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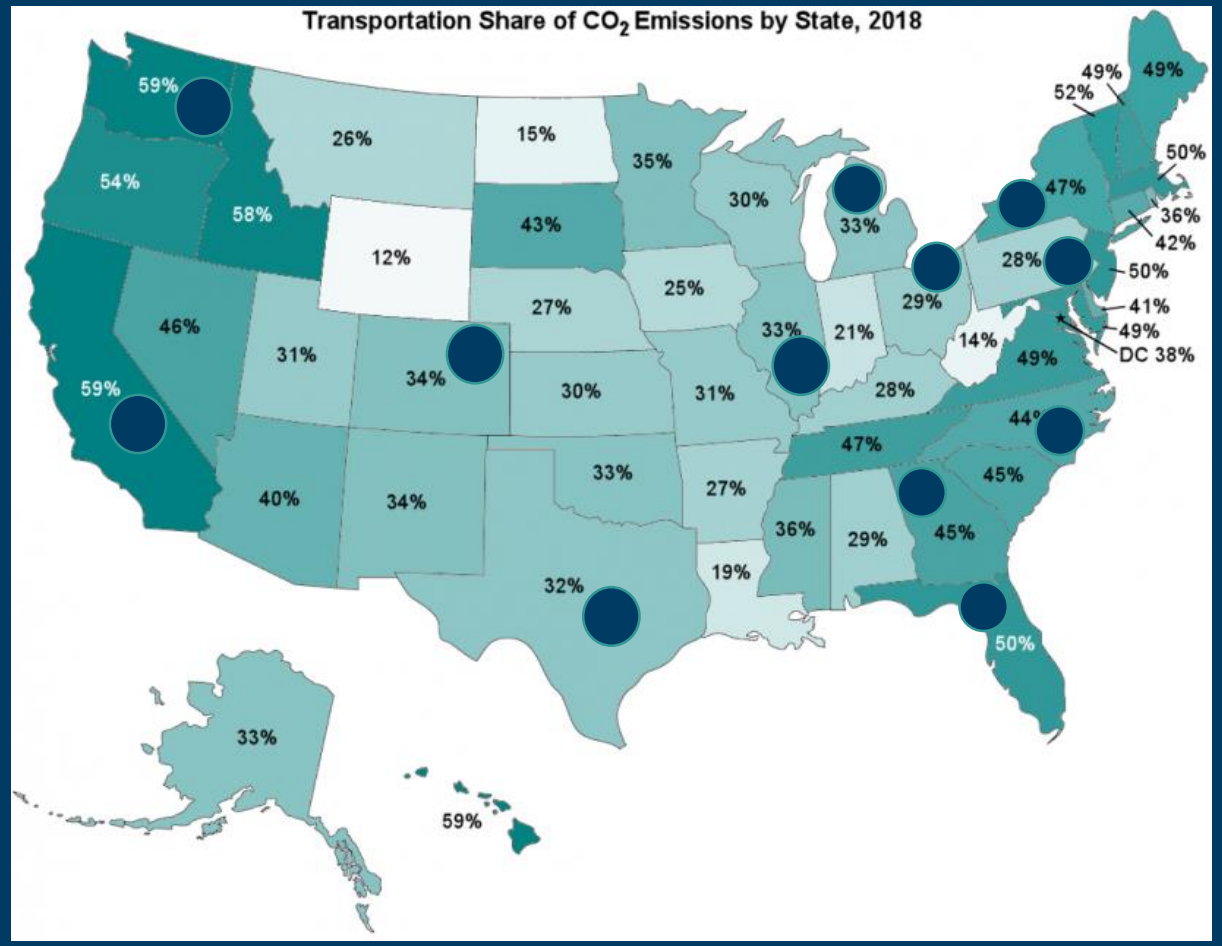
State-Level Results: Emissions Analysis of BIL Investment scenarios

March 2023

States included in this analysis

Our analysis focused on the top 10 gasoline consuming states* + WA and CO



*Source: U.S. Energy Information Agency (EIA) State Energy Data System (SEDS), "Table C8. Transportation Sector Energy Consumption Estimates," year 2019 data, https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_sum/html/sum_btu_tra.html&sid=US, retrieved April 2022.

Methods expand on Dec. 2021 US-wide study*

1. Conducted section by section analysis of BIL and flexibility available to state DOTs under federal law

2. Developed three investment scenarios to explore a range of potential emission outcomes

3. Applied investment scenarios for each state individually and estimated emissions using the GCC Transportation Investment Strategy Tool

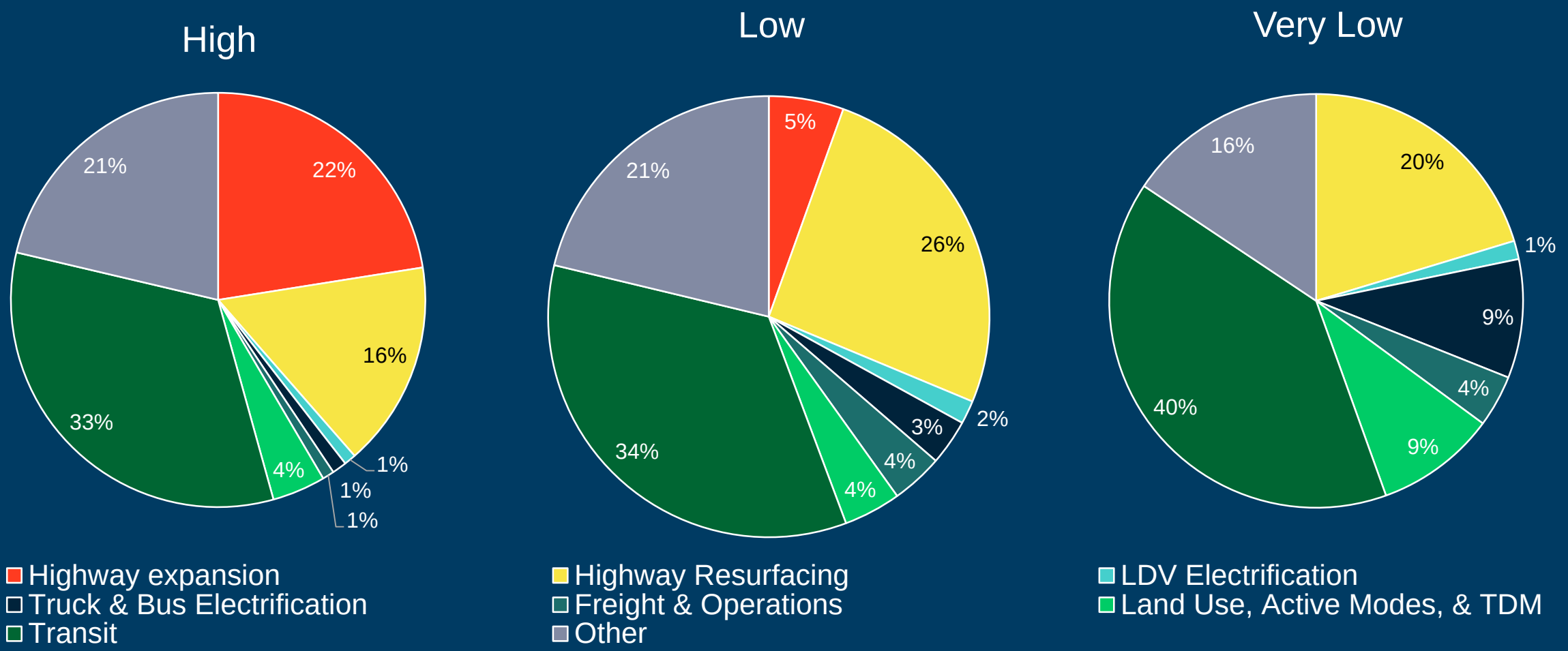
*GCC, 2021 study: https://www.georgetownclimate.org/articles/federal-infrastructure-investment-analysis.html

We modeled 3 investment scenarios

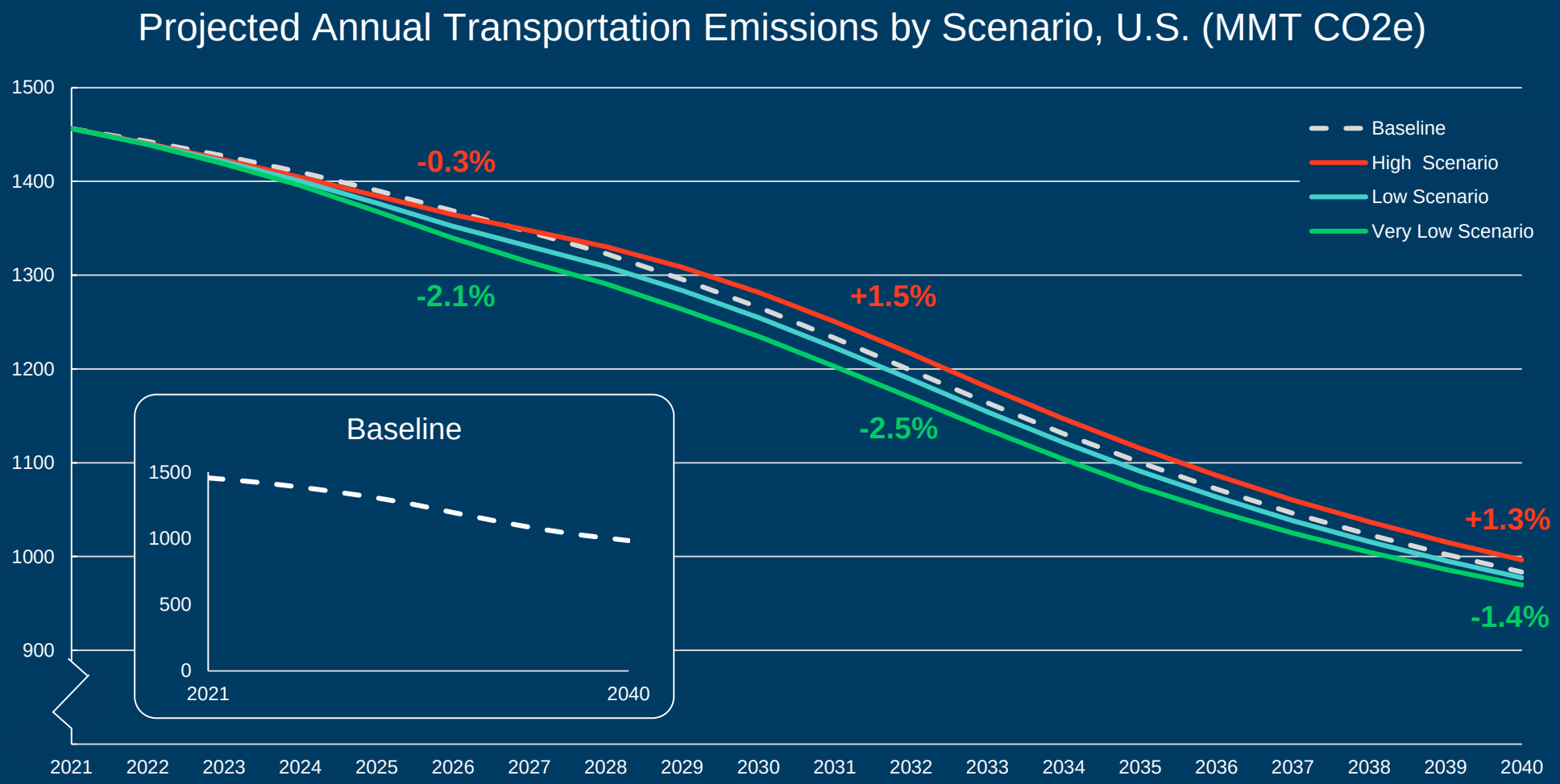
1. **High Scenario**: large investment in highway expansion; decisions do not account for the emissions impacts of transportation projects
2. **Low Scenario**: a climate-conscious approach to transportation investments with a small amount of highway expansion
3. **Very Low Scenario**: stretch goal for leading states optimized for modeled emissions reduction to the extent legally allowed:
    - No investments in highway expansion
    - Maximize flex to invest highway dollars in low-carbon strategies

3 scenarios designed to illustrate a range of different investment priorities

Allocation of BIL $ by Investment Category

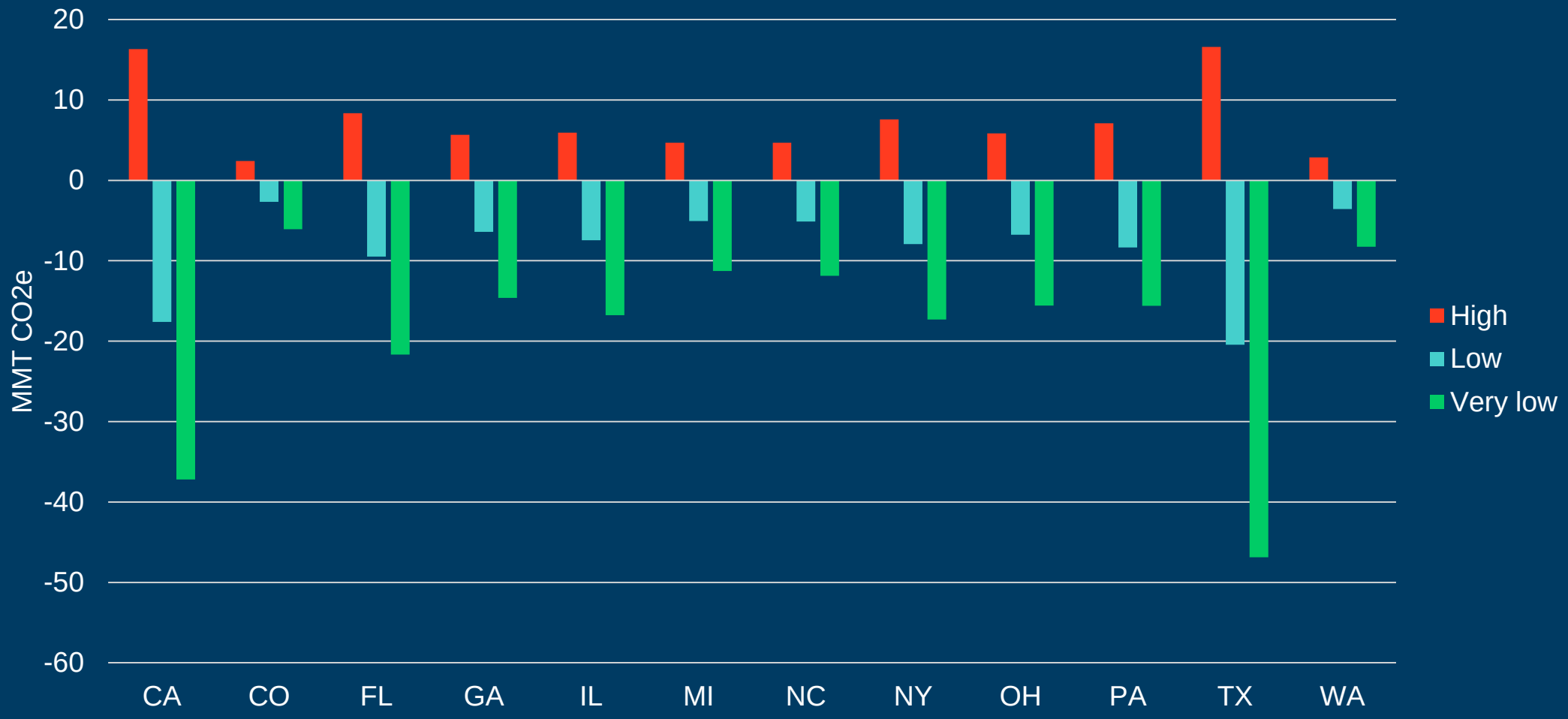


Investment choices can accelerate or slow progress toward GHG targets



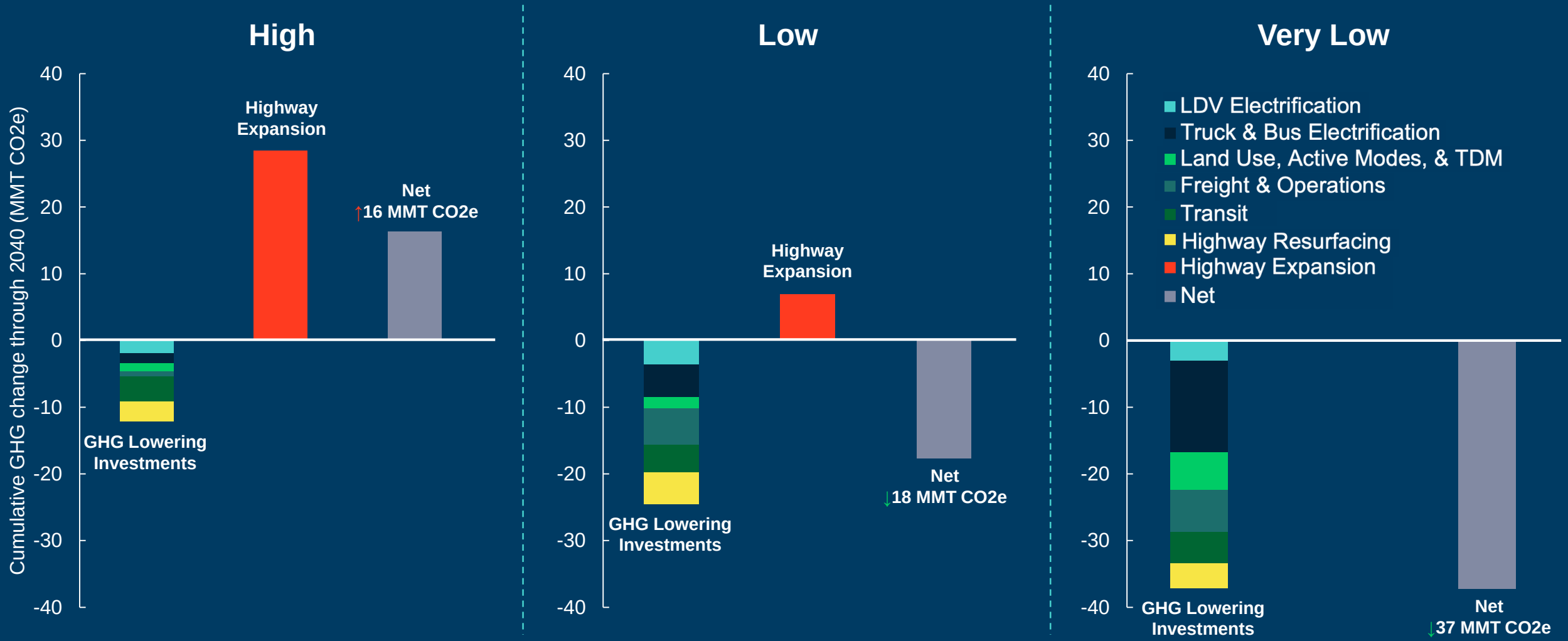
BIL implementation brings opportunities and risks to every state

Cumulative Net Change in On Road Transportation Emissions by Scenario, Relative to BAU (2022-2040)



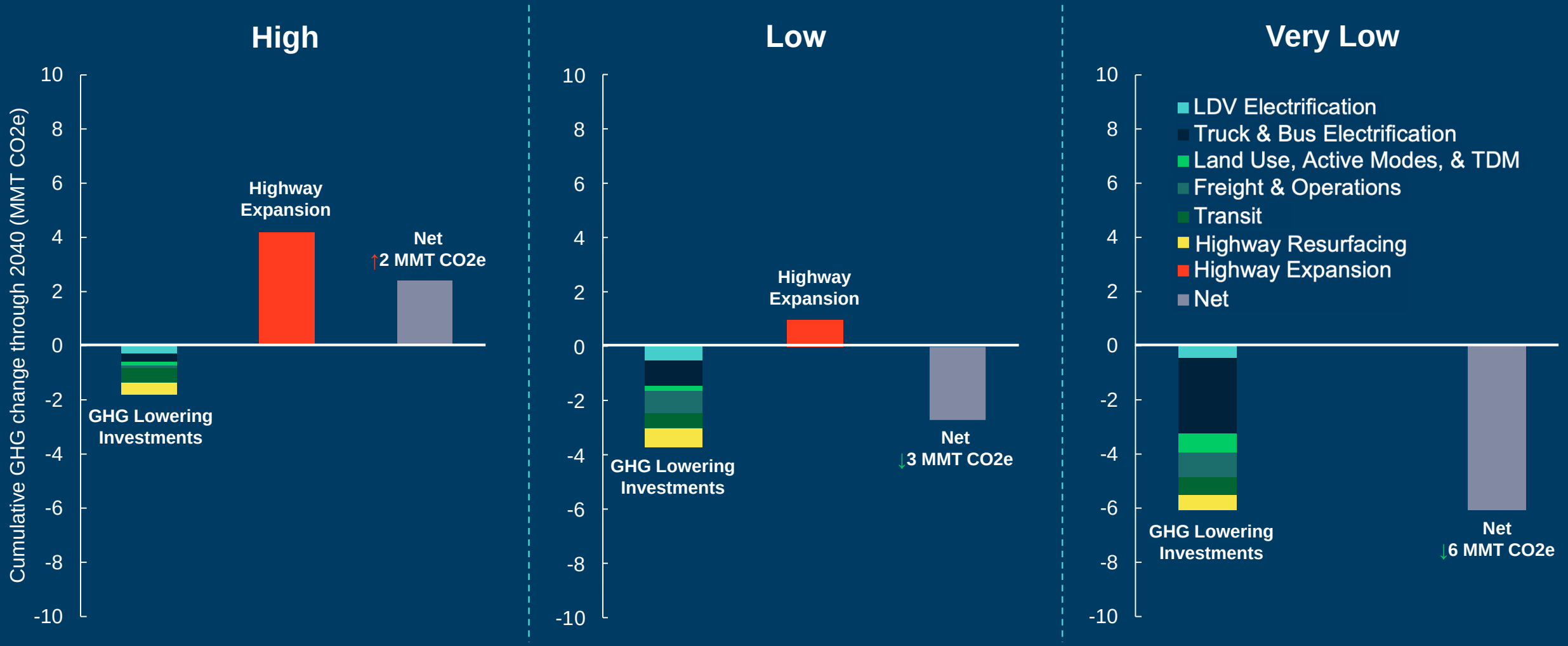
California outcomes span 53 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for CA (aggregated categories)



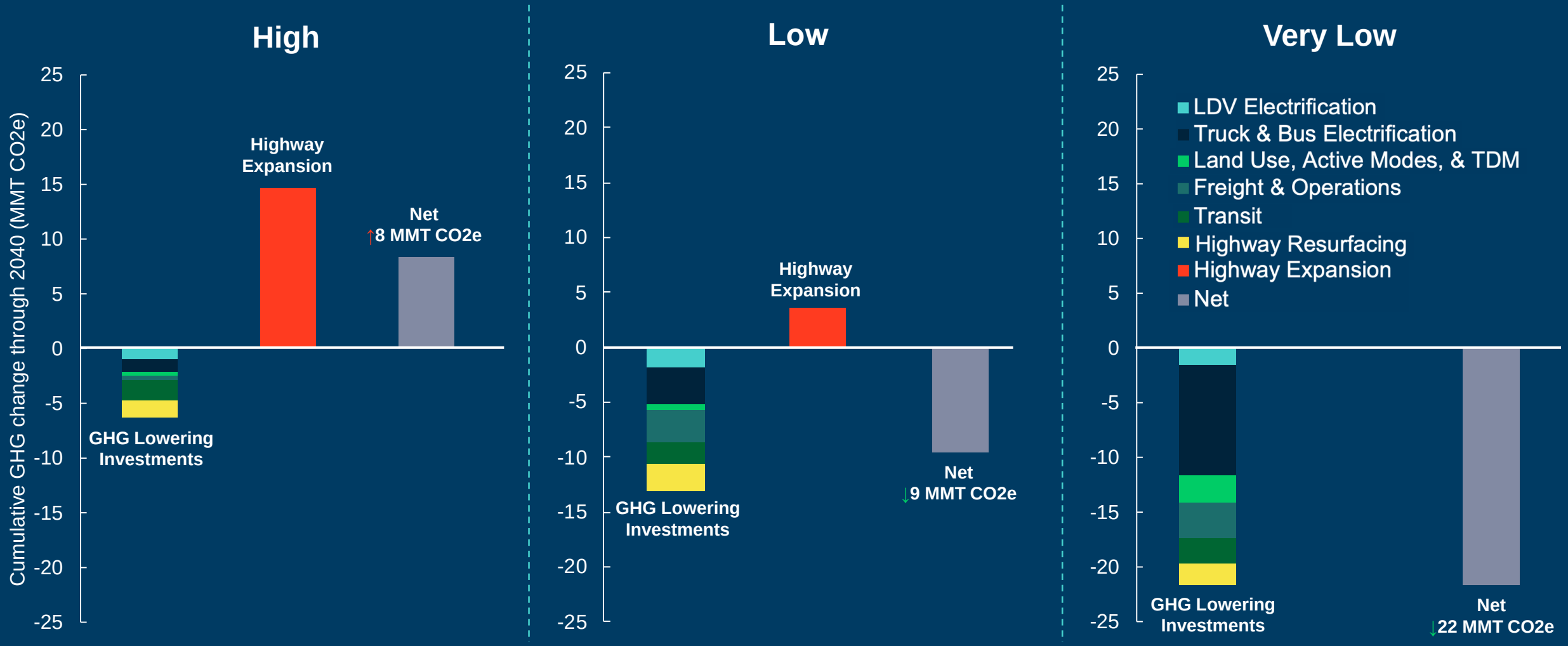
Colorado outcomes span 8 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for CO (aggregated categories)



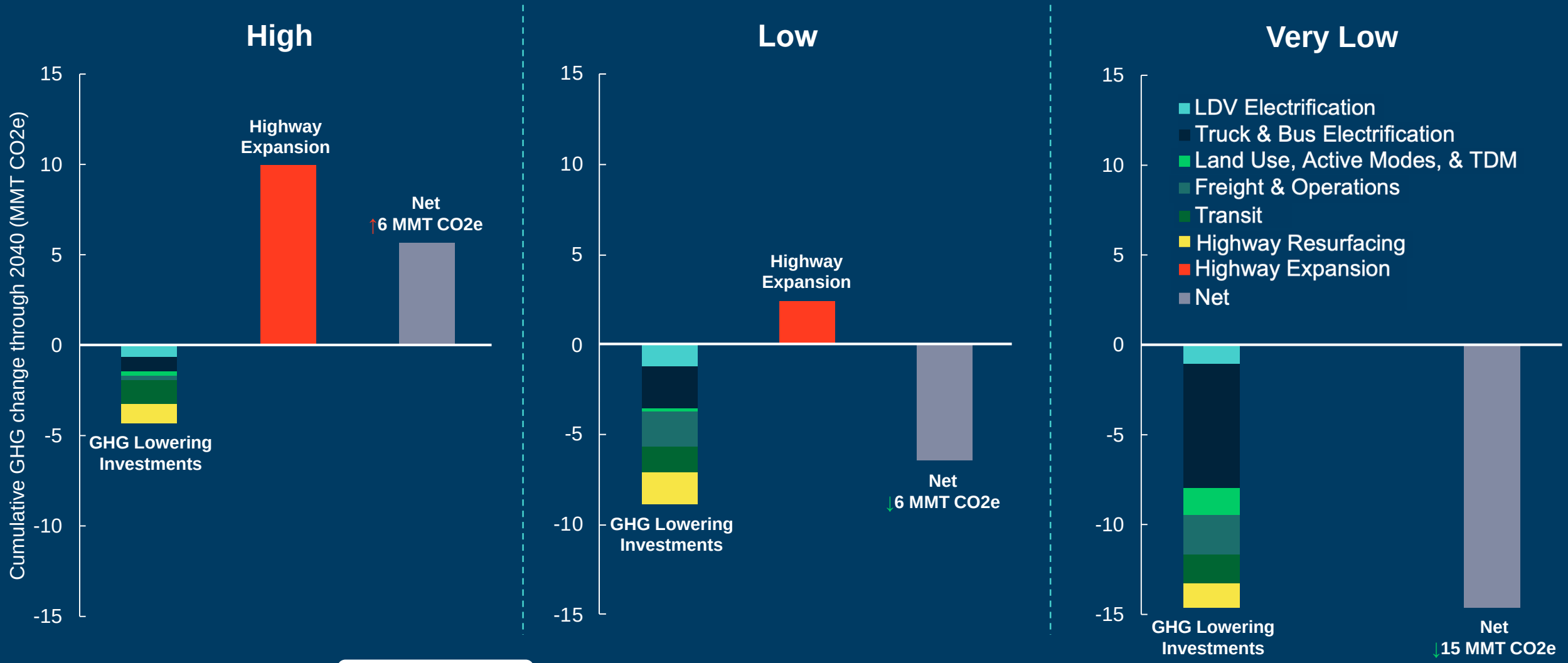
Florida outcomes span 30 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for FL (aggregated categories)



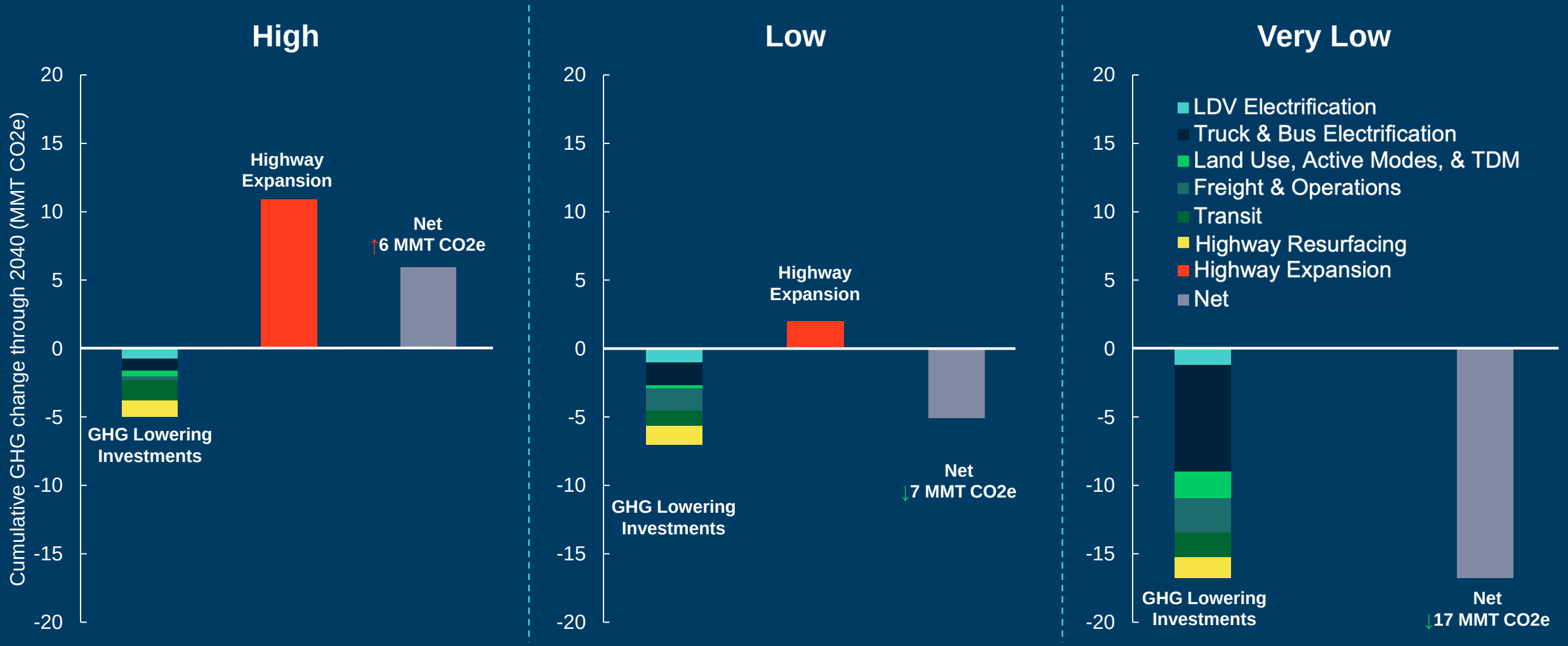
Georgia outcomes span 21 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for GA (aggregated categories)



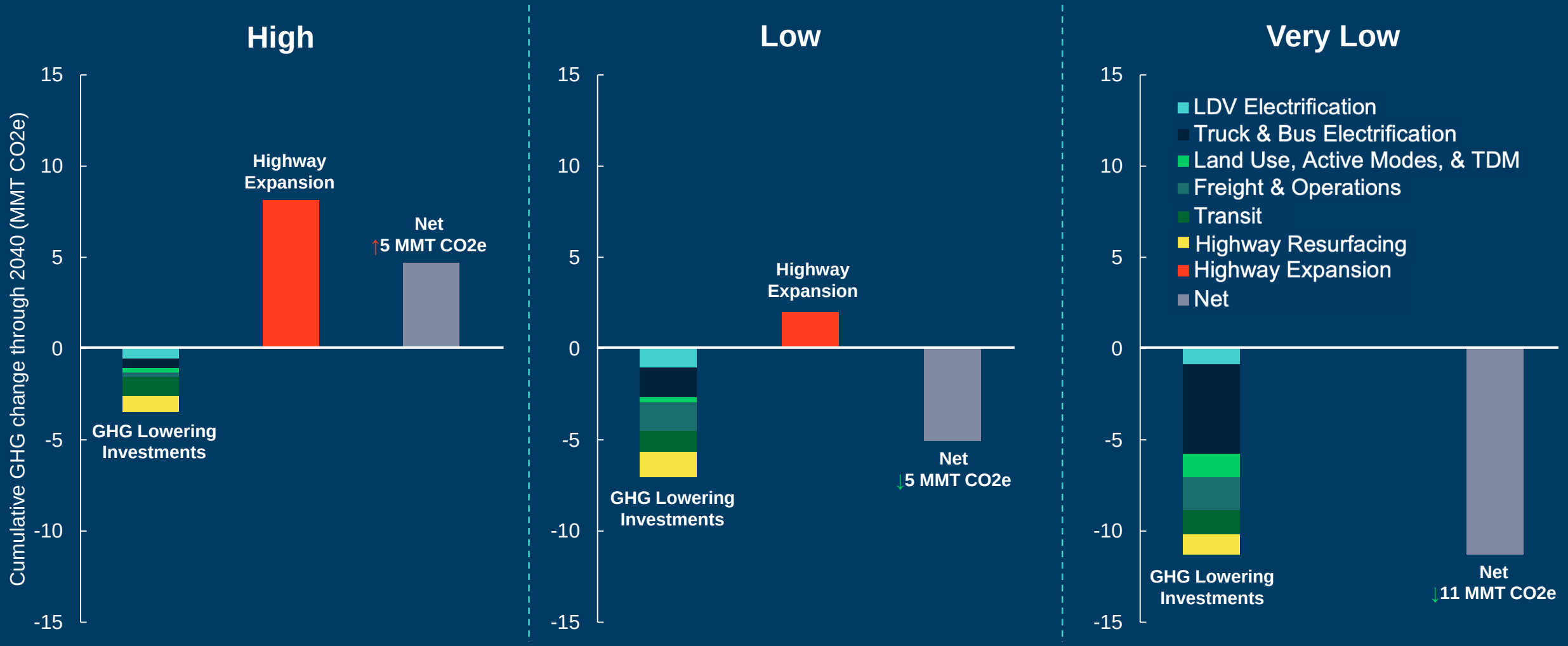
Illinois outcomes span 23 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for IL (aggregated categories)



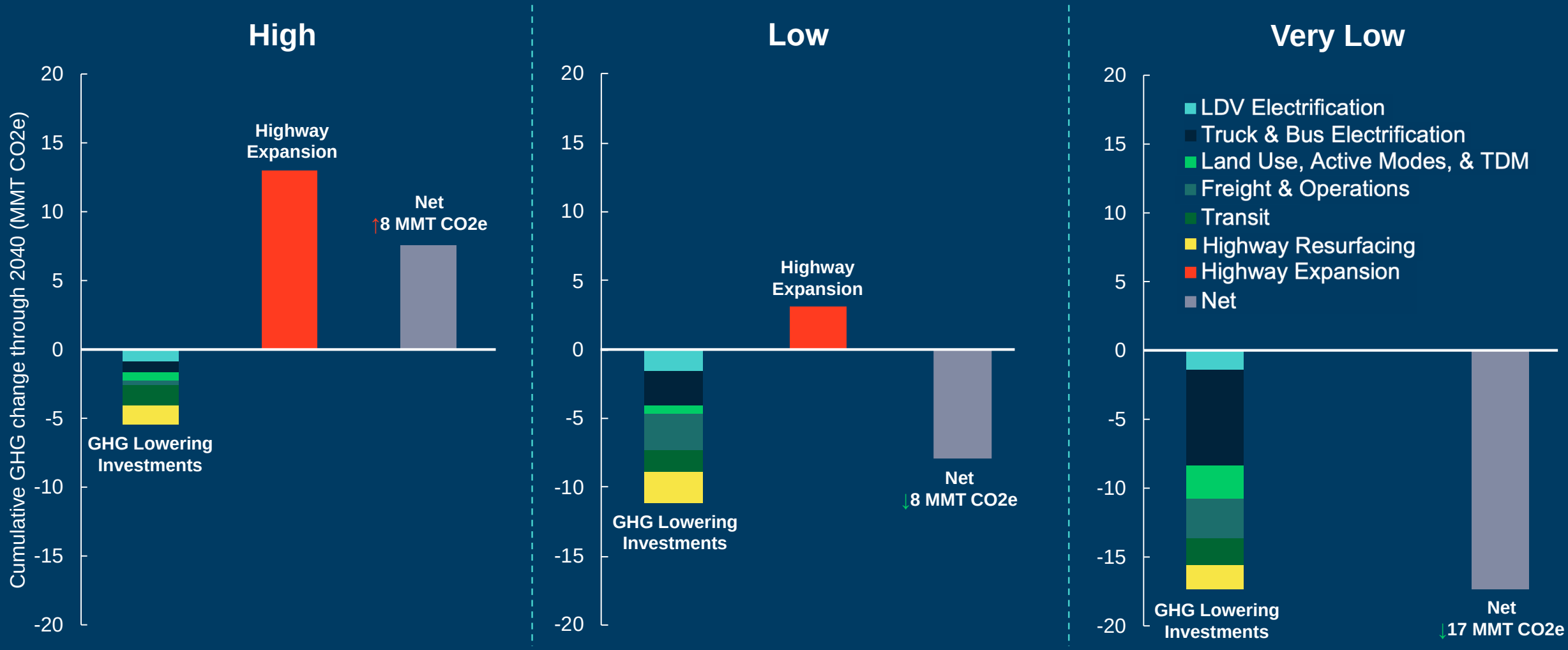
Michigan outcomes span 16 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for MI (aggregated categories)



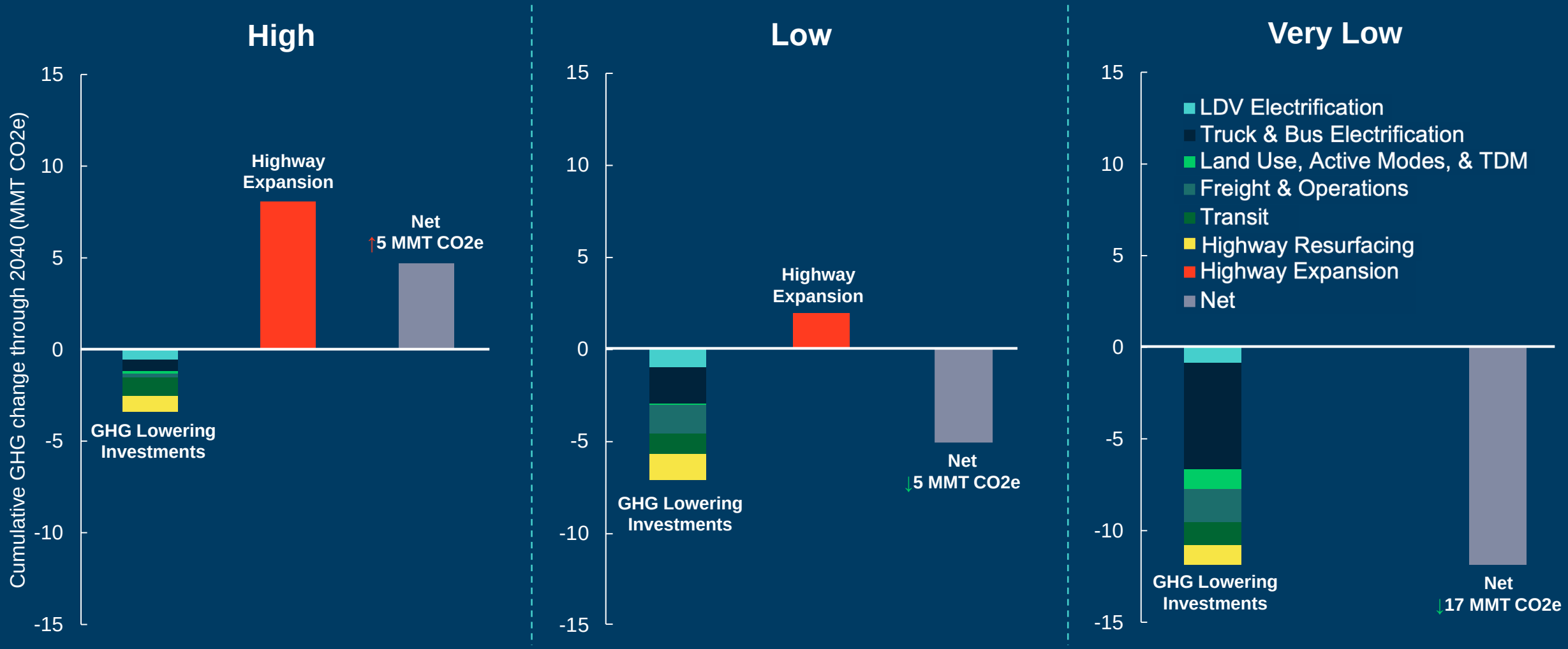
New York outcomes span 25 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for NY (aggregated categories)



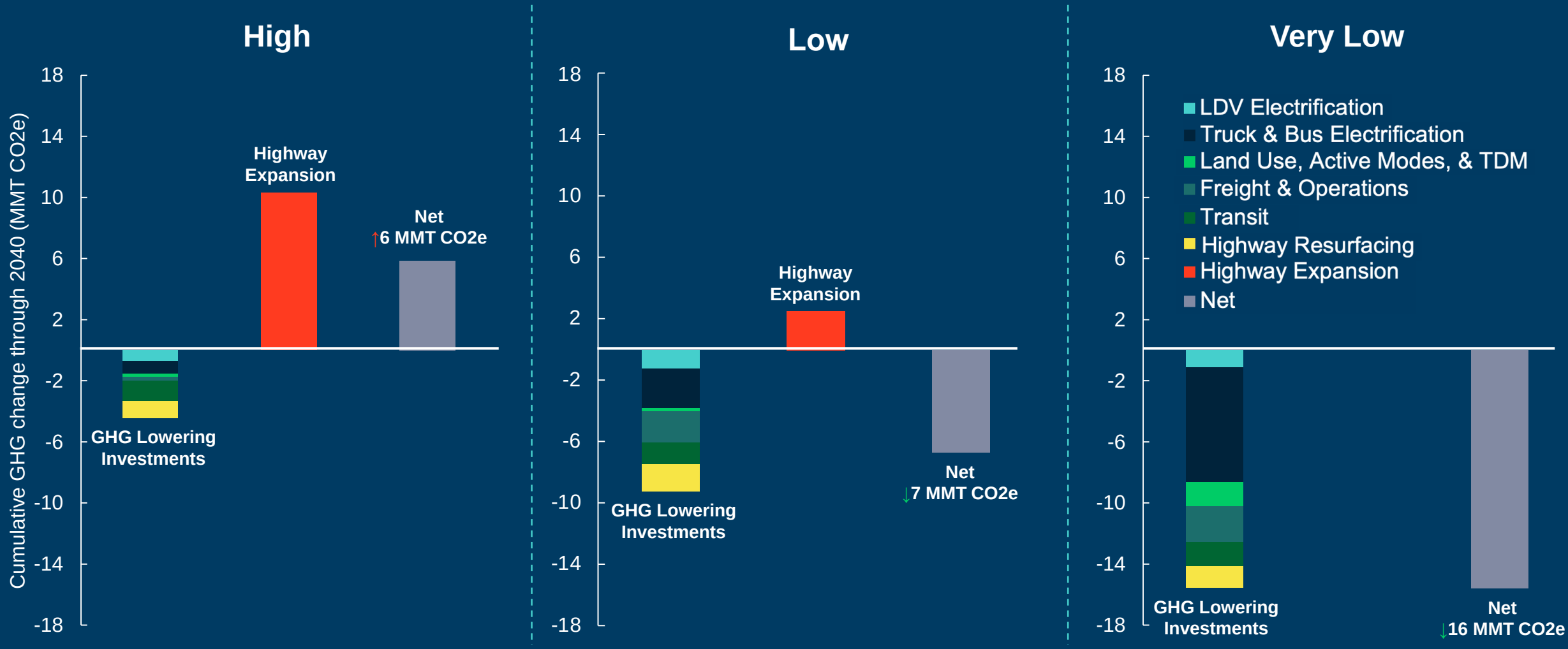
North Carolina outcomes span 22 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for NC (aggregated categories)



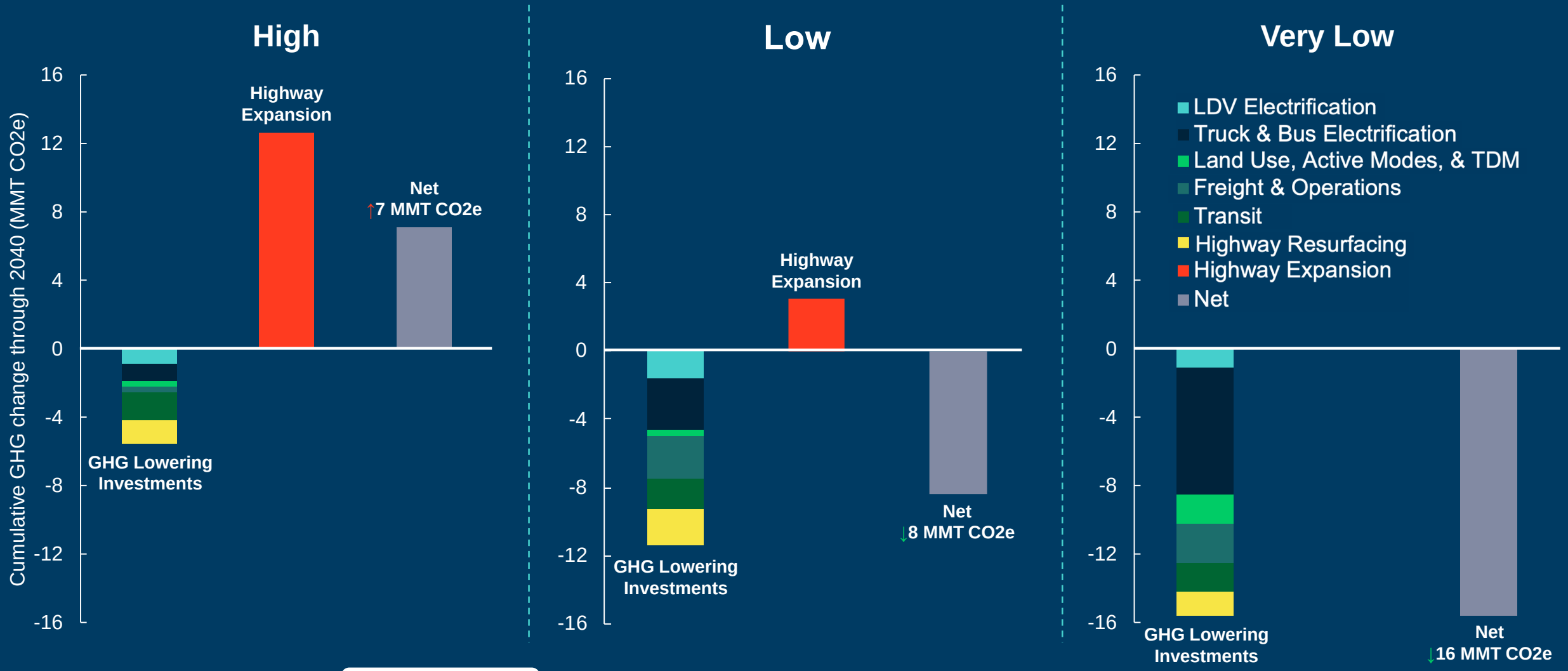
Ohio outcomes span 22 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for OH (aggregated categories)



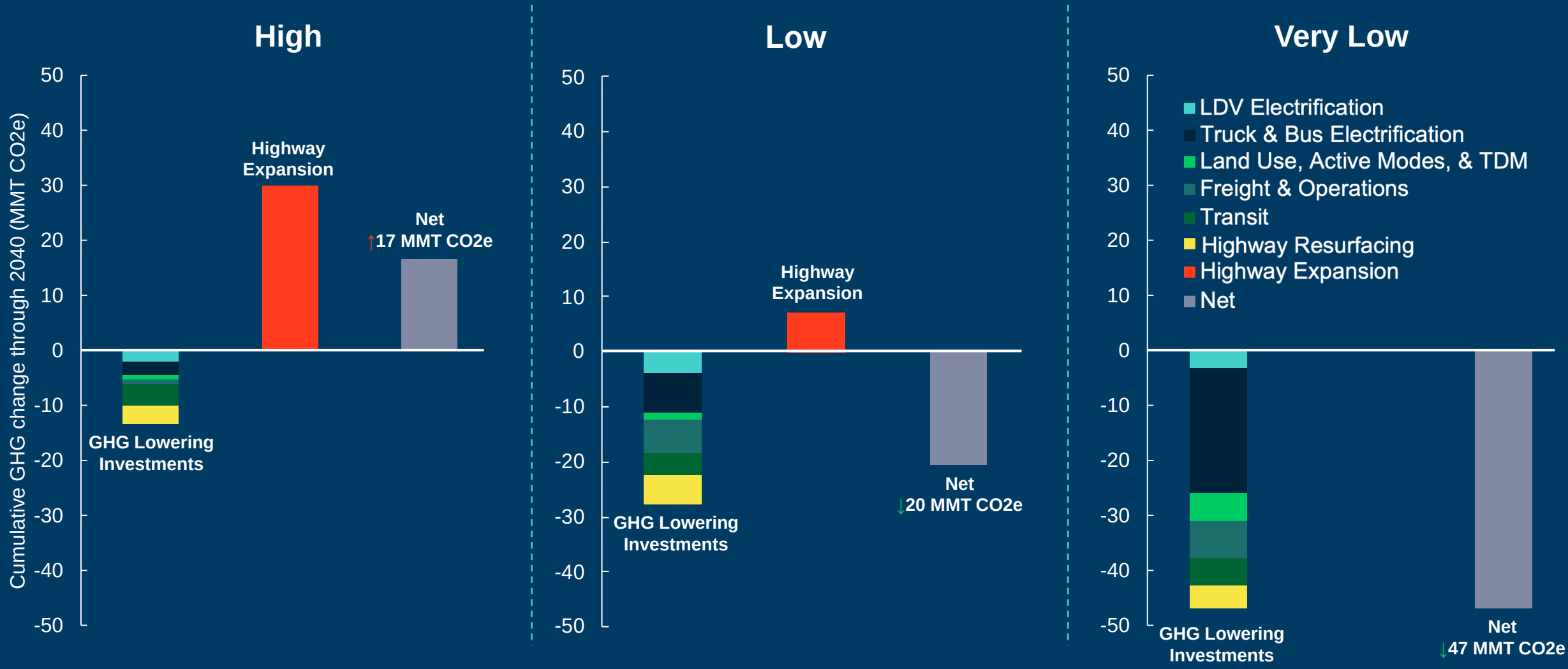
Pennsylvania outcomes span 23 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for PA (aggregated categories)



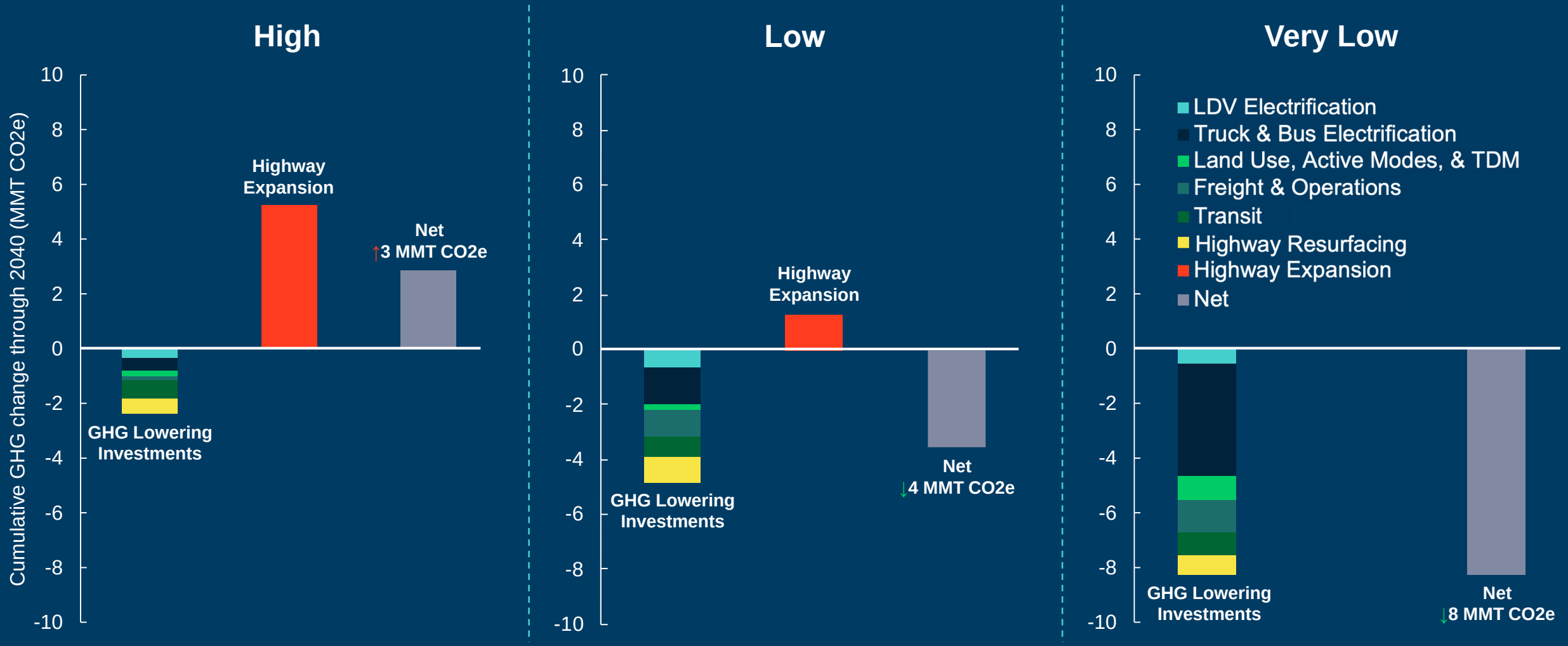
Texas outcomes span 64 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for TX (aggregated categories)

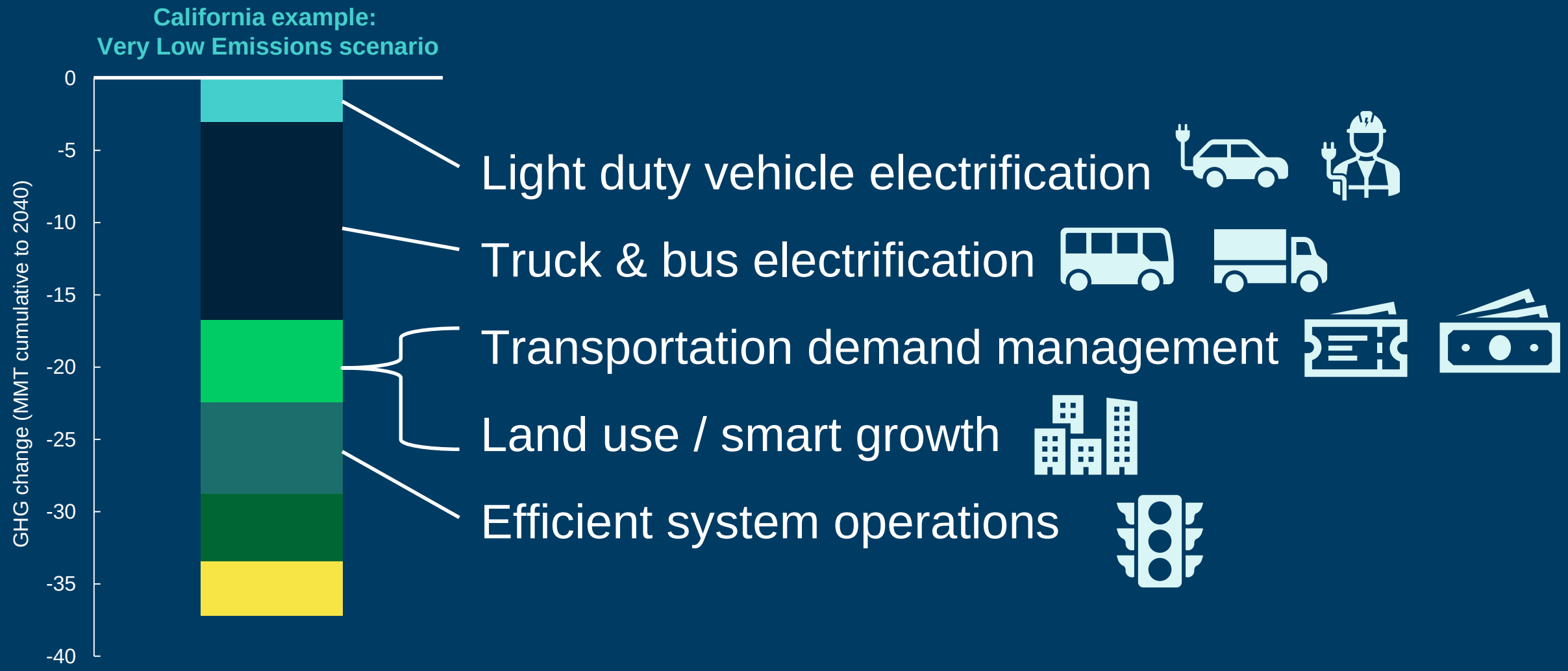


Washington outcomes span 11 MMT CO_2 in Cumulative Emissions

Cumulative 2022-2040 Change in On-Road Transportation GHG Emissions for WA (aggregated categories)



Five potent strategies for avoiding GHG emissions



How 31 strategies in the Transportation Investment Strategies Tool were sorted into 8 categories, for display purposes

Learn more about each strategy in the latest:
Transportation Investment Strategy Tool Documentation

STRATEGY	Investment categories
Light duty EV's: vehicles	LDV Electrification
Light duty EV's: infrastructure	
Electric transit buses	Truck and Bus Electrification
Electric school buses	
Electric trucks - MDT/urban	
Electric trucks - HDT/short-haul	
Hydrogen trucks - long-haul	
Passenger rail electrification	
Shared ride incentives	Land Use, Active Modes, & TDM
Micromobility: shared e-scooters & e-bikes	
Micromobility: e-bike ownership subsidies	
Land use/smart growth	
Bicycle investment	
Pedestrian investment	
Travel demand management (TDM)	
System operations	Freight & Operations
Freight/intermodal	
Highway preservation/ resurfacing	Highway Resurfacing
Highway expansion	Highway Expansion
Bus rapid transit	Transit
Urban rail	
Commuter rail	
Intercity rail	
Bus service: expansion	
Bus service: efficiency	
Electric microtransit	
Transit fare reduction	
SGR: Bus	
SGR: Urban rail	
SGR: Commuter/intercity rail	
Other (non-GHG reducing)	Other

State-by-state budget BIL funding estimates

Estimates for state BIL funding totals are based on FHWA estimates for FY 2022–FY 2026 formula apportionments, then scaled up to include proportional shares of additional competitive grants and other formula dollars

State	Estimated FY 2022–FY 2026 Total Apportionments* ($millions)	Modeled total including non-formula funds, 2022–2026 ($millions)
California	$25,304	$61,428
Colorado	$3,729	$9,052
Florida	$13,062	$31,710
Georgia	$8,902	$21,610
Illinois	$9,802	$23,795
Michigan	$7,259	$17,621
New York	$11,573	$28,093
North Carolina	$7,190	$17,455
Ohio	$9,241	$22,434
Pennsylvania	$11,312	$27,460
Texas	$26,894	$65,286
Washington	$4,674	$11,346
U.S. Total	$273,132	$663,045

*Source: https://www.fhwa.dot.gov/bipartisan-infrastructure-law/funding.cfm

Estimated GHG Cost-Effectiveness

		Average Tons CO2e Savings/$1000 Invested												
Sum of GHG/$*1000		State												
Bin_adjusted	Strategy	CA	CO	FL	GA	IL	MI	NC	NY	OH	PA	TX	USA	WA
Freight & Operations	Freight/intermodal	1.19	1.18	1.18	1.19	1.19	1.19	1.17	1.19	1.18	1.18	1.19	1.19	1.19
Freight & Operations	System operations	4.84	4.83	4.85	4.87	4.94	4.84	4.85	4.84	4.92	4.91	4.93	4.89	4.86
Highway SGR	Highway preservation	0.30	0.30	0.30	0.30	0.31	0.30	0.30	0.30	0.31	0.31	0.31	0.31	0.30
Land Use, Active Modes, & TDM	Bicycle investment	0.71	0.52	0.47	0.28	0.50	0.38	0.22	0.41	0.36	0.39	0.47	0.41	0.49
Land Use, Active Modes, & TDM	Land use/smart growth	2.54	2.42	2.49	2.55	2.59	2.51	2.43	2.56	2.44	2.50	2.53	2.51	2.51
Land Use, Active Modes, & TDM	Micromobility: e-bike ownership subsidies	0.58	0.55	0.56	0.57	0.58	0.56	0.54	0.58	0.55	0.56	0.57	0.56	0.57
Land Use, Active Modes, & TDM	Micromobility: shared e-scooters & e-bikes	0.07	0.06	0.06	0.07	0.07	0.06	0.06	0.07	0.06	0.06	0.07	0.06	0.06
Land Use, Active Modes, & TDM	Pedestrian investment	0.25	0.12	0.11	0.04	0.17	0.08	0.03	0.36	0.07	0.12	0.11	0.13	0.12
Land Use, Active Modes, & TDM	Shared ride incentives	0.03	0.02	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.03
Land Use, Active Modes, & TDM	Travel demand management	4.12	2.69	4.18	5.48	6.32	4.85	2.40	6.05	2.65	4.14	3.40	4.44	5.16
LDV Electrification	Light duty EV's: infrastructure	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39
LDV Electrification	Light duty EV's: vehicles	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33
Transit	Bus rapid transit	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.04	0.04	0.04	0.04
Transit	Bus service: efficiency	0.34	0.32	0.33	0.33	0.34	0.33	0.31	0.33	0.32	0.32	0.33	0.33	0.33
Transit	Bus service: expansion	-0.10	-0.11	-0.10	-0.10	-0.10	-0.12	-0.13	-0.04	-0.10	-0.11	-0.09	-0.10	-0.12
Transit	Commuter rail	0.05	0.04	0.05	0.05	0.05	0.05	0.04	0.05	0.04	0.05	0.05	0.05	0.05
Transit	Electric microtransit	0.22	0.21	0.21	0.22	0.22	0.21	0.21	0.22	0.21	0.21	0.22	0.21	0.22
Transit	Intercity rail	0.20	0.18	0.19	0.20	0.21	0.19	0.18	0.20	0.18	0.19	0.20	0.19	0.20
Transit	SGR: Bus	0.47	0.45	0.46	0.46	0.47	0.50	0.49	0.40	0.46	0.46	0.46	0.46	0.48
Transit	SGR: Commuter/intercity rail	0.29	0.27	0.28	0.28	0.29	0.28	0.27	0.23	0.27	0.28	0.28	0.25	0.28
Transit	SGR: Urban rail	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.11	0.13	0.13	0.13	0.12	0.13
Transit	Transit fare reduction	0.17	0.18	0.17	0.17	0.18	0.21	0.22	0.20	0.18	0.18	0.17	0.19	0.19
Transit	Urban rail	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.13	0.13	0.13	0.13	0.13	0.13
Truck & Bus Electrification	Electric school buses	1.26	1.39	1.40	1.40	1.41	1.35	1.42	1.31	1.42	1.42	1.43	1.38	1.44
Truck & Bus Electrification	Electric transit buses	3.39	4.99	5.18	5.18	5.35	4.40	5.43	3.85	5.50	5.42	5.74	4.83	5.98
Truck & Bus Electrification	Electric trucks - HDT/short-haul	1.72	1.79	1.79	1.79	1.80	1.77	1.80	1.74	1.80	1.80	1.81	1.78	1.81
Truck & Bus Electrification	Electric trucks - MDT/urban	2.35	2.47	2.48	2.48	2.49	2.43	2.49	2.39	2.50	2.49	2.51	2.46	2.52
Truck & Bus Electrification	Hydrogen trucks - long-haul	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Truck & Bus Electrification	Passenger rail electrification	0.63	0.68	0.68	0.68	0.69	0.67	0.69	0.65	0.69	0.69	0.69	0.68	0.70

Results shown are for the “Very Low” scenario. This scenario had no highway expansion, but in other scenarios it would show here as -2.06 tons CO_2e savings per $1000 invested.