Intensity (EUI) in Buildings	Average EUI = 25	10% below 2015 electricity and natural gas consumption by 2035	624	227
Continue HVAC Energy Efficiency Upgrades	1,300 MWh annual energy savings from recent Prop 39 projects	Same rate of retrofits as current every five years until 2035, total 5,300 MWh saving in 2035	280	-
Continue LED Lighting or Other Lighting Retrofits	1.4 MWh annual energy savings in 2016 from lighting upgrades at 23 school sites	Same rate of lighting retrofits at all 200 schools by 2035 (5.6MWh saved in 2020, 44.8 MWh saved in 2035)	1.2	-
Install Additional On-site Solar PV Systems	5.3 MW solar PV planned FY18	Additional 10 MW by 2035	2,758	9,957
Be Part of City of San Diego's Community Choice Aggregation Program	N/A	100% renewable electricity by 2035	-	6,291

Assumptions for SDUSD GHG Reduction Calculations

Strategies and Policies	Current Conditions	EPIC's Assumptions for GHG Reduction Goals	Reduction Potential (metric tons CO ₂ e)	
			2020	2035
Increase Alternative Modes of Transportation in Student and Employee Commuting				
Work with SANDAG to Increase Number of Elementary School Students Walking to School	21% elementary school students walk to school (based on student parent survey)	40% elementary school students (projected 27,000 students) walk to school in 2035	159	451
Work with SANDAG to Offer Vanpool Program for Employees	N/A	10 vanpools with 8 persons each in 2035 (50 miles roundtrip) – based on recommendation as seen in top-rated response in commuter survey	-	135
Consider Coordination Website to Increase Carpooling Among Employees	1% of employees (140) carpool to work (based on employee survey)	5% employees (800 projected employees) carpool to work in 2035 (20 miles roundtrip) – based on recommendation in free response in commuter survey	158	438
Work with SANDAG to Provide Mass Transit Subsidies to Increase Employees using Mass Transit	1% of employees (140) take mass transit to work (based on employee survey)	3% of employees take mass transit to work by 2035 (20 miles roundtrip) – based on recommendation in commuter survey	78	217

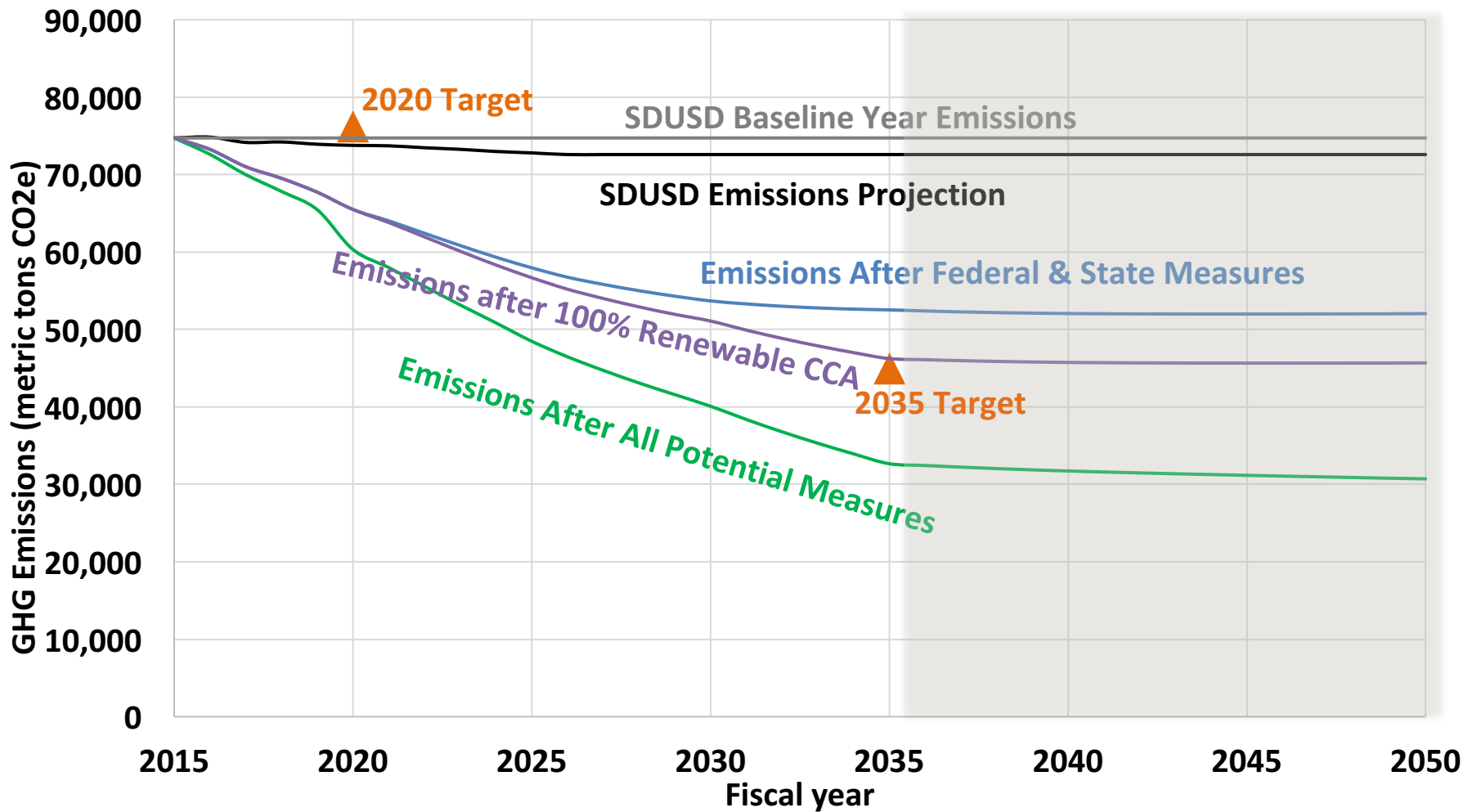
Assumptions for SDUSD GHG Reduction Calculations

Strategies and Policies	Current Conditions	EPIC's Assumptions for GHG Reduction Goals	Reduction Potential (metric tons CO ₂ e)	
			2020	2035
Transition to a Cleaner and More Efficient Vehicle Fleet				
Mark and Encourage more Anti-idling Zones to Reduce Bus Idling Emissions	Have anti-idling policy for 200 school loading zones (360 buses per day), not enforced	Assume enforcement at 100 zones (half of the existing 200 zones, reduces diesel bus idling emissions)	-	93
Transition to a More Efficient White Fleet	White fleet average age is 15.8 years	Replace 10 vehicles every year starting 2020. New vehicles have double the fuel economy of replaced vehicles (10,000 miles driven per vehicle per year)	20	321
Consider Retrofitting Existing School Buses to Electric	Current school bus runs on bio-diesel (E20) with average 8 MPG and drives 20,000 miles per year	2 school buses convert to electric every year starting 2020 leading to 30 electric buses in 2035. Buses would be charged on-site; average fuel economy is 1.5 kWh/mile.	41	661
Encourage transition to Electric Off-road equipment	11,700 gallons fuel use	Replace 25% off-road fuel to electric by 2035	-	23

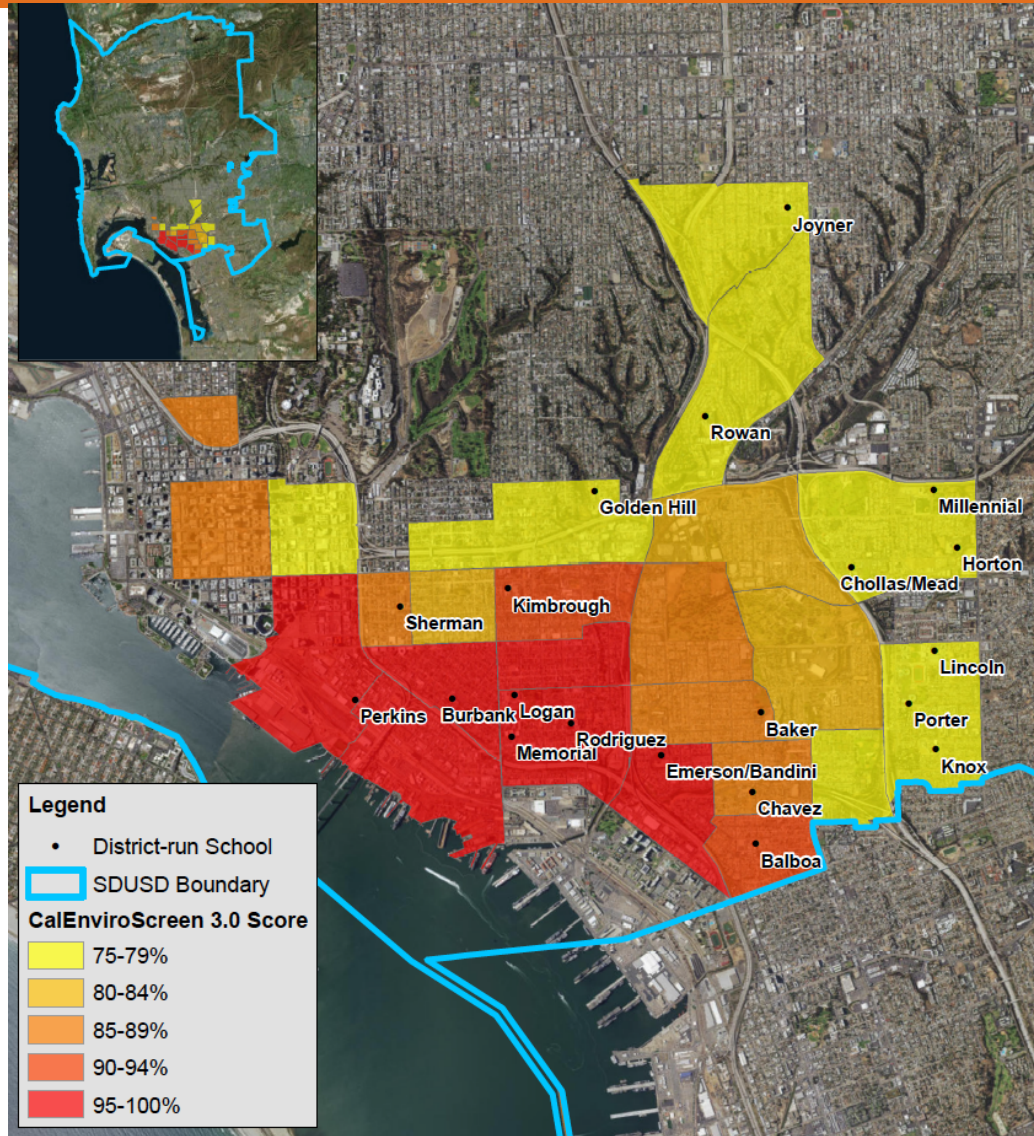
Assumptions for SDUSD GHG Reduction Calculations

Strategies and Policies	Current Conditions	EPIC's Assumptions for GHG Reduction Goals	Reduction Potential (metric tons CO ₂ e)	
			2020	2035
Achieve Zero-Waste in SDUSD Operations				
Continue to Increase Solid Waste Diversion Rate	40% diversion rate	75% diversion rate by 2020 and 90% by 2035 (same as City of San Diego CAP goal)	1,043	1,026
Increase Water Efficiency in SDUSD Operations				
Continue Water Efficient Fixtures Retrofits	Retrofit on average 25 toilets and 15 bathroom faucets a year (1.6 gallons per flush, public bathroom faucet 2.2 gallons per minute)	Same retrofit rate every year until 2035. Replace with fixtures complying with current 2016 CalGreen mandatory requirement (toilet flush 1.28 gallons per flush, public bathroom faucet rate 0.5 gallons per minute)	9	24
Federal and State Regulations				
Renewable Portfolio Standards (RPS)	33% RPS in 2020, 50% RPS in 2030		3,611	6,291
California Advanced Clean Cars program	15% EVs of new car sales by 2025 changes the overall vehicle GHG emission rate		4,667	13,771

Projections, Targets and Potential Reductions



Prioritize schools?



Recommendation:

**Implementation start with
CalEnviroScreen Score
> 75% schools**

Thank You

Nilmini Silva-Send – silvasend@sandiego.edu

Yichao Gu – ygu@sandiego.edu

