EPIC Exercise – CAP Mitigation Measure Scenarios

Prepared by:

Jack Hegenauer and the CAC Subcommittee

2020 Scenario Example

2010	baseline year	
0.139216	baseline emissions MMT	
2020	target year	
0.131868	BAU emissions MMT	
15	% reduction from baseline year	
0.118334	target emissions MMT	
0.096255	emissions after mitigation MMT	
0.013534	emissions reductions needed MMT	
0.035613	emissions reductions achieved MMT	

263	% reductions achieved

Example Scenario (2020) -- 500 Random Simulations

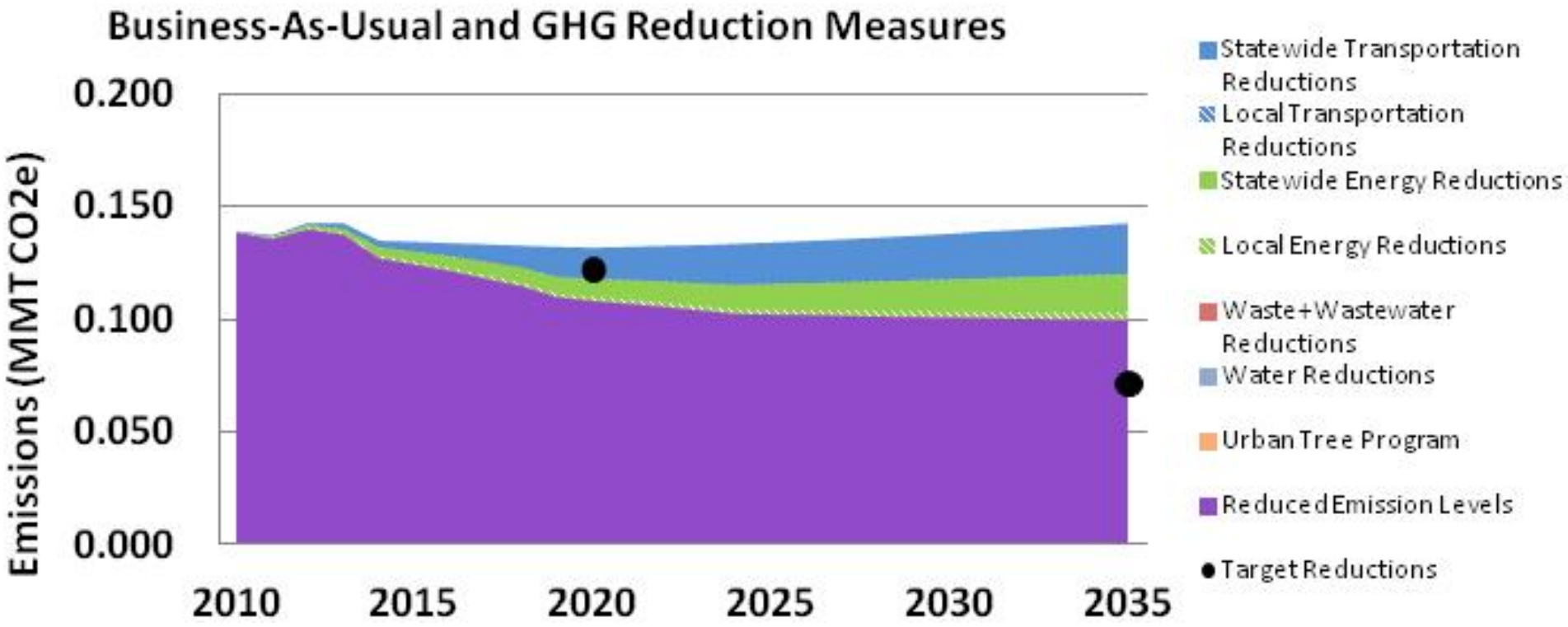
avg value	units	row	base	min	max				
40.75	%	24	0	17	67	Electric & Natural Gas	Local Measures	Community Choice Aggregation	% MORE than required by Renewable Portfolio Standard
80.25	%	25	0	75	85	Electric & Natural Gas	Local Measures	Community Choice Aggregation	% of Customer Participating (after Solar Customer)
3.15	MW	29	0.5	0.5	6	Electric & Natural Gas	Local Measures	Residential & Non-Residential Distributed PV	User Defined PV Installed (Megawatt)
12.00	%	33	0	0	25	Electric & Natural Gas	Local Measures	Point of Sale Energy Assessment & Disclosure Ordir	Energy Reduction (%/Unit)
2.51	%	35	0	0	5	Electric & Natural Gas	Local Measures	Point of Sale Energy Assessment & Disclosure Ordir	% of SF+MF Units Remodeled Annually
12.48	%	38	0	0	25	Electric & Natural Gas	Local Measures	Point of Sale Energy Assessment & Disclosure Ordir	Energy Reduction (% per Square Foot)
4.86	%	41	2	2	8	Electric & Natural Gas	Local Measures	Residential SHW Installs (New Con. & Retrofits)	Systems Installed (% Existing Homes Retrofit)
27.12	%	43	1	1	50	Electric & Natural Gas	Local Measures	Residential SHW Installs (New Con. & Retrofits)	Systems Installed (% of New Construction)
2.61	%	48	0	0	5	Electric & Natural Gas	Local Measures	Incorporating Cool Roofs into Building Code	% Increase in Residential Buildings v. 2010 (New Constru
2.13	mi	98	0	0	4	Transportation	Local Measures	Bicycle Strategy	Bicycle Lane Miles/Square Mile
4.88	#	100	0	0	10	Transportation	Local Measures	Retiming Traffic Signals	Number of Traffic Retimed Traffic Signals
2.54	%	102	0	0	5	Transportation	Local Measures	Pedestrian Mobility Plan	% of Labor Force Participating
1.01	#	104	0	0	2	Transportation	Local Measures	Roundabouts	Number of Roundabouts Installed
25.65	%	107	0	0	50	Transportation	Local Measures	Municipal Zero Emission Vehicle	% Gasoline Fleet Converted to EV`s
62.96	%	118	55	55	70	Waste & Wastewater	Local Measures	Solid Waste	Landfill Waste Diverted (%)
77.54	%	119	75	75	80	Waste & Wastewater	Local Measures	Solid Waste	Landfill Emissions Captured (%)
92.46	%	121	90	90	95	Waste & Wastewater	Local Measures	Wastewater	Wastewater Emissions Capture Rate (%)
12.59	%	143	10	10	15	Land Use	Local Measures	Urban Tree Planting Program	% Urban Tree Canopy Cover
62.93	acre	144	50	50	75	Land Use	Local Measures	Urban Tree Planting Program	Area Affected (acres)

Percent Attainment of 2020 Target GHG Reductions (Top Dogs)

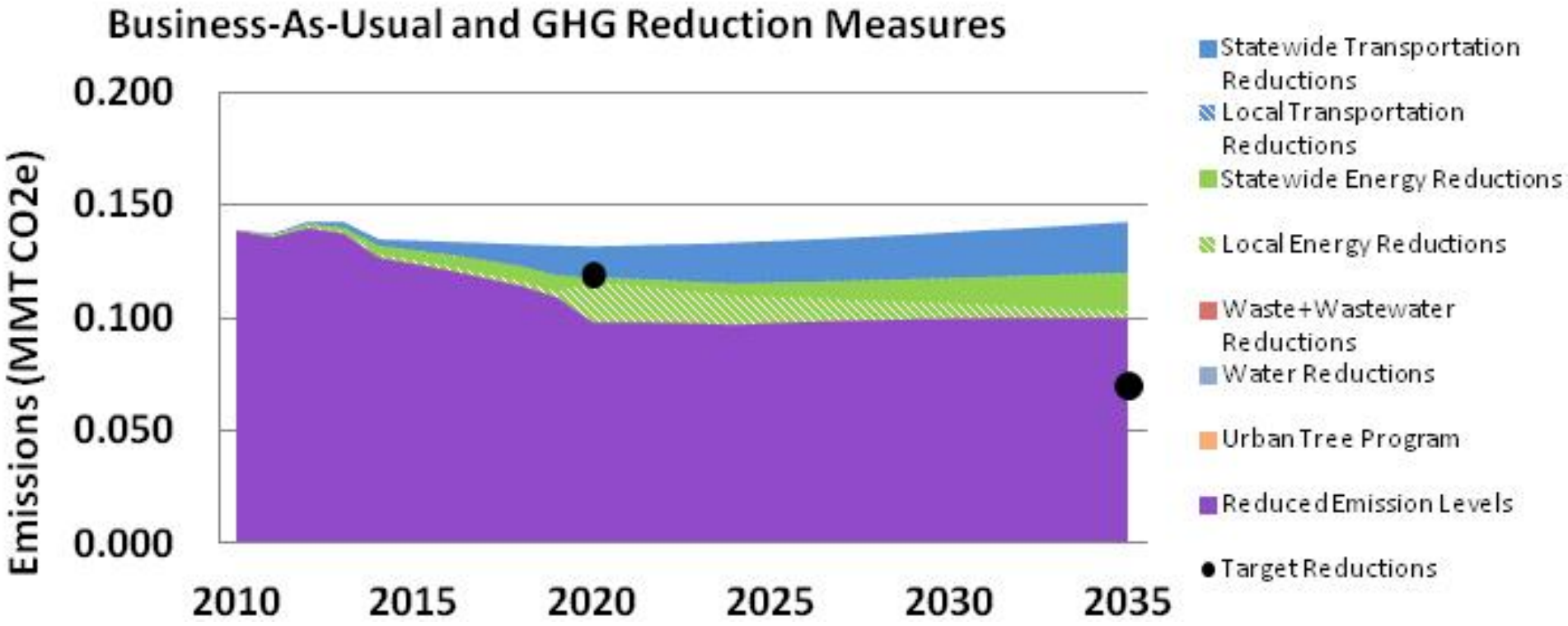
50.62		Federal & State Measures		Low Carbon Fuel Standards
48.12		Federal & State Measures		Renewable Portfolio Standard - CCA
42.13		Federal & State Measures		Vehicle Efficiency Standards - Pavley I/CAFÉ
11.83		Federal & State Measures		Renewable Portfolio Standard - Utility
8.70		Federal & State Measures		Electric Vehicles Program
0.00		Federal & State Measures		Pump Price of Gasoline
0.00		Federal & State Measures		CARB Tire Pressure Program
60.05		Local Measures	Strategy 2: Electricity and Natural Gas	Community Choice Aggregation Program
11.56		Local Measures	Strategy 2: Electricity and Natural Gas	Residential Distributed PV
6.94		Local Measures	Strategy 2: Electricity and Natural Gas	Utility Efficiency Program
6.69		Local Measures	Strategy 3: Waste and Water	Divert Waste from Landfills & Capture Emissions
5.31		Local Measures	Strategy 2: Electricity and Natural Gas	Commercial SHW Installs (New Con. & Retrofits)
3.66		Local Measures	Strategy 2: Electricity and Natural Gas	Non-Residential Distributed PV
2.01		Local Measures	Strategy 1: Transportation	Retiming Traffic Signal
1.90		Local Measures	Strategy 1: Transportation	Municipal Zero Emission Vehicle
1.54		Local Measures	Strategy 3: Waste and Water	New Water Billing Structure
0.68		Local Measures	Strategy 2: Electricity and Natural Gas	Residential SHW Installs (New Con. & Retrofits)

161.40	Total GHG Reductions from Federal and State Measures
101.73	Total GHG Reductions From Local
263.14	Total GHG Reductions

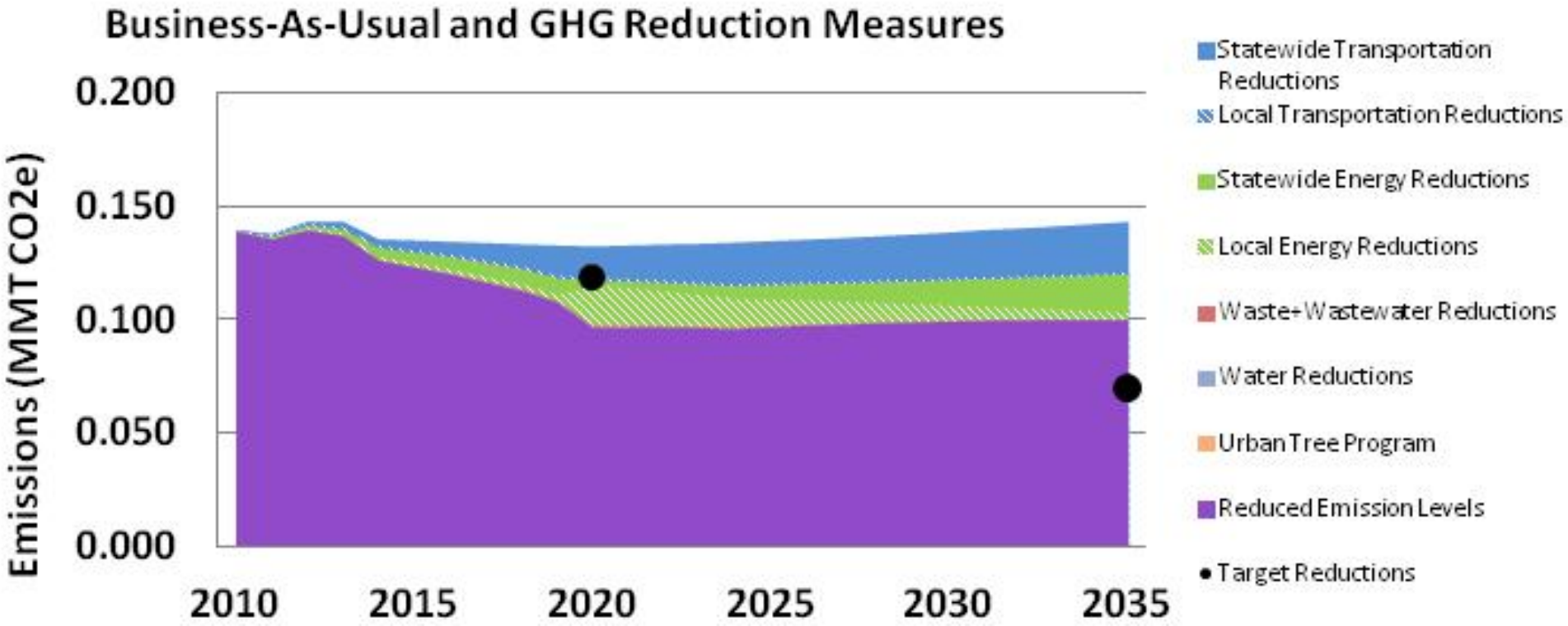
2020 – No local mitigations (only State & Federal)



2020 –State, Federal + Local RPS/CCA/PV Mitigations



2020 –State, Federal, and Many Other Local Mitigations



2035 Scenario Example

2010	baseline year	
0.139216	baseline emissions MMT	
2035	target year	
0.142707	BAU emissions MMT	
50	% reduction from baseline year	
0.069608	target emissions MMT	
0.082849	emissions after mitigation MMT	
0.073099	emissions reductions needed MMT	
0.059858	emissions reductions achieved MMT	

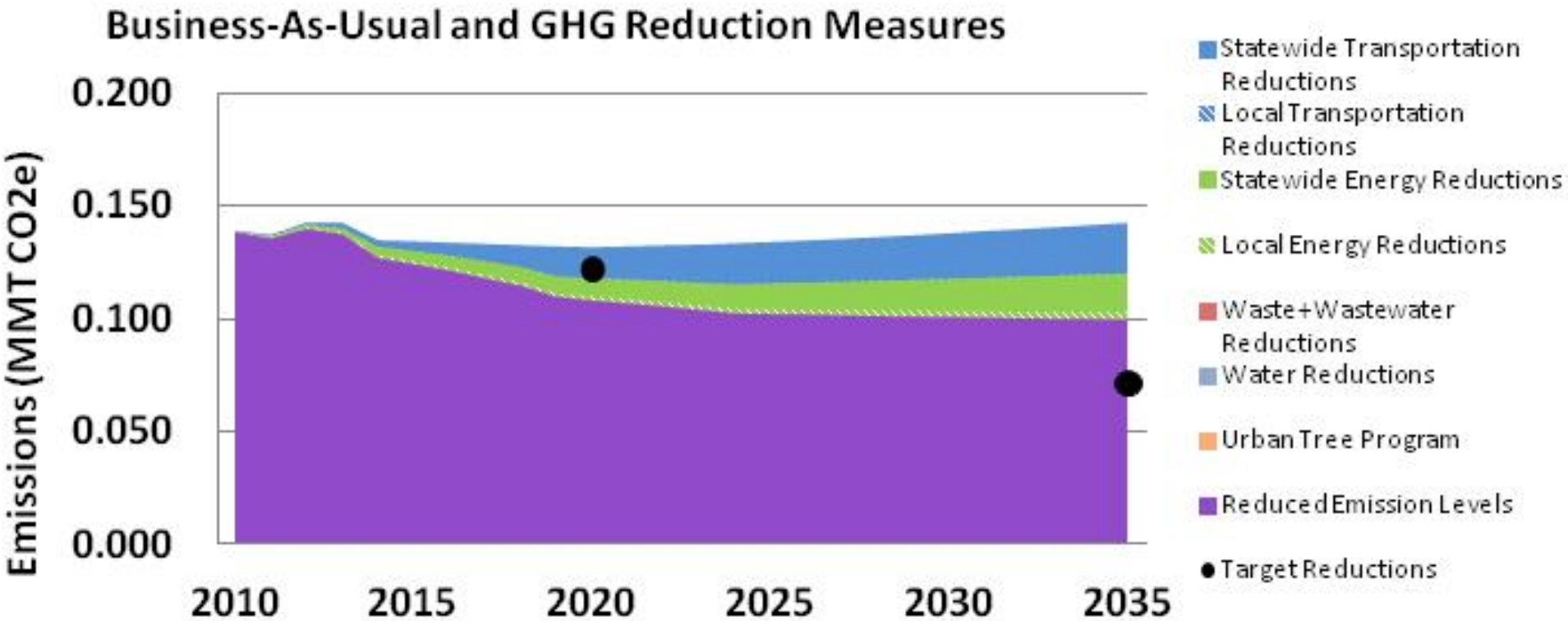
81.89				% reductions achieved					
Example Scenario (2035) -- 1250 Random Simulations									
avg value	***units***	***row***	***base***	***min***	***max***				
37.60	%	24	0	25	50	Electric & Natural Gas	Local Measures	Community Choice Aggregation	% MORE than required by Renewable Portfolio Sta
89.85	%	25	0	85	95	Electric & Natural Gas	Local Measures	Community Choice Aggregation	% of Customer Participating (after Solar Customer)
11.46	MW	29	0.5	5	18	Electric & Natural Gas	Local Measures	Residential Distributed PV	User Defined PV Installed (Megawatt)
25.28	%	33	0	0	0.5	Electric & Natural Gas	Local Measures	Point of Sale Energy Assessment & Disclosure	Energy Reduction (%/Unit)
0.14	%	35	0	0	0	Electric & Natural Gas	Local Measures	Point of Sale Energy Assessment & Disclosure	% of SF+MF Units Remodeled Annually
12.69	%	38	0	0	25	Electric & Natural Gas	Local Measures	Point of Sale Energy Assessment & Disclosure	Energy Reduction (% per Square Foot)
6.02	%	41	2	2	10	Electric & Natural Gas	Local Measures	Residential SHW Installs (New Con. & Retrofits	Systems Installed (% Existing Homes Retrofit)
49.77	%	43	1	25	75	Electric & Natural Gas	Local Measures	Residential SHW Installs (New Con. & Retrofits	Systems Installed (% of New Construction)
30.75	%	45	10	10	50	Electric & Natural Gas	Local Measures	Commercial SHW Installs (New Con. & Retrofit	Reduction in Water Heating Energy
14.96	%	46	5	5	25	Electric & Natural Gas	Local Measures	Commercial SHW Installs (New Con. & Retrofit	% Commercial Water Heating Energy Affected
3.57	mi	98	0	0	7	Transportation	Local Measures	Bicycle Strategy	Bicycle Lane Miles/Square Mile
18.08	#	100	0	0	35	Transportation	Local Measures	Retiming Traffic Signals	Number of Traffic Retimed Traffic Signals
4.95	%	102	0	0	10	Transportation	Local Measures	Pedestrian Mobility Plan	% of Labor Force Participating
5.10	#	104	0	0	10	Transportation	Local Measures	Roundabouts	Number of Roundabouts Installed
49.99	%	107	0	0	100	Transportation	Local Measures	Municipal Zero Emission Vehicle	% Gasoline Fleet Converted to EV`s
72.86	%	118	55	55	90	Waste & Wastewater	Local Measures	Solid Waste	Landfill Waste Diverted (%)
84.79	%	119	75	75	95	Waste & Wastewater	Local Measures	Solid Waste	Landfill Emissions Captured (%)
94.42	%	121	90	90	99	Waste & Wastewater	Local Measures	Wastewater	Wastewater Emissions Capture Rate (%)
17.47	%	143	10	10	25	Land Use	Local Measures	Urban Tree Planting Program	% Urban Tree Canopy Cover
98.88	acre	144	50	50	150	Land Use	Local Measures	Urban Tree Planting Program	Area Affected (acres)

Percent Attainment of 2035 Target GHG Reductions (Top Dogs)

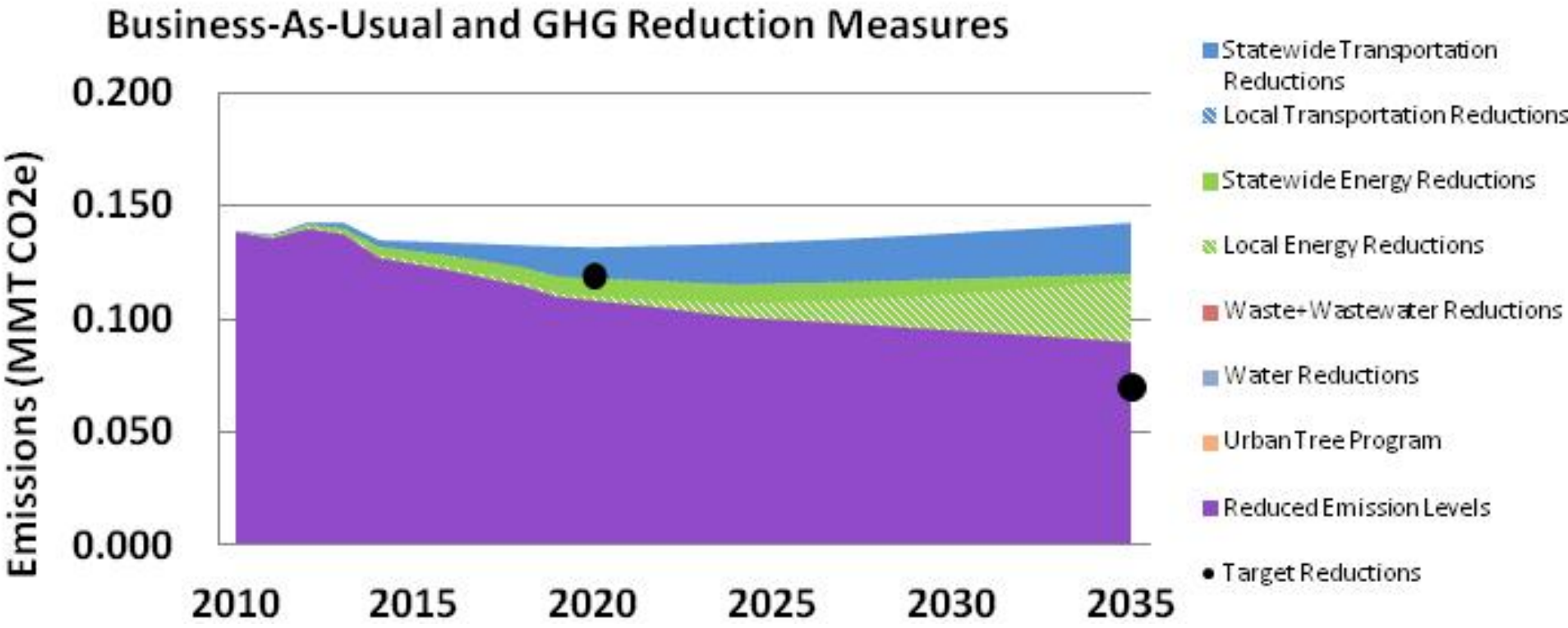
avg % contribution			
14.22	Federal & State Measures		Renewable Portfolio Standard - CCA
12.79	Federal & State Measures		Vehicle Efficiency Standards - Pavley I/CAFÉ
9.00	Federal & State Measures		Low Carbon Fuel Standards
8.83	Federal & State Measures		Electric Vehicles Program
1.61	Federal & State Measures		Renewable Portfolio Standard - Utility
0.00	Federal & State Measures		Pump Price of Gasoline
0.00	Federal & State Measures		CARB Tire Pressure Program
10.71	Local Measures	Strategy 2: Electricity and Natural Gas	Community Choice Aggregation Program
8.19	Local Measures	Strategy 2: Electricity and Natural Gas	Residential Distributed PV
6.16	Local Measures	Strategy 2: Electricity and Natural Gas	Commercial SHW Installs (New Con. & Retrofits)
3.82	Local Measures	Strategy 3: Waste and Water	Divert Waste from Landfills & Capture Emissions
2.97	Local Measures	Strategy 2: Electricity and Natural Gas	Utility Efficiency Program
1.16	Local Measures	Strategy 1: Transportation	Retiming Traffic Signal
0.71	Local Measures	Strategy 2: Electricity and Natural Gas	Non-Residential Distributed PV
0.68	Local Measures	Strategy 1: Transportation	Municipal Zero Emission Vehicle
0.33	Local Measures	Strategy 1: Transportation	Roundabouts
0.30	Local Measures	Strategy 3: Waste and Water	New Water Billing Structure

46.45	Total GHG Reductions from Federal and State Measures
35.44	Total GHG Reductions From Local
81.89	Total GHG Reductions

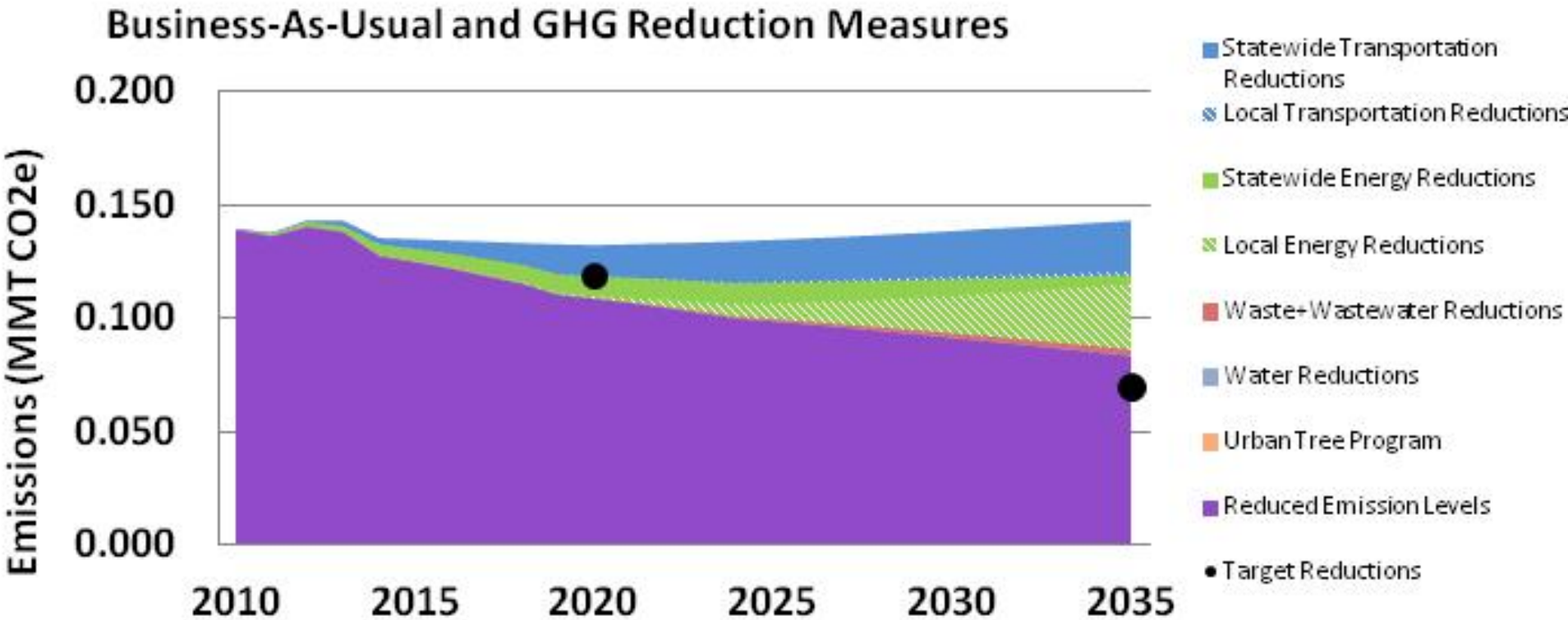
2035 – No local mitigations (only State & Federal)



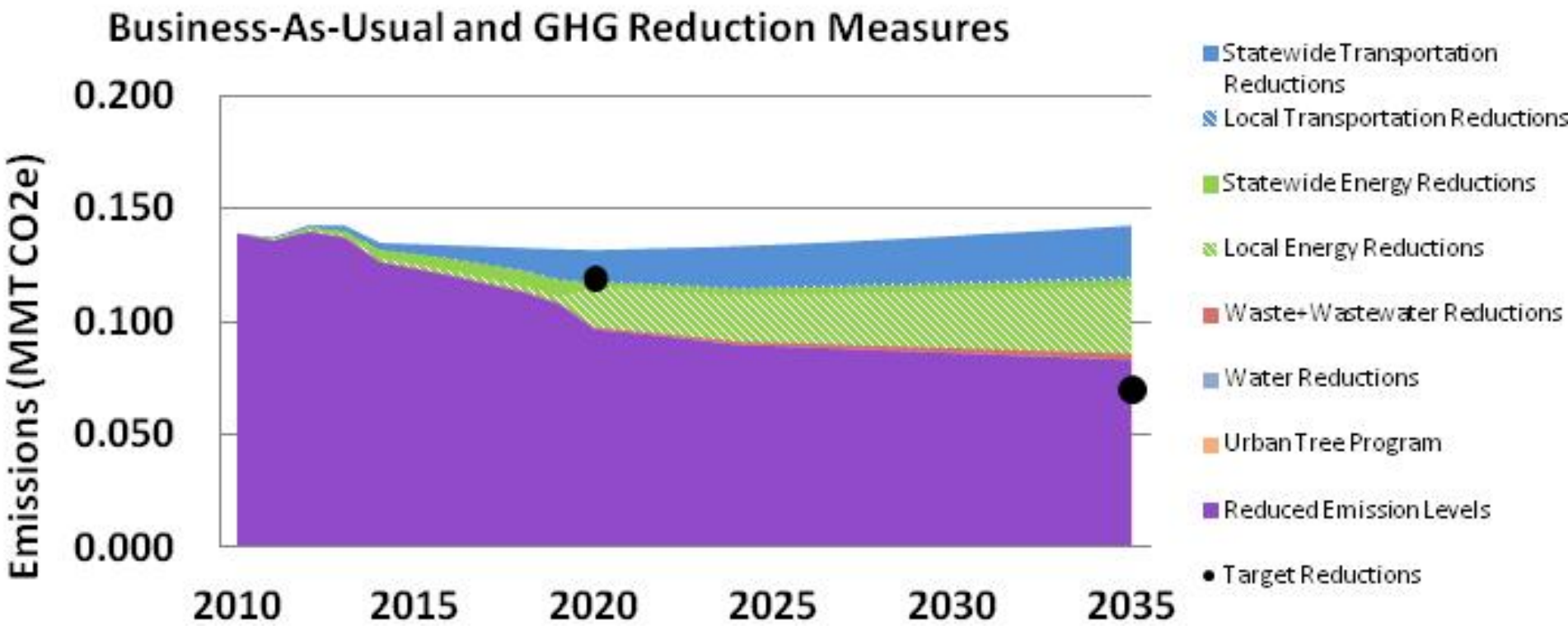
2035 –State, Federal + Local RPS/CCA/PV Mitigations



2035 –State, Federal, and Many Other Local Mitigations



2020 & 2035 – State, Federal, and Many Other Local Mitigations



Next Steps

- Discussion on selected mitigation measures
- Discuss and direct subcommittee to explore additional measures and run scenarios
- Review other CAPs closely for potential mitigation measures to explore
  - Del Mar
  - Carlsbad
  - San Diego