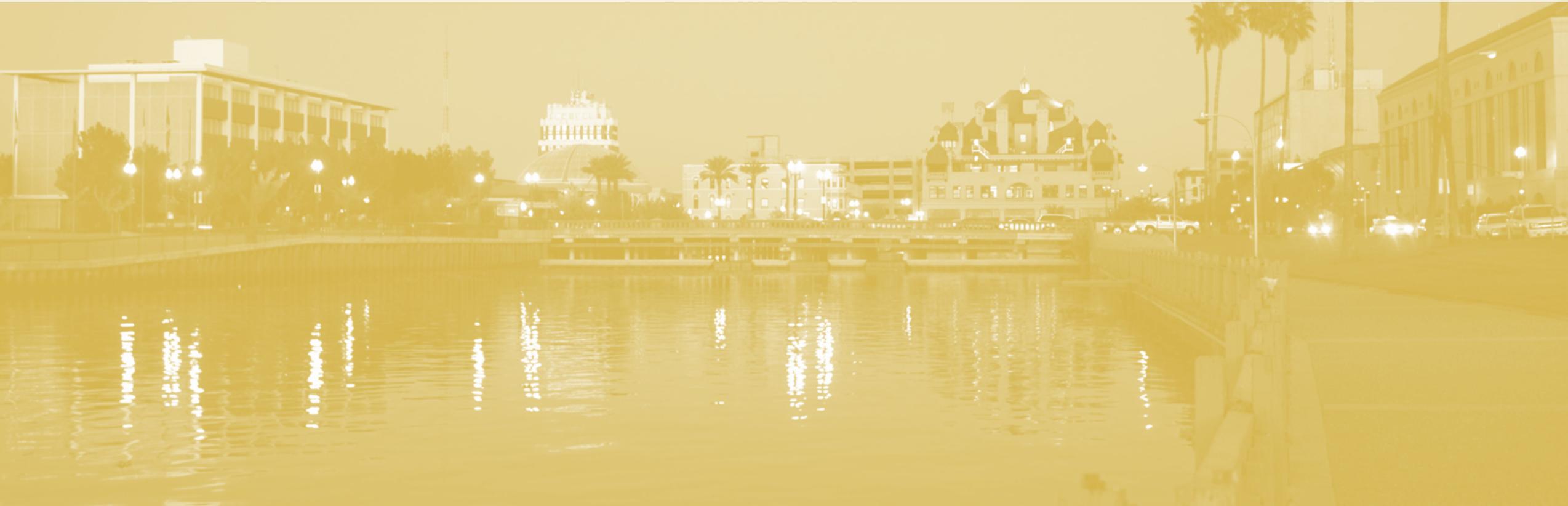
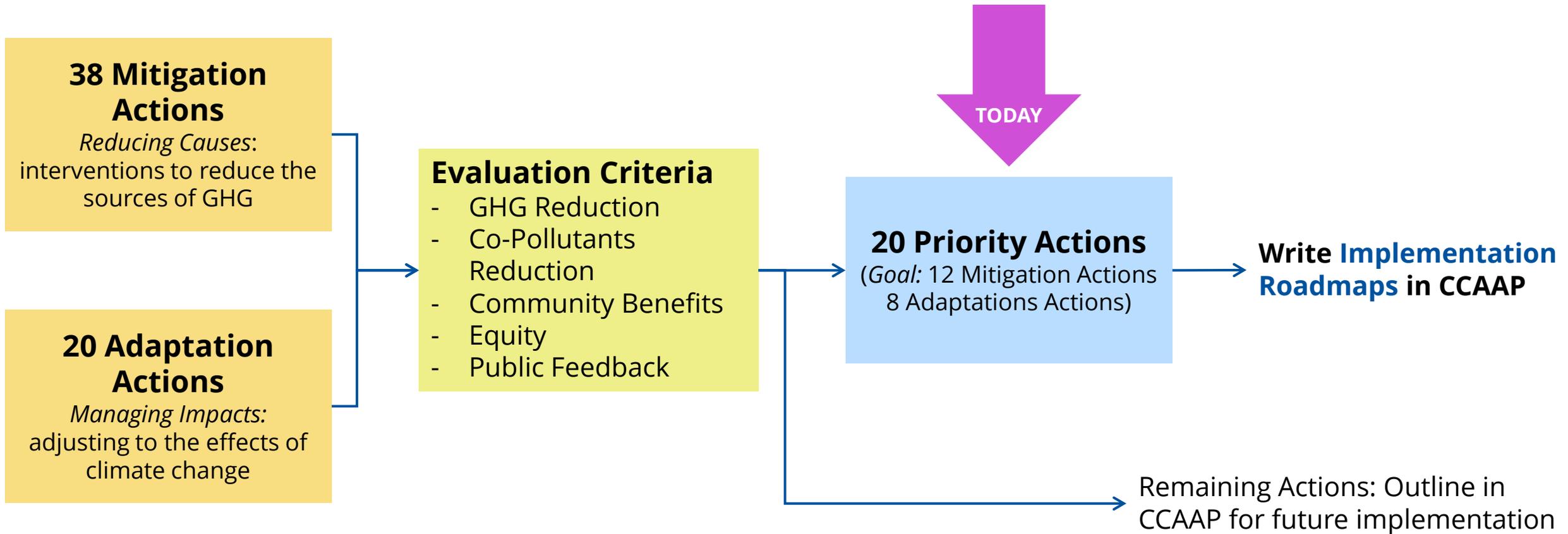


# Climate Mitigation & Adaptation Action Evaluation



# CCAAP Action Prioritization Framework



# Climate Mitigation and Adaptation Action Evaluation

**Five evaluation criteria** were used to holistically evaluate actions for their benefits and feasibility, including **obtaining public input** to aid in **action prioritization**

- 1 GHG Reduction Potential** What is the GHG reduction potential of the action?
- 2 Co-Pollutant Reduction Potential** What is the action's potential to reduce co-pollutant emissions such as NO<sub>x</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, VOCs, and CO?
- 3 Community Benefits Impact\*** What additional community benefits (public health, air quality, environment, cost savings, local economy, climate adaptation, etc.) does the action provide beyond emissions reductions?
- 4 Equity Impact** Which Climate and Economic Justice Screening Tool (CJEST) burden categories are associated with or addressed by the action?
- 5 Public Input\*** Identifying actions prioritized by residents of Stockton

# Climate Mitigation and Adaptation Action Evaluation

- For each criterion, modeled results for each action are placed into a tier: **High, Medium, Low, Very Low, or Not Quantified** using the ranges shown.
- Darker colors indicate **stronger performance**.
- Scores are summed across criteria to compare overall impact and identify top 20 actions.

	①	②	③	④	⑤	
Range	GHG Reduction (2030)	GHG Reduction (2045)	Co-pollutant Reduction*	Co-benefits	Equity	Public Input
Unit	MTCO2e/year		Tons/year	# of benefits	# of benefits	# of votes
<b>High</b>	>2,000		>100	7-8	6	12+
<b>Medium</b>	1,000-2,000		10-100	5-6	4-5	8-11
<b>Low</b>	100-1,000		1-10	3-4	2-3	4-7
<b>Very Low</b>	<100		<1	0-2	0-1	0-3
<b>Not Quantified</b>	NQ		NQ	n/a	NQ	n/a

\*Each co-pollutant was rated separately, the scores were then combined, and a final tier was assigned for comparison across actions.

# Mitigation Action Evaluation | Transportation Sector – Mode Shift

Action #	Action Description	GHG Reduction (2030)	GHG Reduction (2045)	Co-pollutant Reduction	Co-benefits	Equity Impact	Public Input	Top 12
T1	Expand and improve pedestrian network	High	High	Low	Low	Low	High	✓
T2	Expand bike networks and facilities	Low	Low	Low	Low	Low	Medium	✓
T3	Develop and implement Safe Routes to School Plans	High	High	Low	Low	Low	Medium	✓
T4	Support school bus program	High	High	Low	High	Low	Low	✓
T5	Improve transit service and frequency	High	High	Low	High	Low	Low	✓
T6	Provide transit passes and incentives	Low	Low	Low	High	Low	Medium	
T7	Expand carpool/vanpool and carshare programs	Low	Low	Low	Low	Low	Medium	
T8	Support rail expansion	Low	Low	Low	Low	Low	Low	
T9	Incentivize infill development	High	High	Low	High	Low	Low	✓
T10	Establish Transit-Oriented Development (TOD) overlay zones	Low	Low	Low	High	Low	Medium	
T11	Improve traffic signaling	Low	Low	Low	Low	Low	Medium	
T13	Incorporate TDM elements in plan review process	Low	Low	Low	Low	Low	Medium	

# Mitigation Action Evaluation | Transportation Sector – Zero-Emissions and Off-Road Vehicles

Action #	Action Description	GHG Reduction (2030)	GHG Reduction (2045)	Co-pollutant Reduction	Co-benefits	Equity Impact	Public Input	Top 12
OR2	Require cleaner-fuel off-road equipment for new development	High	High	High	Low	Low	Low	✓
OR3	Use cleaner-fuel off-road equipment for municipal operations	High	High	Low	Low	Low	Low	✓
T14	Convert municipal fleets to cleaner fuels	High	High	Low	Low	Low	Low	
T15	Convert buses to cleaner fuels	Low	Low	Low	Low	Low	Low	
T16	Provide public EV chargers	Low	Low	Low	High	Low	Low	
T17	Develop a regional clean freight plan	Low	Low	Low	Low	Low	High	
T18	Develop warehouse freight truck clean fuel requirements in new projects	Low	High	Low	Low	Low	Low	
T19	Install hydrogen fueling infrastructure	Low	Low	Low	Low	Low	Low	
T20	Support development of a Stockton Airport Sustainability Plan	Low	Low	Low	Low	Low	Low	
T21	Support the implementation of the Port of Stockton Clean Air Action Plan	High	High	High	Low	Low	Low	✓

# Mitigation Action Evaluation | Building & Electricity Generation

Action #	Action Description	GHG Reduction (2030)	GHG Reduction (2045)	Co-pollutant Reduction	Co-benefits	Equity Impact	Public Input	Top 12
BE1	Upgrade public outdoor lighting	Light Blue	White	Light Blue	Yellow	Yellow	Light Blue	
BE2	Promote existing incentives for energy efficient and electric building equipment	Yellow	Yellow	Yellow	Yellow	Yellow	Light Blue	✓
EG1	Install solar on local government properties	Yellow	Light Blue	Light Blue	Yellow	Yellow	Yellow	
EG2	Promote solar installations	Yellow	Light Blue	Light Blue	Yellow	Yellow	Light Blue	

# Mitigation Action Evaluation | Waste and Water Supply

Action #	Action Description	GHG Reduction (2030)	GHG Reduction (2045)	Co-pollutant Reduction	Co-benefits	Equity Impact	Public Input	Top 12
W1	Provide outreach and education on recycling and composting	High	High	Low	High	High	Low	
W2	Develop food waste diversion and food recovery incentive and enforcement program in accordance with state law	High	High	Low	High	High	Low	
W3	Increase construction and demolition waste diversion	High	High	Low	Low	High	Low	
W4	Require sustainable local government purchasing practices	Low	Low	Low	High	High	Low	
W5	Collect and use biogas at landfills and wastewater treatment plants	High	High	Low	High	High	Low	
WS1	Require water efficiency in new commercial developments and renovations	Low	Low	Low	High	High	Low	
WS2	Install smart water meters	Low	Low	Low	High	High	Low	

# Mitigation Action Evaluation | Other – Agriculture, Carbon Sequestration

Action #	Action Description	GHG Reduction (2030)	GHG Reduction (2045)	Co-pollutant Reduction	Co-benefits	Equity Impact	Public Input	Top 12
A1	Support best management practices for manure management	High	High	Low	High	High	Low	
A2	Support best management practices to improve the health and function of agricultural lands	High	High	Low	High	High	Low	
S1	Expand urban tree planting and maintenance	Low	High	High	High	High	High	✓
S2	Increase public parks with natural vegetation	Low	Low	Low	High	High	High	✓
S3	Create a regional urban forest master plan	Low	Low	Low	High	High	Low	

# Adaptation Action Evaluation

Action #	Action Description	Co-benefits	Public Input	Top 8
AD01	Establish an adaptation strategy review process with Climate Action Plan Advisory Committee (CAPAC) oversight to monitor and track progress of climate strategy implementation			✓
AD03	Pursue funding to implement adaptation projects			✓
AD04	Establish a multilingual climate hazards alert system			✓
AD05	Create resilience hubs to provide community support and climate adaptive services, especially during heat waves or extreme weather events			✓
AD06	Develop an extreme heat action plan and conduct outreach campaigns to enhance community understanding of how to be prepared for extreme heat			✓
AD07	Increase tree canopy and integrate heat-resilient infrastructure in heat-vulnerable neighborhoods			✓
AD08	Create a partnership agreement with ride share programs and the bus system to provide free rides to resilience hubs/cooling facilities during extreme heat events and other disasters			✓
AD09	Connect residents with resources and programs to improve resilience of their homes to flooding and extreme heat			
AD10	Upgrade road and pedestrian surfaces in areas with high vulnerability to extreme heat and flooding			
AD11	Enhance community resilience to wildfire smoke and poor air quality			

# Adaptation Action Evaluation

Action #	Action Description	Co-benefits	Public Input	Top 8
AD12	Ensure critical facilities can operate and provide refuge during extreme heat and flooding events			
AD13	Implement and expand the General Plan's infrastructure flood resilience strategies			✓
AD14	Use nature-based solutions to support groundwater recharge and stormwater mitigation			
AD16	Update codes to allow greywater infrastructure, dual plumbing, and rainwater capture systems for on-site water reuse			
AD17	Develop drought-tolerant landscaping where it doesn't yet exist, ideally with stormwater benefits, and implement a watering schedule to prevent watering during the hottest time of day			
AD18	Update the 2022 Wastewater Master Plan and 2021 Water Master Plan to integrate climate projections into utility planning			
AD19	Ensure wastewater treatment plants and sewer systems are functional during heat and flood events			
AD20	Ensure that backup generators at city facilities are properly placed, connected, maintained, and operated during hazard events (e.g., heatwaves, floods, power outages)			
AD22	Improve asset monitoring systems to identify deteriorating infrastructure			
AD23	Enhance regional planning efforts by developing a citywide ecosystem services inventory			

# Top 20 Actions

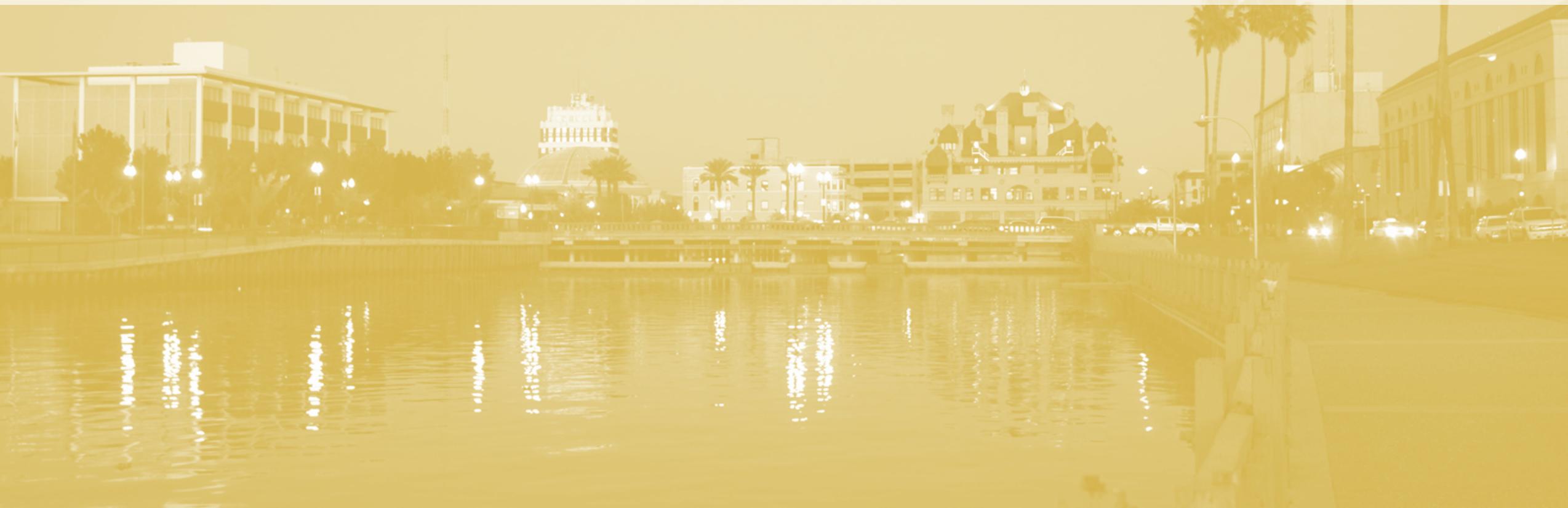
Action #	Action Description	1	2	3	4	5
<b>S1</b>	Expand urban tree planting and maintenance	5	5	5	5	5
<b>S2</b>	Increase public parks with natural vegetation	5	5	5	5	5
<b>BE2</b>	Promote existing incentives for energy efficient and electric building equipment	5	5	5	5	5
<b>OR2</b>	Require cleaner-fuel off-road equipment for new development	5	5	5	5	5
<b>OR3</b>	Use cleaner-fuel off-road equipment for municipal operations	5	5	5	5	5
<b>T1</b>	Expand and improve pedestrian network	5	5	5	5	5
<b>T2</b>	Expand bike networks and facilities	5	5	5	5	5
<b>T3</b>	Develop and implement Safe Routes to School Plans	5	5	5	5	5
<b>T4</b>	Support school bus program	5	5	5	5	5
<b>T5</b>	Improve transit service and frequency	5	5	5	5	5
<b>T9</b>	Incentivize infill development	5	5	5	5	5
<b>T21</b>	Support the implementation of the Port of Stockton Clean Air Action Plan	5	5	5	5	5
<b>AD01</b>	Establish an adaptation strategy review process with Advisory Committee (CAPAC) oversight to monitor and track progress of climate strategy implementation	5	5	5	5	5
<b>AD03</b>	Pursue funding to implement adaptation projects	5	5	5	5	5
<b>AD04</b>	Establish a multilingual climate hazards alert system	5	5	5	5	5
<b>AD05</b>	Create resilience hubs to provide community support and climate adaptive services, especially during heat waves or extreme weather events	5	5	5	5	5
<b>AD06</b>	Develop an extreme heat action plan and conduct outreach campaigns to enhance community understanding of how to be prepared for extreme heat	5	5	5	5	5
<b>AD07</b>	Increase tree canopy and integrate heat-resilient infrastructure in heat-vulnerable neighborhoods	5	5	5	5	5
<b>AD08</b>	Create a partnership agreement with ride share programs and the bus system to provide free rides to resilience hubs/cooling facilities during extreme heat events and other disasters	5	5	5	5	5
<b>AD13</b>	Implement and expand the General Plan's infrastructure flood resilience strategies	5	5	5	5	5

# Action Prioritization Discussion

- **Today's goal:** Identify 20 priority actions to write implementation roadmaps in the CCAAP
- Do you agree that these 20 actions on the previous slide should be prioritized?
  - Why or why not?
- If not, what actions should be prioritized and why?

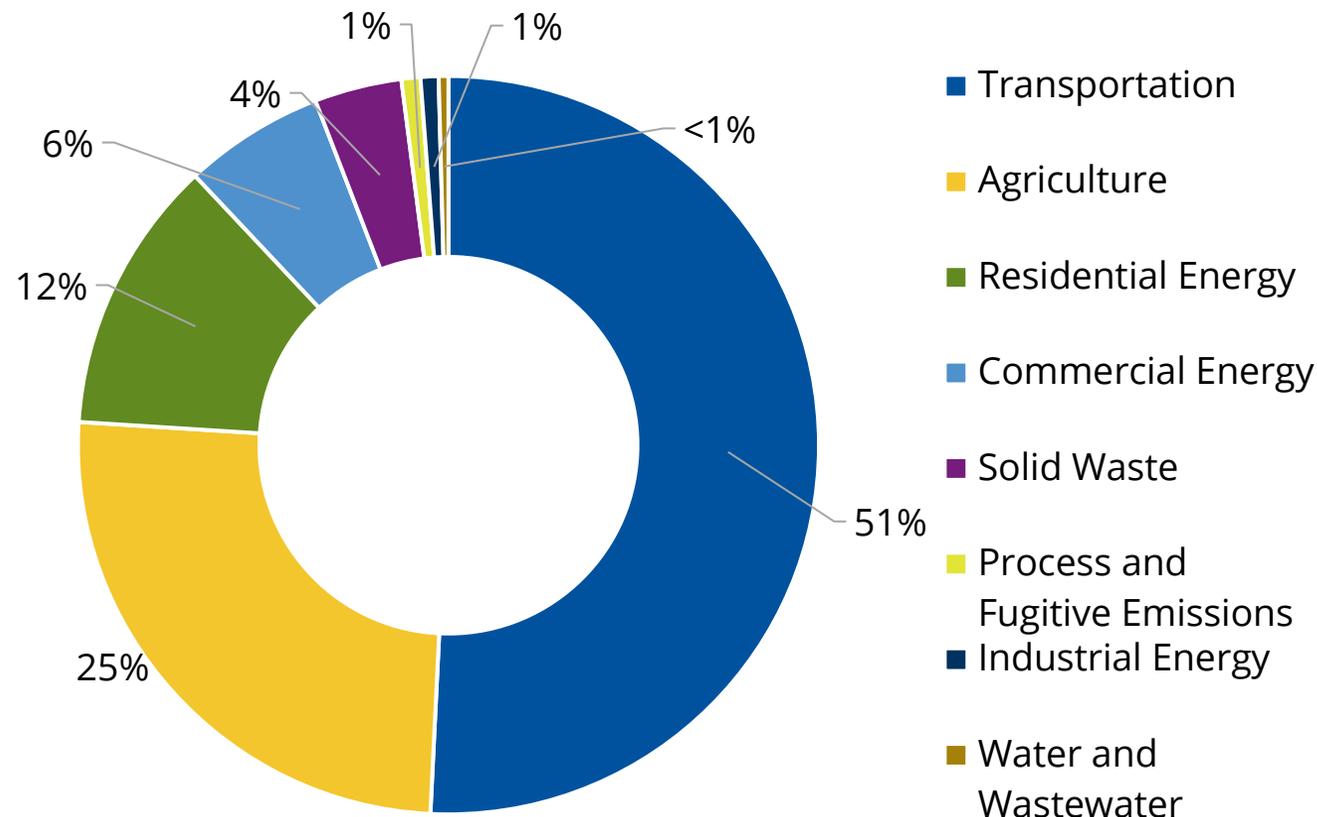
Any other discussion or comments?

# Appendix



# Where do the region's GHG emissions come from?

- The chart shows a draft of the San Joaquin county-wide 2022 GHG emissions inventory
- Emissions are primarily from **Transportation (51%)**, **Agriculture (25%)** and **Residential Buildings (12%)**
- Transportation emissions are mainly from on-road vehicle fuel use, agricultural emissions mainly from livestock, and residential emissions mainly from natural gas use



# Action Development

- 38 Mitigation Actions
- 20 Adaptation Actions

**Mitigation:** *Reducing Causes:* interventions to reduce the sources of GHG

**Adaptation:** *Managing Impacts:* adjusting to the effects of climate change

## Sectors

- Agriculture
- Building Energy
- Electricity Generation
- Industrial Processes and Off-Road Equipment
- Sequestration
- Solid Waste
- Water Supply
- Transportation

# 1 GHG Reduction Potential

## How are GHGs evaluated?

Establish an emissions **baseline** using existing emissions data

Estimate **scale & effectiveness**, i.e., how much an activity and its respective emissions are reduced over time

Reduction Potential	Range
<b>High</b>	>2,000 MTCO <sub>2</sub> e/year
<b>Medium</b>	1,000-2,000 MTCO <sub>2</sub> e/year
<b>Low</b>	100-1,000 MTCO <sub>2</sub> e/year

#	Action	GHG Reduction Potential	
		2030	2045
A1	Manure Management Best Practices	High	High
A2	Agricultural Land Health Best Practices	High	High
S1	Urban Tree Planting & Maintenance	Medium	High
BE2	Energy-Efficient & Electric Building Equipment Incentives	High	High
EG1	Solar on Government Facilities	Medium	
EG2	Solar Installation Promotion	Medium	
W1	Recycling & Composting Education	High	High
W2	Food Waste Diversion	High	High
W5	Biogas Capture	High	High
OR2	Cleaner off-road equipment (new development)	High	High

# 1 GHG Reduction Potential

## How are GHGs evaluated?

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Estimate **scale & effectiveness**, i.e., how much an activity and its respective emissions are reduced over time

Reduction Potential	Range
<b>High</b>	>2,000 MTCO <sub>2</sub> e/year
<b>Medium</b>	1,000-2,000 MTCO <sub>2</sub> e/year
<b>Low</b>	100-1,000 MTCO <sub>2</sub> e/year

#	Action	GHG Reduction Potential	
		2030	2045
OR3	Cleaner off-road equipment (municipal)	High	High
T1	Pedestrian Network Expansion	High	High
T2	Bicycle Network Expansion	Medium	Medium
T3	Safe Routes to School	High	High
T4	Clean School Bus Program	High	High
T5	Transit Service Enhancements	High	High
T6	Transit Incentives	Medium	Medium
T9	Incentivize infill development	High	High
T14	Clean Municipal Fleet	High	High
T21	Port Clean Air Plan support	High	High

## 2 Co-Pollutant Reduction Potential

### What are co-pollutants?

Co-pollutants pose significant risks to **public health, the environment, and property**

Each co-pollutant has a different impact on public health, the environment and property

Score	Co-Pollutant Reduction Potential	Range
4	High	>100 Tons/year
3	Medium	10-100 Tons/year
2	Low	1-10 Tons/year
1	Very Low	<1 Tons/year
0	Not Quantified	Not Quantified

#	Action	Co-Pollutant Reduction Potential						Overall	
		NOx	SO2	PM2.5	PM10	CO	VOCs		HAPs
S1	Urban Tree Planting & Maintenance	2	2	2	2	1	2	0	11
BE2	Energy-Efficient Equipment Incentives	3	1	1	1	3	2	1	12
EG1	Solar on Government Facilities	2	1	1			1		5
EG2	Solar Installation Promotion	2	1	1			1		5
W2	Food Waste Diversion	2		1			1		4
WS1	Support rail expansion	1	1	1			1		4
OR2	Cleaner off-road equipment (new development)	4	1	2	2	4	3		16
OR3	Cleaner off-road equipment (municipal)	3	1	1	1	4	3		13
T1	Pedestrian Network Expansion	2	1	1	2	4	2		12
T2	Bicycle Network Expansion	1	1	1	1	2	1		7

## 2 Co-Pollutant Reduction Potential

### What are co-pollutants?

Co-pollutants pose significant risks to **public health, the environment, and property**

Each co-pollutant has a different impact on public health, the environment and property

Score	Co-Pollutant Reduction Potential	Range
4	High	>100 Tons/year
3	Medium	10-100 Tons/year
2	Low	1-10 Tons/year
1	Very Low	<1 Tons/year
0	Not Quantified	Not Quantified

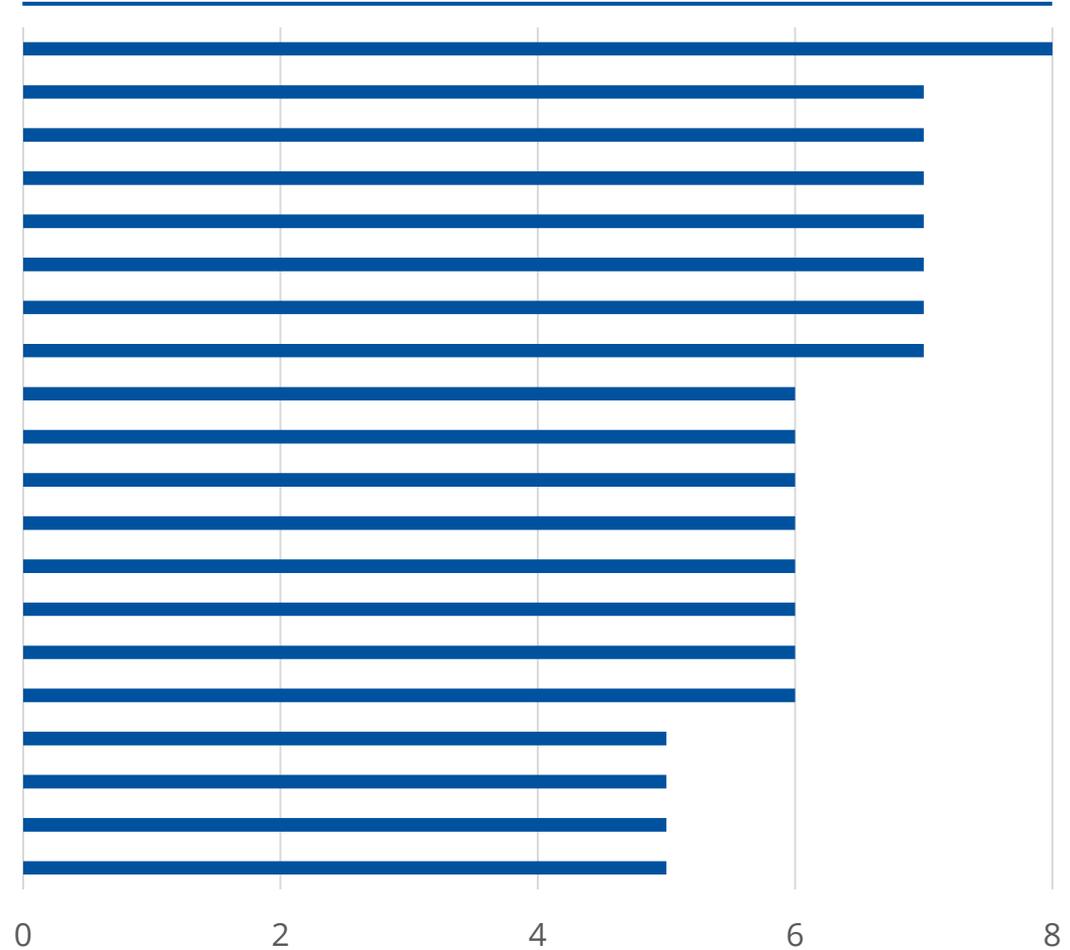
#	Action	Co-Pollutant Reduction Potential						Overall	
		NOx	SO2	PM2.5	PM10	CO	VOCs		HAPs
T3	Safe Routes to School	1	1	1	2	3	1		9
T4	Clean School Bus Program	1	1	1	1	3	1		8
T5	Transit Service Enhancements	1	1	1	2	3	1		9
T6	Transit Incentives	1	1	1	1	2	1		7
T7	Rideshare & Carshare Programs	1	1	1	1	3	1		8
T9	Infill Development Incentives	1	1	1	1	3	1		8
T10	Transit-Oriented Development Zones	1	1	1	1	2	1		7
T14	Clean Municipal Fleets	1	1	1	2	4	2		11
T15	Clean Transit Buses	1	1	1	1	2	1		7
T18	Clean-Fuel Freight Requirements	2	1	1	1	2	1		8
T21	Port Clean Air Plan support	4	3	2	3	3		2	17

# 3 Community Benefits Impact | Mitigation Actions

## Highest Rated Community Benefit Mitigation Actions

- S3. Urban Forest Master Plan
- S2. Parks with Natural Vegetation
- S1. Urban Tree Planting & Maintenance
- T4. Clean School Bus Program
- T5. Transit Service Enhancements
- T6. Transit Incentives
- T9. Infill Development Incentives
- T10. Transit-Oriented Development Zones
- EG2. Solar Installation Promotion
- WS2. Smart Water Meter Installation
- T1. Pedestrian Network Expansion
- T2. Bicycle Network Expansion
- T3. Safe Routes to School
- T7. Rideshare & Carshare Programs
- T8. Rail Expansion
- T13. Transportation Demand Management
- A1. Manure Management Best Practices
- A2. Agricultural Land Health Best Practices
- BE2. Energy-Efficient & Electric Building Equipment Incentives
- T16. Public EV Charging

## Number of community benefits

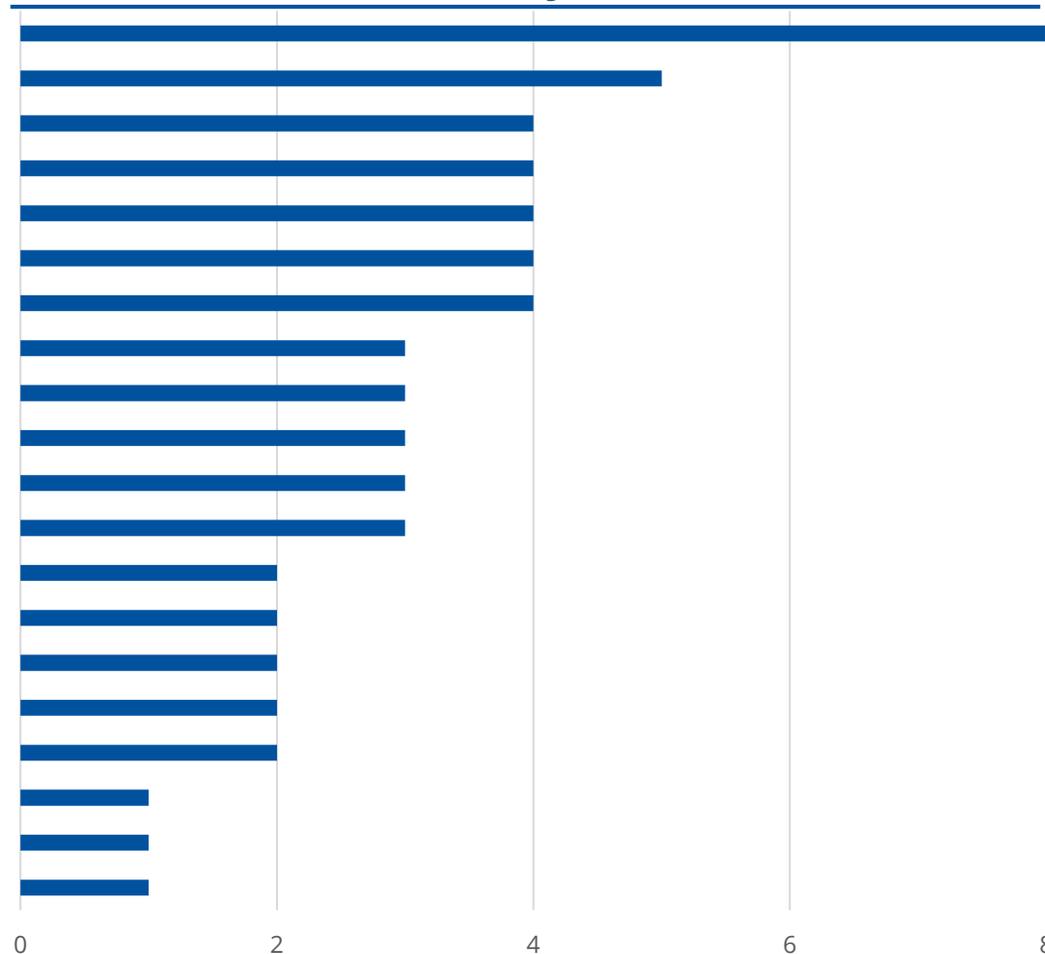


### 3 Community Benefits Impact | Adaptation Actions

#### Highest Rated Community Benefit Adaptation Actions

- AD07. Increase tree canopy + heat-resilient infrastructure
- AD13. Implement General Plan's flood resilience strategies
- AD23. Develop citywide ecosystem services inventory
- AD09. Provide residents resources for at-home resilience
- AD16. Update codes for greywater infrastructure
- AD14. Nature-based solutions for stormwater
- AD12. Critical facilities as refuges for heat and flood
- AD08. Free rides to resilience hubs and cooling centers
- AD17. Drought-tolerant landscaping
- AD11. Community resilience for wildfire smoke
- AD06. Develop extreme heat action plan
- AD05. Create resilience hubs to provide community support
- AD04. Establish multilingual climate hazard alert system
- AD22. Improve asset monitoring system
- AD20. Backup generators for city facilities
- AD19. Ensure functional wastewater treatment plants
- AD18. Incorporate climate projections into utility planning
- AD10. Update road and pedestrian surfaces
- AD03. Pursue funding to implement adaptation projects
- AD01. Establish strategy review process with CAPAC

#### Number of community benefits

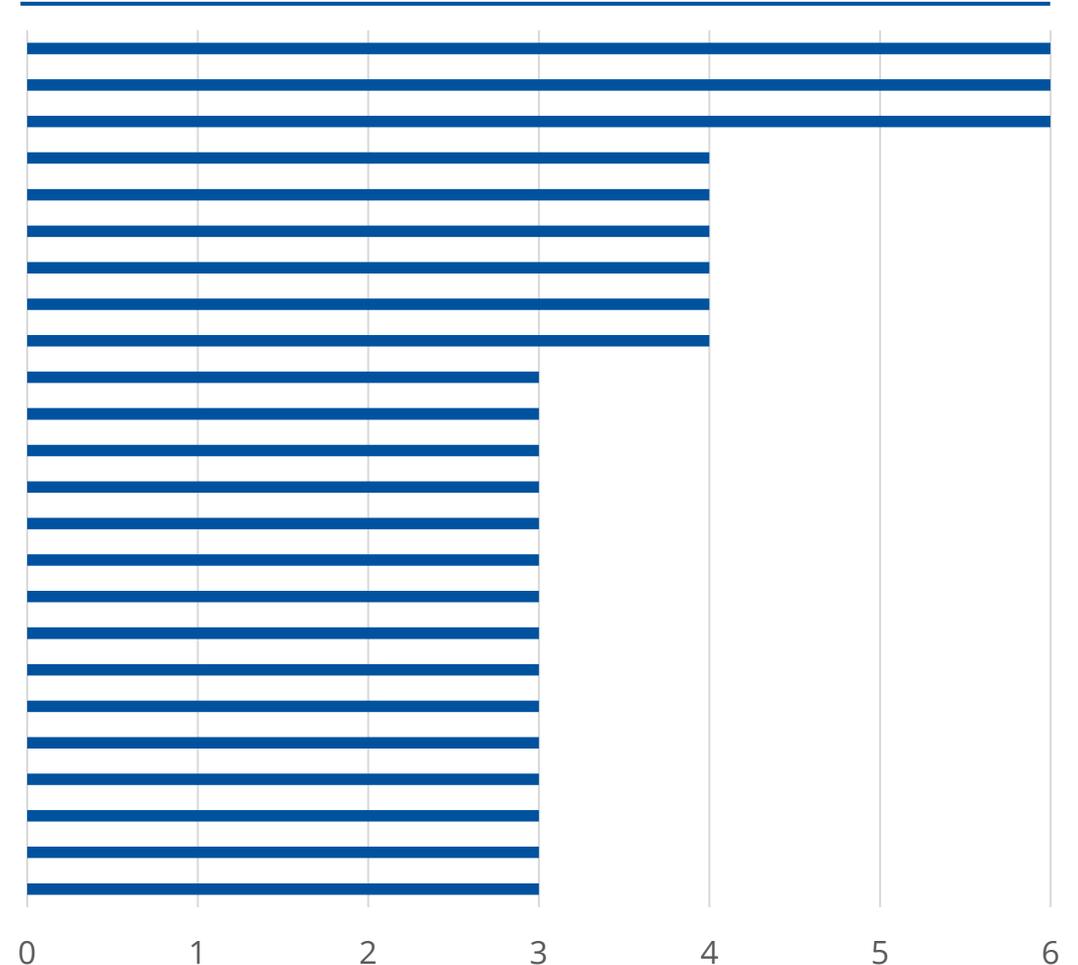


## 4 Evaluation Results: Equity

### Highest Rated Equity Actions

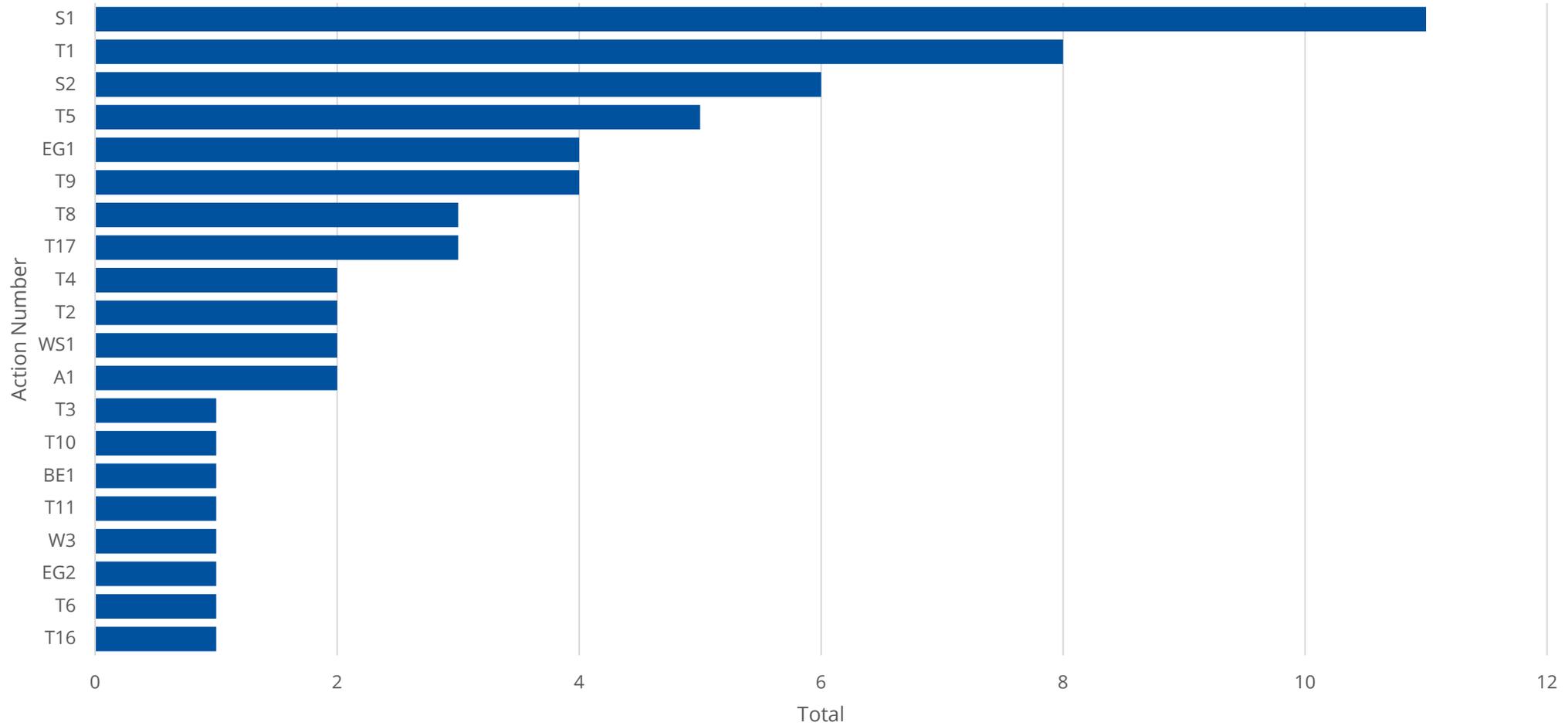
- S1. Urban Tree Planting & Maintenance
- S2. Parks with Natural Vegetation
- S3. Urban Forest Master Plan
- BE2. Energy-Efficient & Electric Building Equipment Incentives
- T1. Pedestrian Network Expansion
- T2. Bicycle Network Expansion
- T3. Safe Routes to School
- T9. Infill Development Incentives
- T10. Transit-Oriented Development Zones
- A2. Agricultural Land Health Best Practices
- BE1. Public Outdoor Lighting Upgrades
- EG1. Solar on Government Facilities
- EG2. Solar Installation Promotion
- T4. Clean School Bus Program
- T5. Transit Service Enhancements
- T6. Transit Incentives
- T7. Rideshare & Carshare Programs
- T8. Rail Expansion
- T14. Clean Municipal Fleets
- T15. Clean Transit Buses
- T16. Public EV Charging
- T17. Regional Clean Freight Plan
- T18. Clean-Fuel Freight Requirements
- T19. Hydrogen Fueling Infrastructure

### Number of categories impacted



# 5 Evaluation Results: Public Input

## MITIGATION ACTIONS



## 5 Evaluation Results: Public Input

