

CAP Status Update

Planning Commission Presentation
August 25, 2020



What is a CAP

- Climate action planning is making the necessary changes to protect the planet.
- A Climate Action Plan (“CAP”) is a package of policies and actions that helps achieve the greenhouse gas reduction targets set forth by the state of California.



Project – CAP Overview

- Update City’s baseline with newer data.
- Model business-as-usual emissions projections for 2020, 2030, and 2035 (and trend projection to 2050).
- Review and update existing measures.
- City actions and supporting measures in the future.
 - Updated CAP would include applicable measures from the 2013 CAP and new actions necessary to meet the 2020 and 2030 GHG reduction targets.
- Update implementation and monitoring strategies.

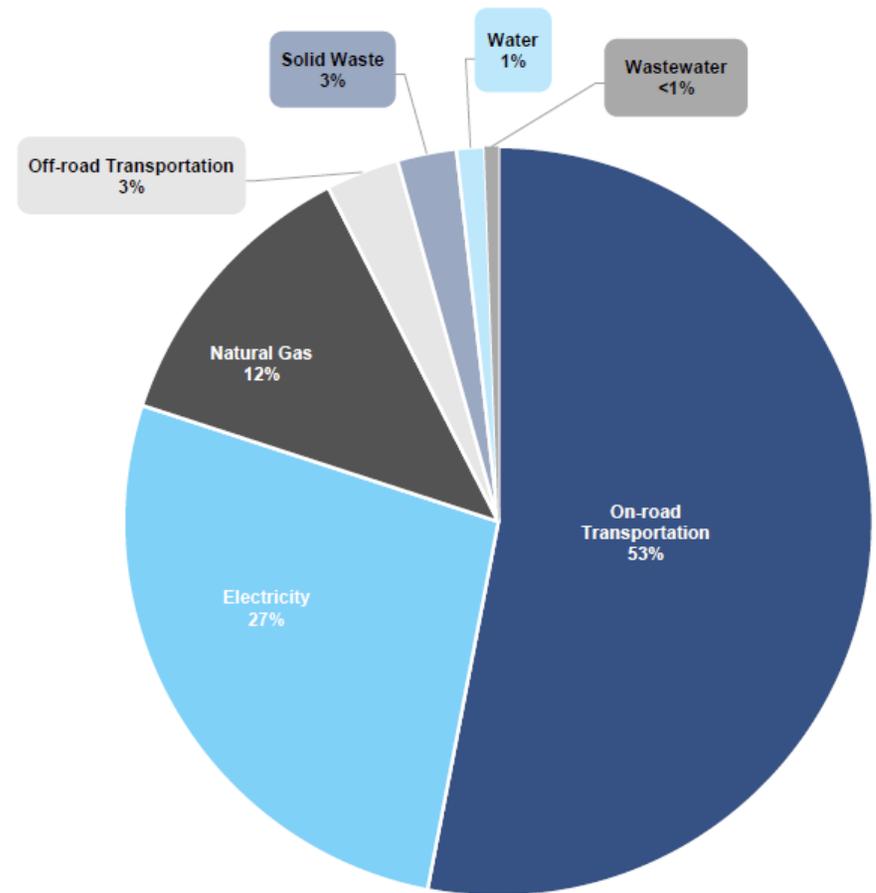
Planning Commission Work Sessions

Table 1: Planning Commission Review Schedule

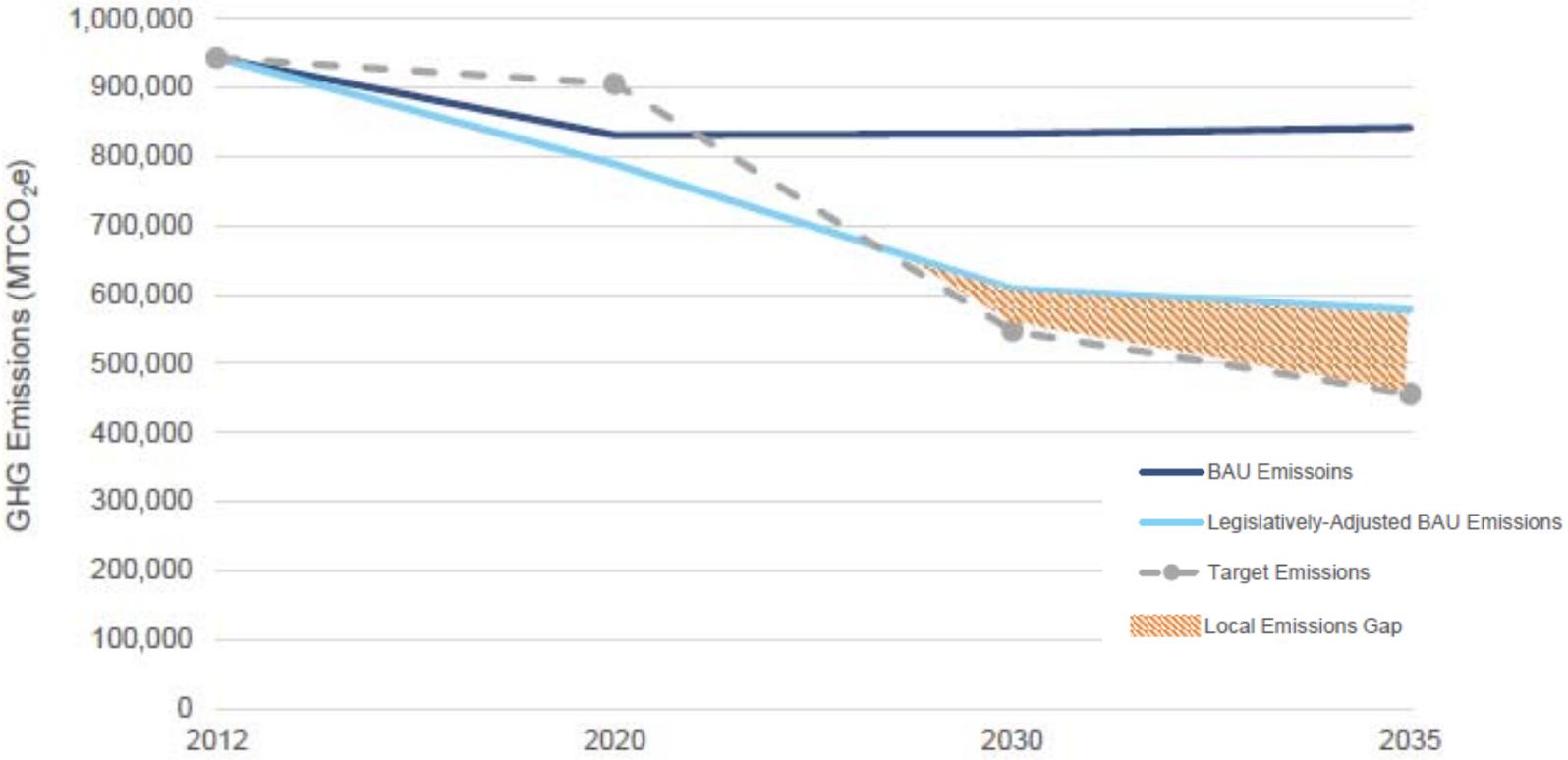
Meeting No.	Topic Or Discussion Item Covered	Milestone or Target Date
1	General overview about the process and public engagement.	May 8, 2018
2	Review of Phase 1 outreach materials and workshop format.	July 10, 2018
3	Presentation on greenhouse gas emission inventory and forecasts.	August 28, 2018
4	Informational meeting on Phase 1 outreach results.	November 27, 2018
5	Draft CAP presentation.	July 28, 2020
6	CEQA significance thresholds discussion.	August 11, 2020
7	<ol style="list-style-type: none"> 1) Presentation: Climate change impact overview with guest speaker Dr. Daniel Cayan, Research Meteorologist UCSD Scripps Institution of Oceanography; and 2) Presentation: Preliminary benefit/cost analysis. 	August 25, 2020
8	<ol style="list-style-type: none"> 1) Presentation: Environmental Community Advisory Community ("ECAG") recommendations; and 2) Presentation: Implementation staff resourcing impacts. 	September 8, 2020
---	Additional work sessions if needed.	<i>tbd</i>
---	Planning Commission public hearing and recommendation to City Council.	<i>tbd</i>

Draft CAP Contents

- Background
- Greenhouse Gas Inventory
 - Most emissions are coming from transportation
- Identify Mitigation Measures
- Adaptation, Social Equity, and Environmental Justice
- Implementation Program
- Monitoring and Evaluation



Draft CAP Targets



Tonight's Agenda

- Presentation:
 - Climate Change overview with guest speaker Dr. Daniel Cayan
- Presentation:
 - Preliminary benefit cost analysis based on other existing work
 - El Cajon
 - La Mesa
 - Oceanside
 - County of San Diego

Preliminary Benefit/Cost Analysis

- Presentation:
 - Climate Change overview with guest speaker Dr. Daniel Cayan
- Presentation:
 - Preliminary benefit cost analysis based on other existing work
 - El Cajon
 - La Mesa
 - Oceanside
 - County of San Diego

Preliminary Benefit/Cost Analysis Overview

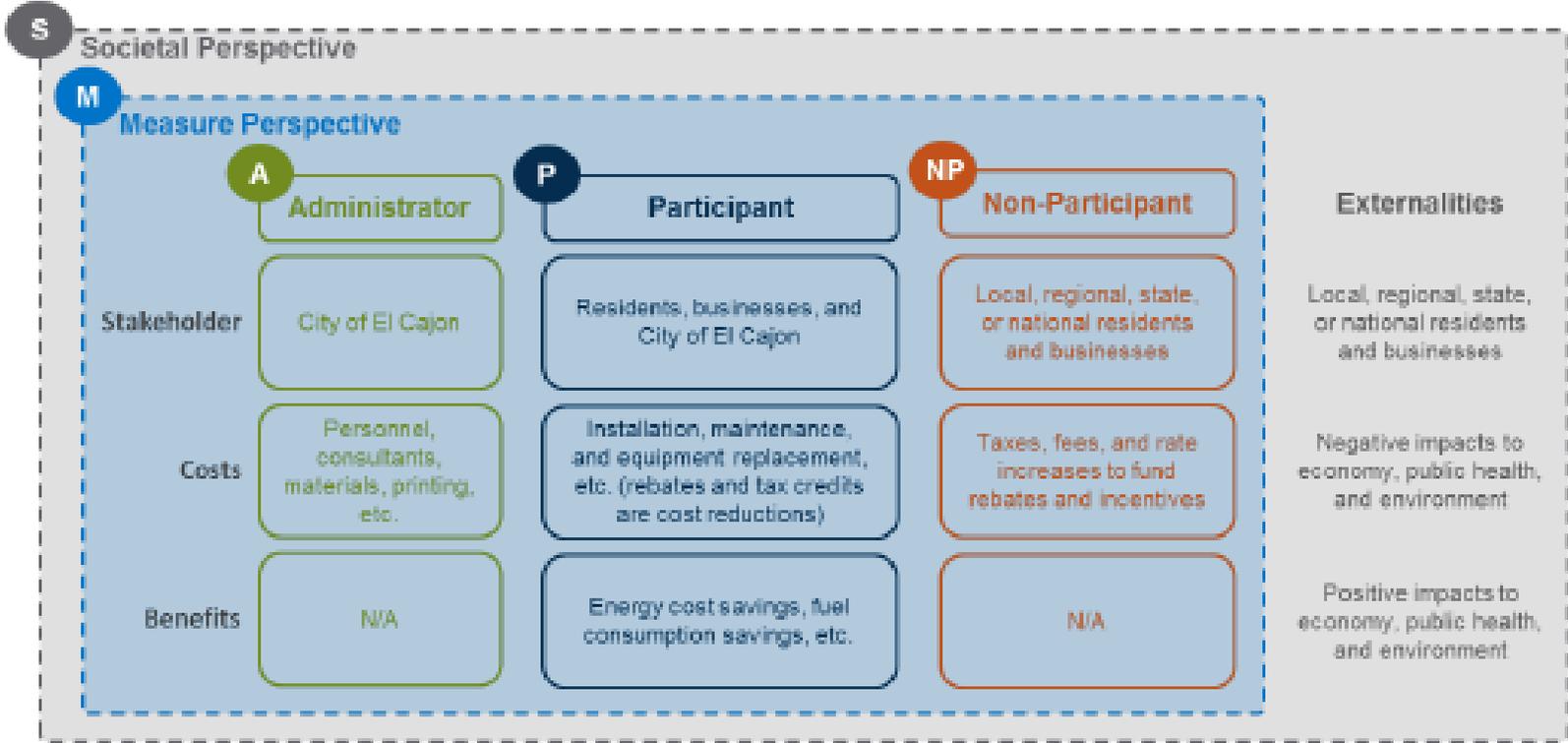
The goals of benefit/cost analysis reports are to:

- Estimate the benefit or cost of each CAP action; and
- Identify the financial benefits received and costs incurred by those directly involved.

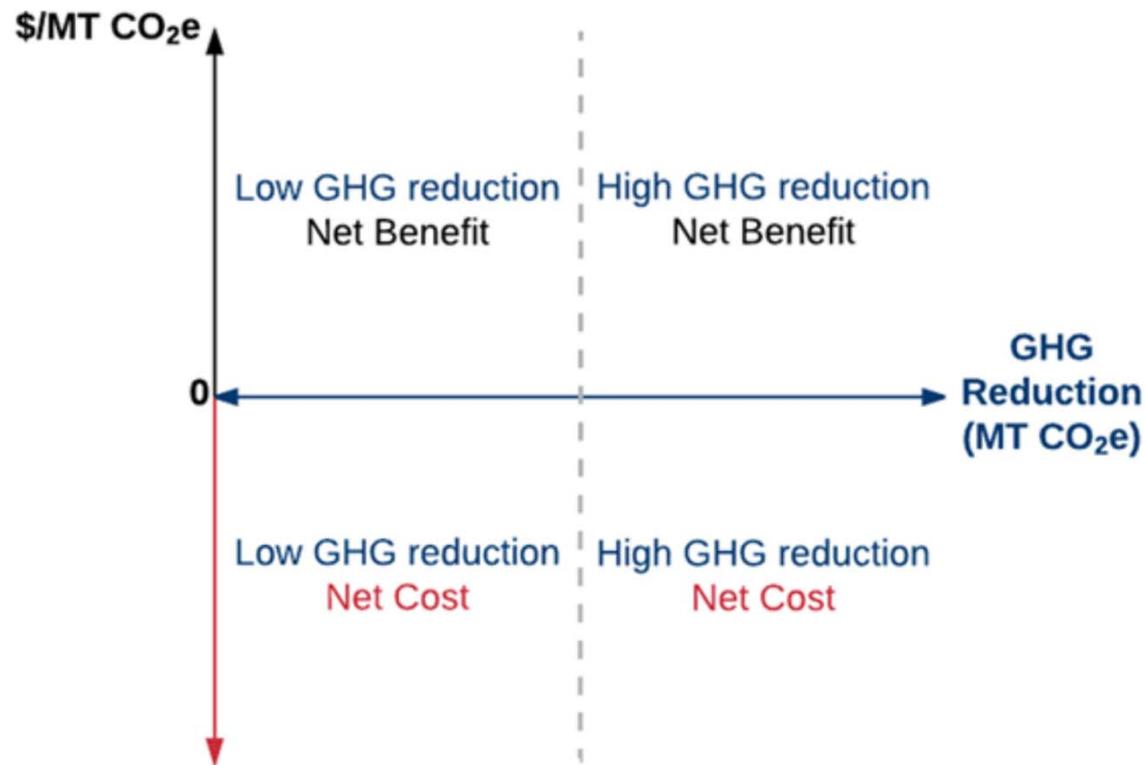
Types of Benefits and Costs

- Direct Benefits and Costs.
 - Direct benefits and costs are those directly related to implementing a City action or engaging in an activity defined in a City action.
- External Benefits and Costs.
 - Benefits and costs associated with positive or negative externalities are the result of indirect effects of an action.

Perspectives



Scatterplot Results to show Dollar per Metric Ton of CO₂e Effect



Benefits and Cost Analysis Examples

- El Cajon
- La Mesa
- Oceanside
- County of San Diego

Preliminary Benefit/Cost Analysis Findings - El Cajon

Summary:

- Actions included in the CAP and evaluated in this analysis have an overall net cost of \$37 per MT CO₂e reduced, with an estimated 20,854 MT CO₂e reduced in target year 2030.
- City actions range in cost-effectiveness from a benefit of \$1,950/MT CO₂e to a net cost of \$3,655/MT CO₂e.

Preliminary Benefit/Cost Analysis Findings - El Cajon

CAP City Action (Existing Activity)	2030	
	Measure Perspective (\$/MT CO ₂ e)	GHGs Reduced (MT CO ₂ e)
Transportation		
T-3.1: Synchronize Traffic Lights	\$190	389 ¹
T-3.2: Install Roundabouts	(\$338)	306 ¹
T-6.1: Complete an Active Transportation Plan	\$65	238 ¹
T-7.1: Increase Residential Dwelling Units in Transit Oriented Development Areas	\$254	191 ¹
T-7.2: Encourage Development in Mixed-Use Residential Overlay Zone	\$782	608 ¹
T-7.3: Implement the Transit District Specific Plan	\$254	531 ¹
Energy and Buildings		
BE-1.2: Continue the Critical Home Repair Program	\$230	40 ²
BE-3.1: Continue Energy Efficiency Projects in Municipal Facilities	\$192	17
Water and Wastewater		
WE-1.2: Require Weather-Based Irrigation Systems	\$1,950	159 ²
Solid Waste		
SW-1.1: Implement Solid Waste Reduction and Recycling Targets	(\$280)	7,832
Carbon Sequestration		
CS-1.1: Increase Shaded Landscape Area	(\$498)	42 ²
Net for City Actions with Existing Activity	(\$121)	10,353

¹ GHG reductions are net of tailpipe emissions avoided and electricity emissions from EV charging. These GHG values may differ from those in the CAP which attribute EV charging emissions to the electricity sector, not to the action.

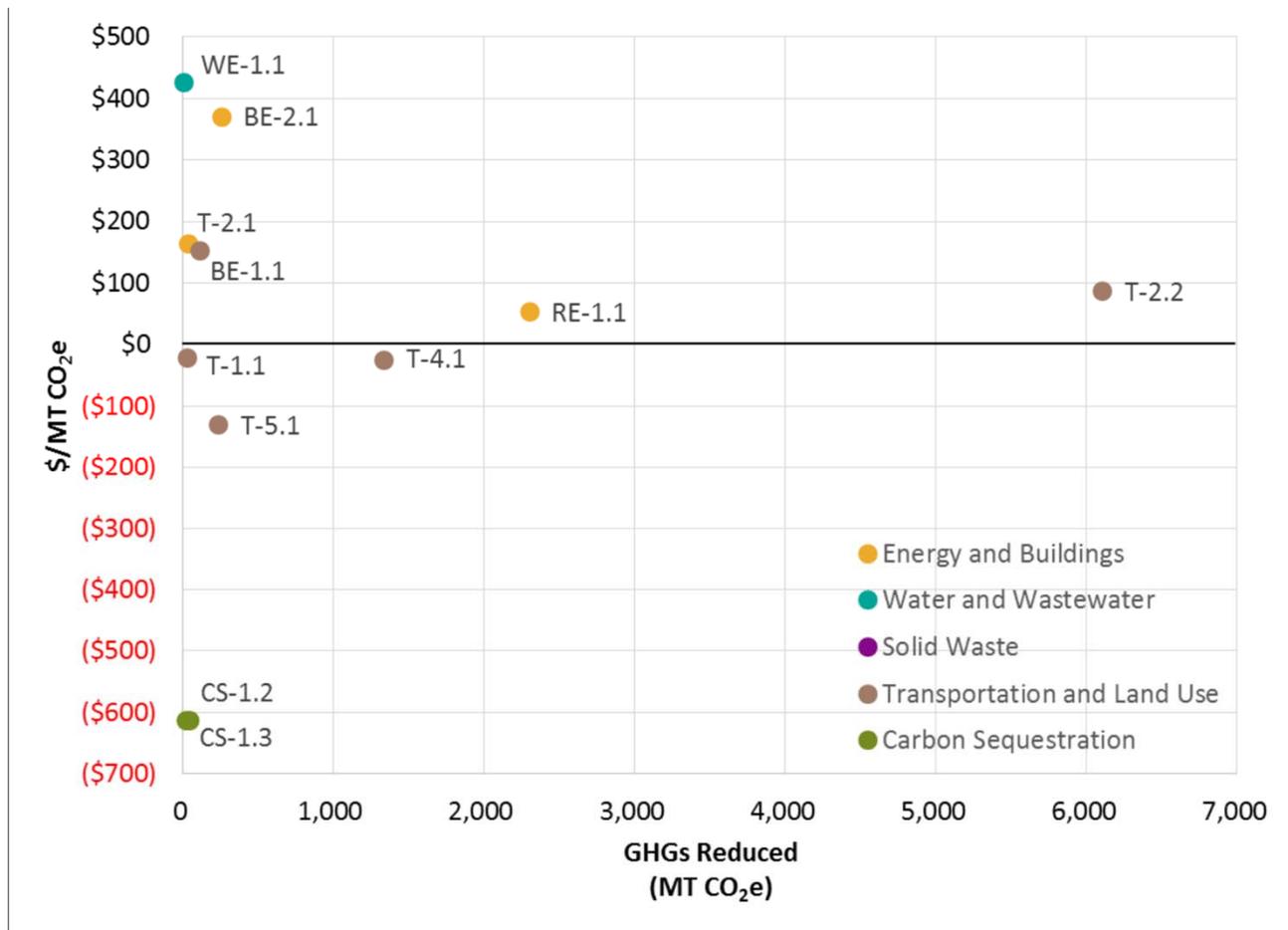
² GHG reductions differ from the CAP. BCA calculations only include activity for ongoing actions for 2019 and after, whereas CAP calculations also include activity in 2018.

All dollar values are in 2019 dollars

Energy Policy Initiatives Center, USD 2019

CAP City Action (Expanded and New Activity)	2030	
	Measure Perspective (\$/MT CO ₂ e)	GHGs Reduced (MT CO ₂ e)
Transportation		
T-1.1: Develop a Fleet Management Program (expanded)	(\$20)	24 ¹
T-2.1: Install Municipal Electric Vehicle Charging Stations (expanded)	\$153	108 ¹
T-2.2: Incentivize the Installation of Electric Vehicle Charging Stations	\$87	6,103 ¹
T-2.4: Convert School Bus Fleet to Electric	(\$3,655)	53 ¹
T-4.1: Increase Renewable and Alternative Fuel Construction Equipment	(\$25)	1,334
T-5.1: Increase Alternative Modes of Travel Through Transportation Demand Management	(\$130)	233 ¹
T-7.4: Transition to an Online Submittal Permitting System (expanded)	(\$886)	10 [*]
Energy and Buildings		
BE-1.1: Require Energy Audits of Existing Residential Additions	\$164	29
BE-2.1: Require Energy Audits of Non-Residential Additions	\$371	253
RE-1.1: Incentivize Photovoltaic Installation on Commercial Buildings	\$54	2,299
Water and Wastewater		
WE-1.1: Require Covers on New Pools	\$426	2
Carbon Sequestration		
CS-1.2: Increase Tree Shade in Surface Parking Lots (expanded)	(\$612)	14
CS-1.3: Increase Street Trees (expanded)	(\$612)	39
Net for City Actions with New and Expanded Activity	\$45	10,501

Preliminary Benefit/Cost Analysis Findings - El Cajon



Preliminary Benefit/Cost Analysis Findings – La Mesa

Summary:

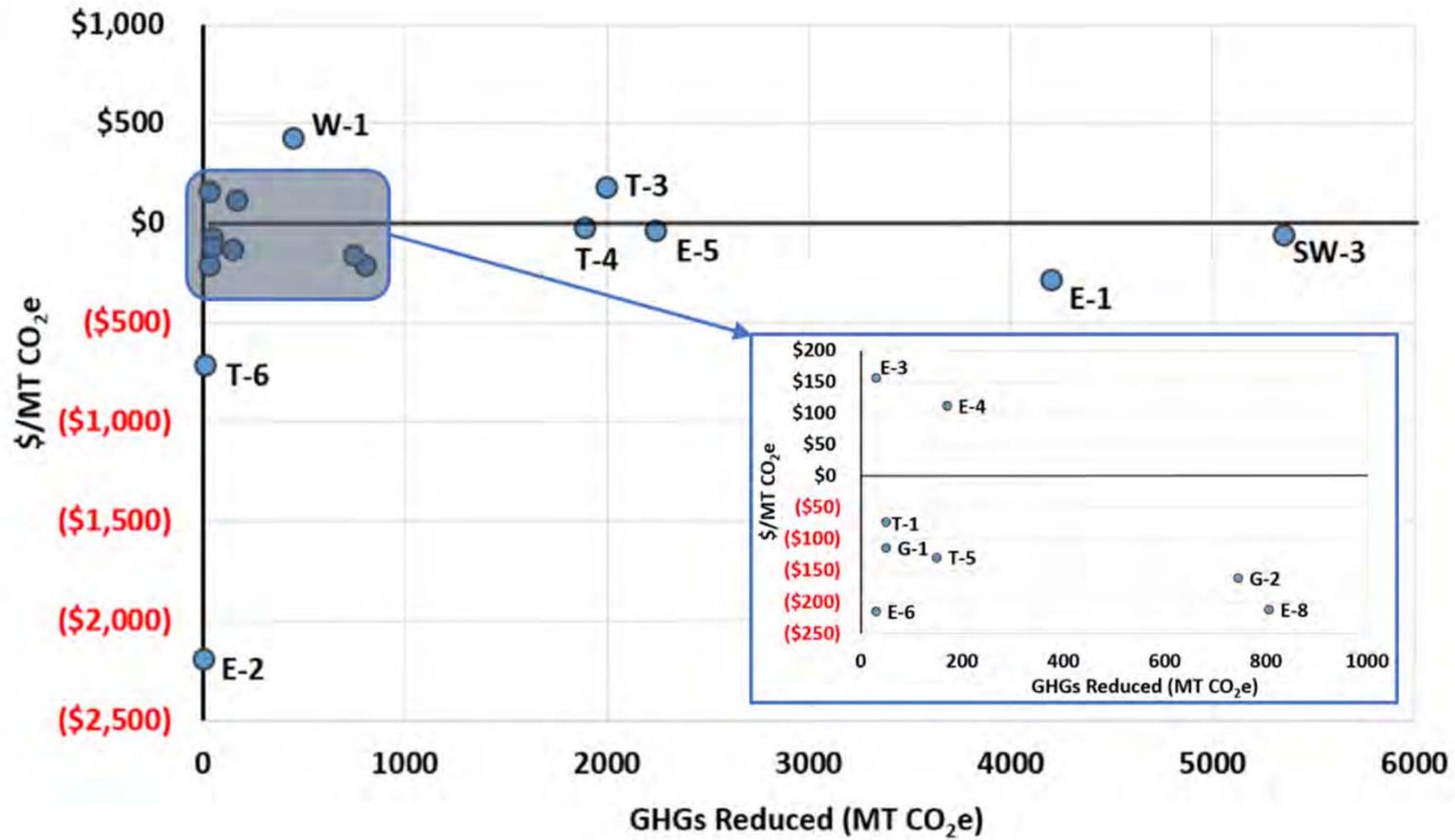
- The measures included in the CAP to reach GHG reduction targets would have a net cost of \$61/MTCO₂e reduced in 2020 and reduce an estimated 18,171 MT CO₂e.
- Of the 16 measures included in the cost-effectiveness analysis, measure W-1 Urban Water Management Plan Programs is the most cost-effective at \$427/MT CO₂e and reduces 450 MT CO₂e. Measure E-2 Shade Tree Program is the least cost-effective measure at reducing GHGs (-\$2,194/MT CO₂e) and reduces the least amount of GHGs (<1 MT CO₂e).
- Combined, CAP measures provide a net benefit of \$8/MT CO₂e to those who participate in CAP measure activities.

Benefit/Cost – La Mesa

CAP Measure	Administrator	Participant	Non-Participant	Measure	Society	GHGs Reduced In 2020 (MT CO ₂ e)
	A	P	NP	A+P+NP=M	M+E=S	
Energy						
E-1: Building Retrofit Program	(\$1)	(\$160)	(\$126)	(\$287)	(\$262)	4,200
E-2: Shade Tree Program	(\$1,783)	(\$410)	-	(\$2,194)	(\$1,761)	<1
E-3: Municipal Energy Efficiency Goal	(\$59)	\$232	(\$17)	\$157	\$179	30
E-4: Public Lighting	(\$13)	\$125	-	\$112	\$142	170
E-5: Solar Photovoltaic Program	(\$1)	\$146	(\$181)	(\$36)	(\$14)	2,240
E-6: Solar Hot Water Program	(\$59)	(\$39)	(\$118)	(\$215)	(\$191)	30
E-8: Zero Net Energy Construction	(\$1)	(\$143)	(\$69)	(\$212)	(\$189)	806*
Transportation and Land Use						
T-1: Bicycle and Pedestrian Infrastructure Development	(\$95)	\$21	-	(\$73)	(\$23)	50
T-3: Transportation Demand Management Program	(\$21)	\$229	(\$26)	\$182	\$245	2,000
T-4: Mixed-Use and Transit-Oriented Development	(\$43)	\$22	-	(\$21)	\$46	1,890
T-5: Alternative Refueling Infrastructure Development	(\$80)	(\$22)	(\$28)	(\$129)	(\$94)	150
T-6: Municipal Fleet Transition	(\$800)	\$84	-	(\$716)	(\$692)	10
Water						
W-1: Urban Water Management Plan Programs	(\$8)	\$644	(\$209)	\$427	\$453	450
Solid Waste						
SW-3: 75% Waste Diversion Strategy	(\$3)	(\$55)	-	(\$58)	(\$29)	5,350*
Agriculture and Conservation						
G-1: Urban Forest Management	(\$21)	(\$94)	-	(\$115)	(\$75)	50
G-2: Expanded Urban Forestry Program	(\$0)	(\$162)	-	(\$162)	(\$143)	745*
Total	(\$11)	\$8	(\$58)	(\$61)	(\$26)	18,171



Preliminary Benefit/Cost Analysis Findings – La Mesa



Preliminary Benefit/Cost Analysis Findings – Oceanside

Summary:

- The measures included in the CAP to reach GHG reduction targets would have a net cost of \$61/MTCO₂e reduced in 2020 and reduce an estimated 18,171 MT CO₂e.
- Of the 16 measures included in the cost-effectiveness analysis, measure W-1 Urban Water Management Plan Programs is the most cost-effective at \$427/MT CO₂e and reduces 450 MT CO₂e. Measure E-2 Shade Tree Program is the least cost-effective measure at reducing GHGs (-\$2,194/MT CO₂e) and reduces the least amount of GHGs (<1 MT CO₂e).
- Combined, CAP measures provide a net benefit of \$8/MT CO₂e to those who participate in CAP measure activities.

Preliminary Benefit/Cost Analysis Findings – Oceanside

Table 3. Measure Perspective Cost-Effectiveness for Existing Activity

CAP Measure	Measure Perspective (\$/MT CO ₂ e)	GHGs Reduced in 2025 (MT CO ₂ e)
Water and Wastewater		
W1: Implementation of the Water Conservation Master Plan	\$1,974	589
W3: Local Water Supply Development	(\$235)	2,102
Solid Waste		
SW1: Implementation of Zero Waste Strategic Resource Plan*	-	-
Weighted Average for All Existing Activity	\$248	2,691

All dollar values are in 2018\$

*Measure SW1 does not go past 2020

Energy Policy Initiatives Center, USD 2018

Table 4. Measure Perspective Cost-Effectiveness for Expanded and New Activity

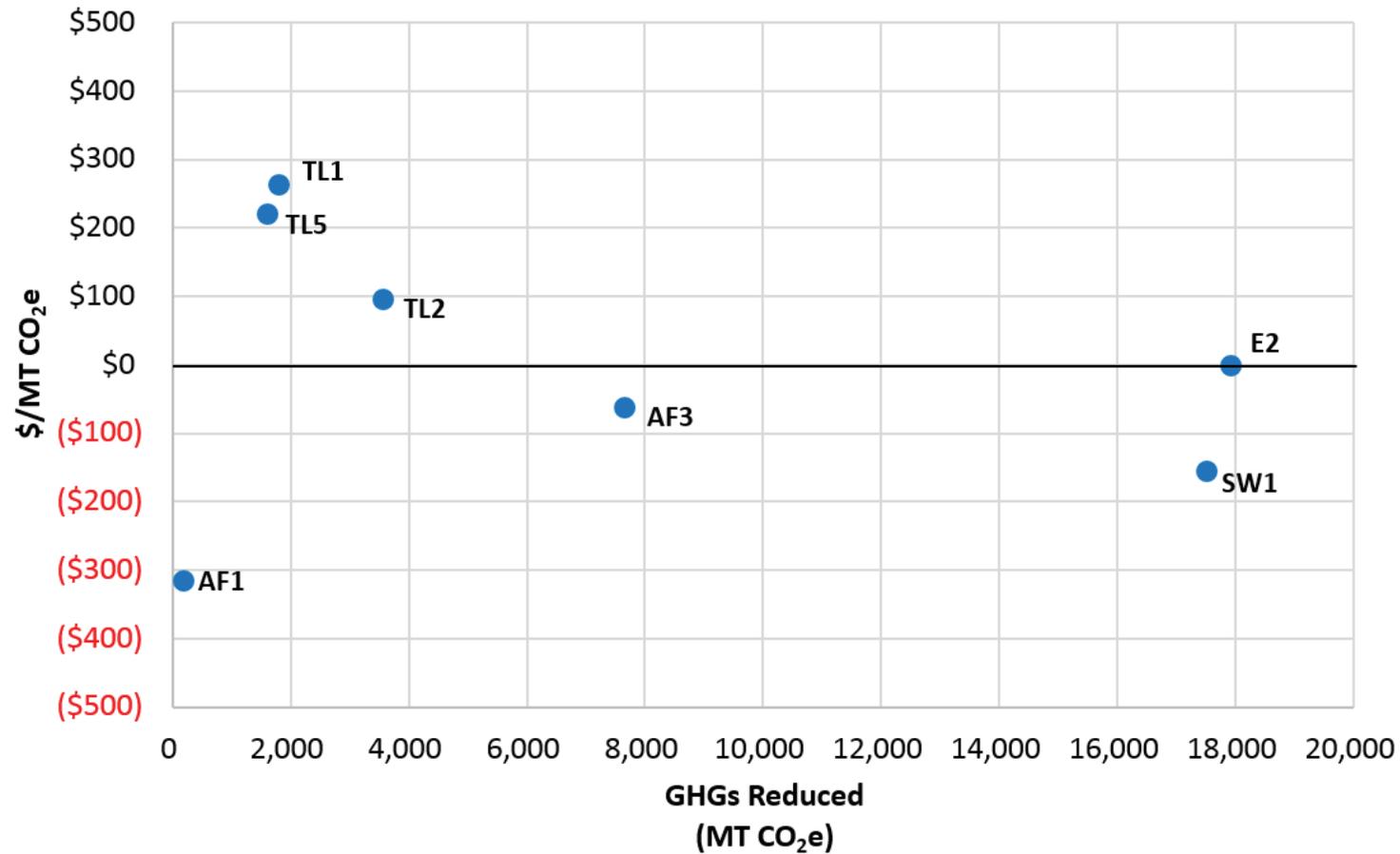
CAP Measure (new unless specified as expanded)	Measure Perspective (\$/MT CO ₂ e)	GHGs Reduced in 2025 (MT CO ₂ e)
Energy and Buildings		
E2: Solar Photovoltaic Promotion Program	< \$1	17,903
Solid Waste		
SW2: Beyond 2020 – Enhanced Waste Diversion (expanded)	(\$156)	17,510
Transportation and Land Use		
TL1: Smart Growth Policies	\$264	1,799
TL2: Expanded Electric Vehicle Charging Infrastructure	\$95	3,562
TL5: Transportation Demand Management Programs	\$221	1,608
Agriculture and Forestry		
AF1: Urban Forestry Program (expanded)	(\$315)	176
AF3: Agriculture Lands Conservation Program	(\$63)	7,636
Weighted Average for All New and Expanded Activity*	(\$42)	50,193

All dollar values are in 2018\$

*Excluding measure E1 (Renewable Energy Procurement)

Energy Policy Initiatives Center, USD 2018

Preliminary Benefit/Cost Analysis Findings – Oceanside



Preliminary Benefit/Cost Analysis Findings – County

Summary:

- The measures included in the draft Final CAP to reach GHG reduction targets would have a net cost of \$12/ MTCO_{2e} reduced in 2023
- Taken as a group, the 10 CAP measures leveraging Existing Programs have an estimated net benefit of \$3 per metric ton reduced and an estimated 208,565 MTCO_{2e} reduced in 2023.
- Taken as a group, the 19 CAP measures that are New and Expanded Programs have an estimated net cost of \$40 per metric ton reduced and an estimated 114,772 MTCO_{2e} reduced in 2023.

Benefit/Cost Analysis – County

Table 1. Dollar per MTCO₂e to Achieve 2023 GHG Reductions for Existing Programs

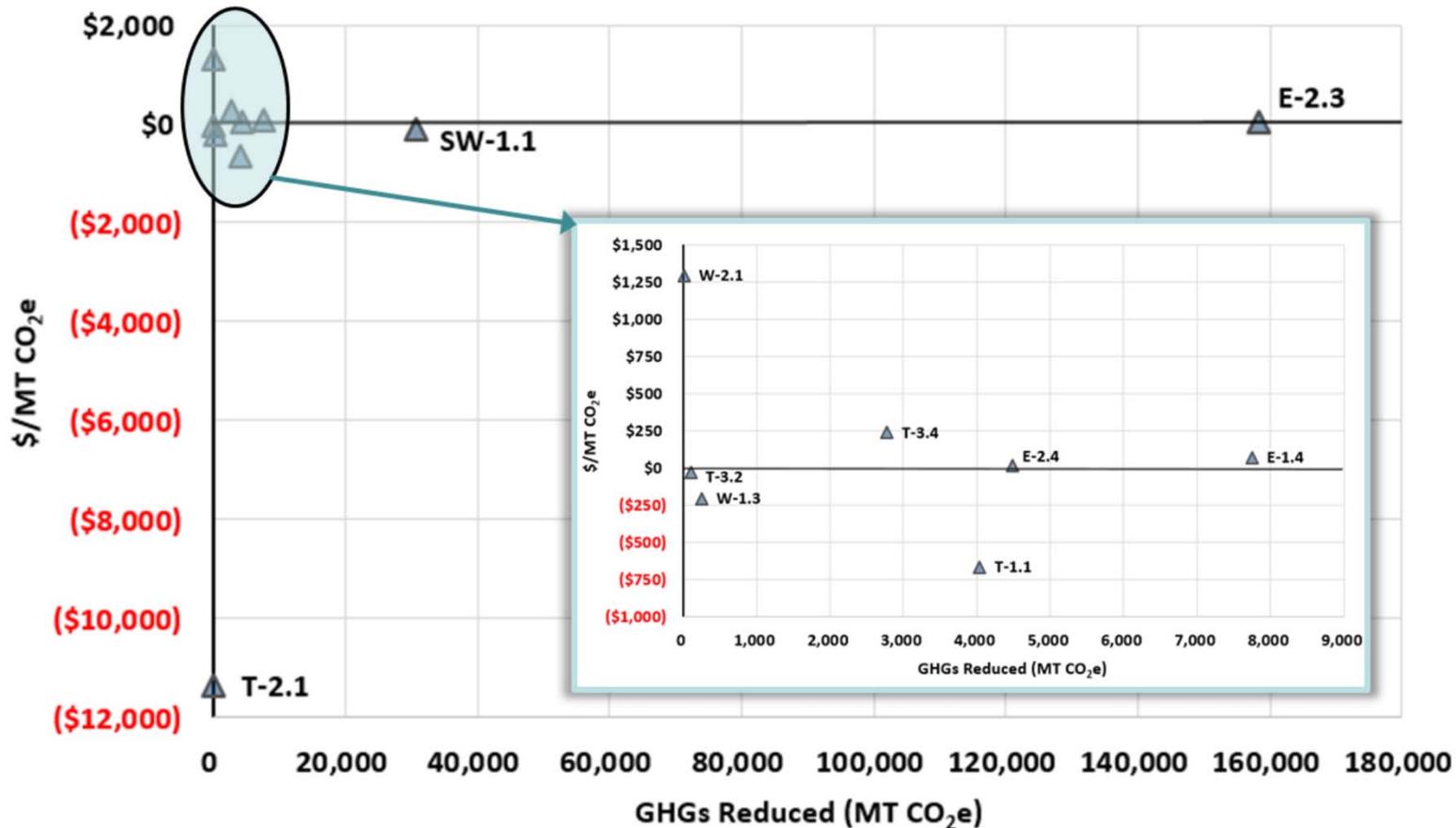
CAP Measure		Administrator	Participant	Non-Participant	Measure	Society	GHGs Reduced In 2023 (MT CO ₂ e)
		<i>A</i>	<i>P</i>	<i>NP</i>	<i>A+P+NP=M</i>	<i>M+E=S</i>	
Built Environment and Transportation							
T-1.1	Acquire Open Space Conservation Land	(\$130)	(\$534)	-	(\$665)	(\$639)	4,043
T-2.1	Improve Roadway Segments as Multi-modal	(\$781)	(\$10,558)	-	(\$11,339)	(\$11,277)	181
T-3.2	Use Alternative Fuels In County Projects	-	(\$30)	-	(\$30)	(\$1)	109
T-3.4	Reduce the County's Fleet Emissions	(\$4)	\$242	-	\$238	\$242	2,778
Energy							
E-1.4	Reduce Energy Use Intensity at County Facilities	(\$6)	\$77	(\$0)	\$71	\$101	7,751
E-2.3	Install Solar Photovoltaics In Existing Homes	(\$1)	\$171	(\$125)	\$45	\$72	158,296
E-2.4	Increase On-Site Renewable Electricity Generation for County Operations	(\$5)	\$147	(\$124)	\$19	\$46	4,483
Solid Waste							
SW-1.1	Increase Solid Waste Diversion	(\$1)	(\$98)	-	(\$99)	(\$69)	30,656
Water and Wastewater							
W-1.3	Reduce Potable Water Consumption at County Facilities	(\$229)	\$24	(\$1)	(\$206)	(\$175)	254
W-2.1	Increase Rain Barrel Installations	(\$14)	\$1,501	(\$195)	\$1,292	\$1,320	14
Total		(\$5)	\$105	(\$97)	\$3	\$30	208,565

*E represents quantified externalities

*All dollar values are in 2015\$

Energy Policy Initiatives Center, USD 2017

Preliminary Benefit/Cost Analysis Findings – County



Benefit/Cost Analysis– County

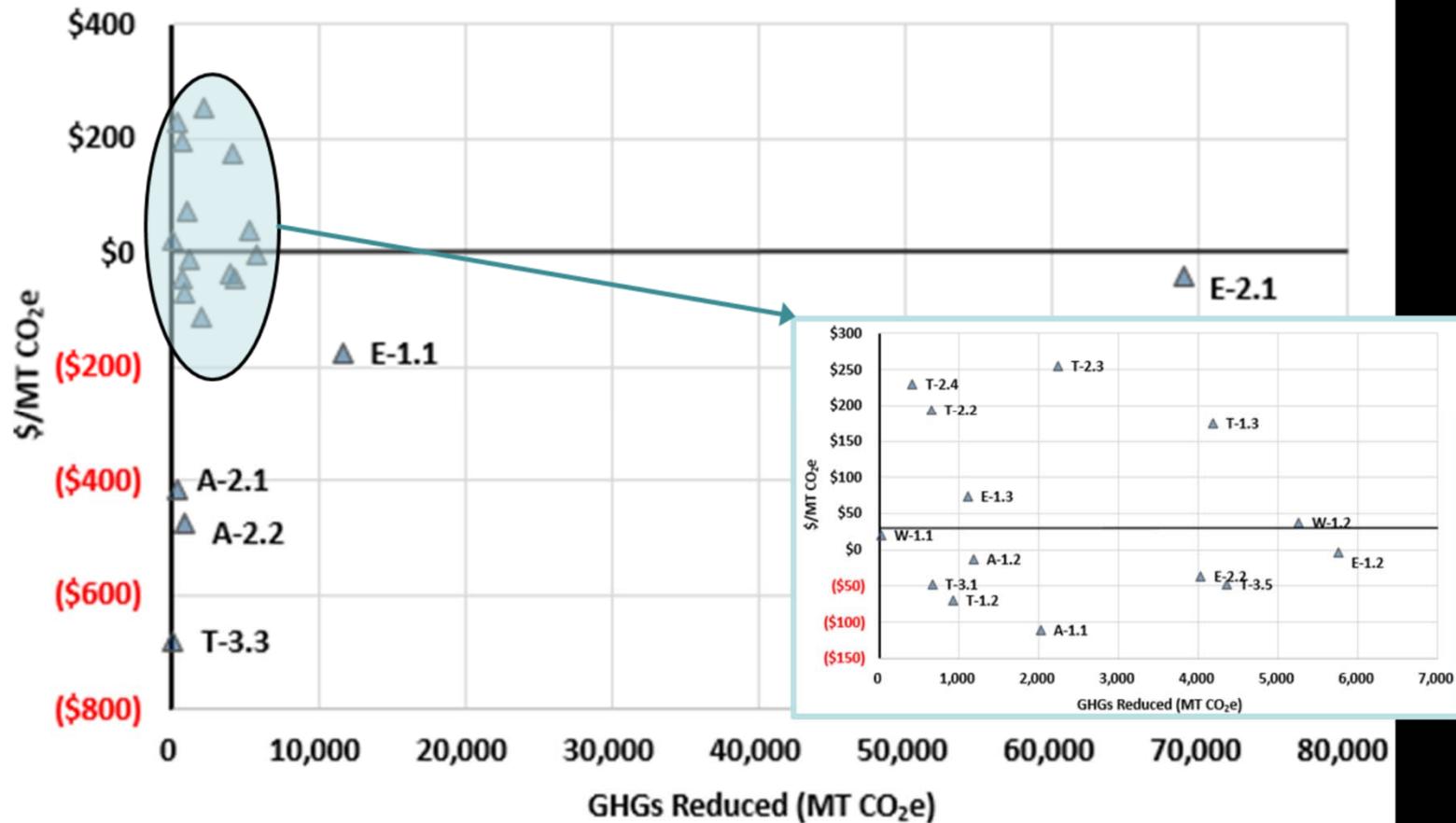
Table 2. Dollar per MTCO₂e to Achieve 2023 GHG Reductions for New and Expanded Programs

CAP Measure		Administrator	Participant	Non-Participant	Measure	Society	GHGs Reduced In 2023 (MT CO ₂ e)
		A	P	NP	A+P+NP=M	M+E=S	
Built Environment and Transportation							
T-1.2	Acquire Agricultural Easements	(\$27)	(\$42)	-	(\$69)	(\$46)	925
T-1.3	Update Community Plans	(\$10)	\$185	-	\$174	\$229	4,185
T-2.2	Reduce New Non-residential Development Vehicle Miles Traveled	(\$62)	\$313	(\$57)	\$194	\$265	654
T-2.3	Reduce County Employee Vehicle Miles Traveled	(\$1)	\$380	(\$124)	\$255	\$327	2,242
T-2.4	Shared and Reduced Parking in New Non-residential Development	(\$3)	\$233	-	\$230	\$292	418
T-3.1	Use Alternative Fuels in New Residential and Non-Residential Construction Projects	(\$40)	(\$7)	-	(\$47)	(\$24)	664
T-3.3	Develop a Local Vehicle Retirement Program	(\$727)	\$219	(\$174)	(\$681)	(\$539)	134
T-3.5	Install Electric Vehicle Charging Stations	(\$6)	(\$41)	-	(\$47)	(\$1)	4,359
Energy							
E-1.1	Improve Building Energy Efficiency in New Development	(\$1)	(\$108)	(\$66)	(\$175)	(\$149)	11,613
E-1.2	Use Alternatively-powered Water Heaters in Residential Development	(\$1)	\$4	(\$7)	(\$4)	\$22	5,753
E-1.3	Improve Building Energy Efficiency in Existing Development	(\$16)	\$125	(\$35)	\$74	\$5	1,108
E-2.1	Increase Renewable Electricity	(\$9)	(\$34)	-	(\$43)	(\$9)	68,956
E-2.2	Increase Renewable Electricity in Non-residential Development	(\$7)	\$64	(\$93)	(\$36)	(\$12)	4,033
Water and Wastewater							
W-1.1	Increase Water Efficiency in New Residential Development	(\$562)	\$638	(\$55)	\$20	\$50	25
W-1.2	Reduce Outdoor Water Use	(\$3)	\$42	(\$2)	\$38	\$65	5,261
Agriculture and Conservation							
A-1.1	Convert Farm Equipment to Electric	(\$5)	(\$34)	(\$72)	(\$111)	(\$83)	2,021
A-1.2	Convert Stationary Irrigation Pumps to Electric	(\$7)	(\$1)	(\$6)	(\$13)	\$13	1,181
A-2.1	Increase Residential Tree Planting	(\$8)	(\$406)	-	(\$414)	(\$293)	373
A-2.2	Increase County Tree Planting	(\$50)	(\$427)	-	(\$477)	(\$343)	867
Total		(\$9)	(\$16)	(\$15)	(\$40)	(\$6)	114,772

*E represents quantified externalities
 *All dollar values are in 2015\$

Energy Policy Initiatives Center, USD 2017

Preliminary Benefit/Cost Analysis Findings – County



Other Findings from the County Benefit/Cost Analysis

Table 5. Upfront Cost to Comply for New Residential Construction and Net Benefit/Cost over Lifetime

GAP Measure		2023 Anticipated Cost	Net Benefit/Cost Over Lifetime
		\$/home	
E-1.1	Improve Building Energy Efficiency in New Development	(\$13,845)	(\$4,634)
E-1.2	Use Alternately-powered Water Heaters in Residential Development	(\$769)	\$41
W-1.1	Increase Water Efficiency in New Residential Development	(\$278)	\$549
W-1.2	Reduce Outdoor Water Use	(\$337)	\$10,048
W-2.1	Increase Rain Barrel Installations	(\$30)	\$180
A-2.1	Increase Residential Tree Planting	(\$123)	(\$756)
Total		(\$16,881)	\$5,728

*All dollar values are in 2015\$

Energy Policy Initiatives Center, USD 2017

Applying the Findings to Escondido Draft CAP

- Not necessary for policy action.
- Degree of uncertainty
 - Estimating benefits and costs
 - Societal perspective (some cities also didn't analyze this)
- Could provide a high level of association for cost efficiencies
 - positive or negative benefit/cost ratio
 - big or small efficiency

Preliminary Benefit/Cost Analysis– Escondido

- Measure T-1.1: Clean and more fuel efficient municipal fleet
 - (\$716) La Mesa and (\$20) El Cajon
- Measure T-1.2: Install EV Charging stations at Park and Ride lots
 - (\$129) La Mesa, (\$126) El Cajon) and (\$47) County
- Measure T-1.3: Require EV charging stations at new MF and commercial developments.
 - None comparable. Incremental charge expected to participant.
- Measure T-1.4: Require EV charging stations at new SF model home developments.
 - \$47 El Cajon and \$221 in Oceanside

Preliminary Benefit/Cost Analysis– Escondido

- Measure T-2.1: Synchronize traffic lights
 - \$190 El Cajon
- Measure T-2.2: Install roundabouts
 - (\$338) El Cajon
- Measure T-2.3: Alternative fuel construction equipment.
 - (\$25) El Cajon and (\$47) County
- Measure T-3.1: SANDAG vanpool program.
 - None comparable. Continuing program. Incremental charge expected to non-participant.

Preliminary Benefit/Cost Analysis– Escondido

- Measures T-3.2 and 3.3: Pedestrian infrastructure and safe routes to school
 - None comparable. Charge expected to non-participant.
- Measure T-3.4: TDM program
 - \$182 La Mesa and \$221 Oceanside
- Measure T-3.5: BMP and implementation.
 - (\$73) La Mesa and \$65 Oceanside
- Measures T-3.6, 3.7, and 3.8: Transit programs
 - \$254 El Cajon, (\$21) La Mesa, \$64 Oceanside, and \$174 County

Preliminary Benefit/Cost Analysis– Escondido

- Measures T-3.9: VMT
 - \$194 County.
- Measure E-4.1: Installation of alternative fuel water heaters in homes
 - (\$215) La Mesa and (\$4) County
- Measure E-4.2: MF installation of electric stoves
 - None comparable. Direct cost savings to participant.
- Measure E-4.3: Reduce electricity use in streetlights.
 - \$112 La Mesa
- Measures E-4.4: Non-residential additions to install alternative fuel water heaters
 - None comparable. Charge expected to participant.

Preliminary Benefit/Cost Analysis– Escondido

- Measures E-5.1: Increase renewable energy at city facilities
 - \$157 La Mesa and \$78 County.
- Measure E-5.2: Net zero for commercial uses
 - (\$36) La Mesa and (\$36) County – Solar PV.
 - (\$175) County
- Measure E-5.3: CCE/CCA
 - (\$43) County – 90%
 - Most agencies defer the analysis to a separate study

Preliminary Benefit/Cost Analysis– Escondido

- Measures E-5.4: Increase renewables at school sites
 - \$10 County
- Measure W-6.1: Reduce water use at city facilities.
 - (\$234) County
- Measures W-6.2: Reduce water use at new model home developments
 - \$1,292 County – water barrel program
- Measures W-7.1: Local water supply
 - None comparable. Continuing program. Charge expected to non-participant.

Preliminary Benefit/Cost Analysis– Escondido

- Measures S-8.1: Increase waste diversion
 - (\$58) La Mesa, (\$280) El Cajon, (\$156) Oceanside, and (\$99) County
- Measure C-9.1 and 9.2: Urban forestry.
 - (\$2,194) La Mesa, (\$498) El Cajon, and (\$414) County
- Measures C-9.3: Agricultural land and open space conservation
 - (\$649) County – open space
 - (\$63) Oceanside and (\$88) County – Ag easements