Transportation Advisory Panel

Meeting 13

April 9, 2021

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NEW YORK STATE OF OPPORTUNITY. | Climate Action Council

Agenda

- Welcome/Introductions
- Review of Cadmus New York Clean Transportation Roadmap Preliminary Results: GHGs and Energy
- Report out from the Equity and Health Round Table
- Review/Finalize/adopt recommendations for submission to the Climate Action Council
- Plans for additional expert input/research
- Open discussion/next steps

Meeting Procedures

Before beginning, a few reminders to ensure a smooth discussion:

- Panel members should be on mute when not speaking
- Video is encouraged for Panel members, in particular when speaking
- We will not be muting individuals for this discussion; the chair will call on members individually, at which time please unmute
- If technical problems arise, please contact: james.bottomley@cadmusgroup.com

Panel Member Roll Call

Transportation Advisory Panel Members

Marie Therese Dominguez, Chair
NYSDOT

Jared Snyder
NYSDEC

Paul Allen, M. J. Bradley & Associates

Dimitris Assanis, Stony Brook University

Steve Finch, AAA Western & Central New York

Albert Gore III, Tesla

Kendra Hems, Trucking Association of New York

Elgie Holstein, Environmental Defense Fund

Renae Reynolds, New York City Environmental Justice Alliance

Porie Saikia-Eapen, Metropolitan Transit Authority

John Samuelsen, Transport Workers Union of America AFL-CIO

Vacant

Kerene Tayloe, WE ACT for Environmental Justice

Julie Tighe, NYS League of Conservation Voters

Craig Turner, Buffalo Niagara International Trade Gateway Organization

Nancy Young, Airlines for America

Bob Zerrillo, New York Public Transit Association

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New York Clean Transportation Roadmap Preliminary Results:

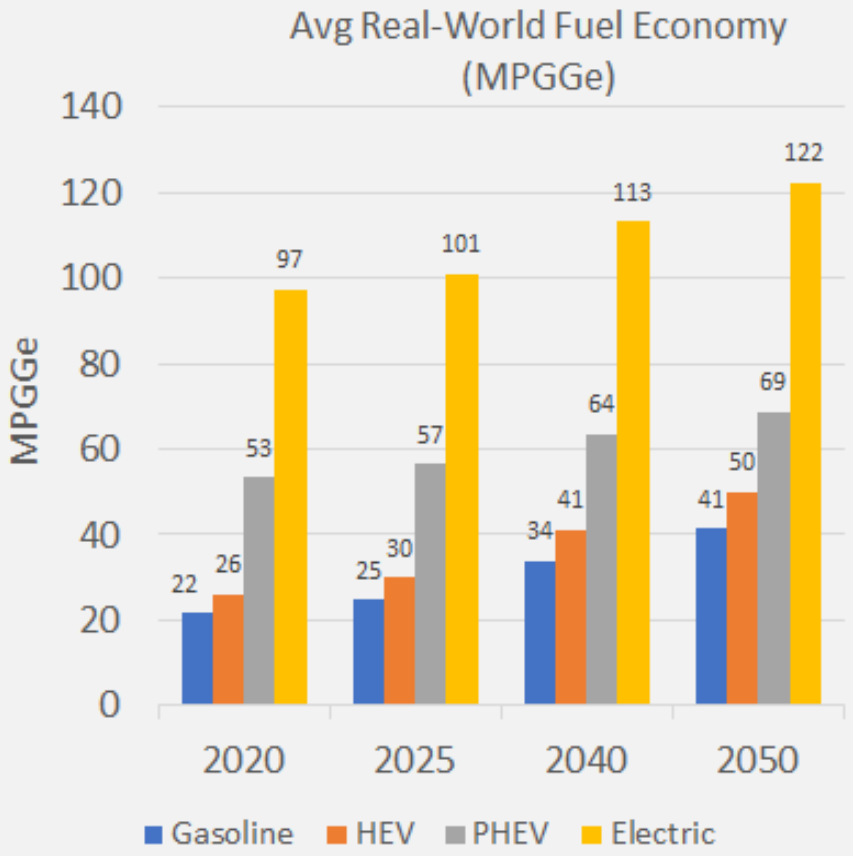
GHGs and Energy

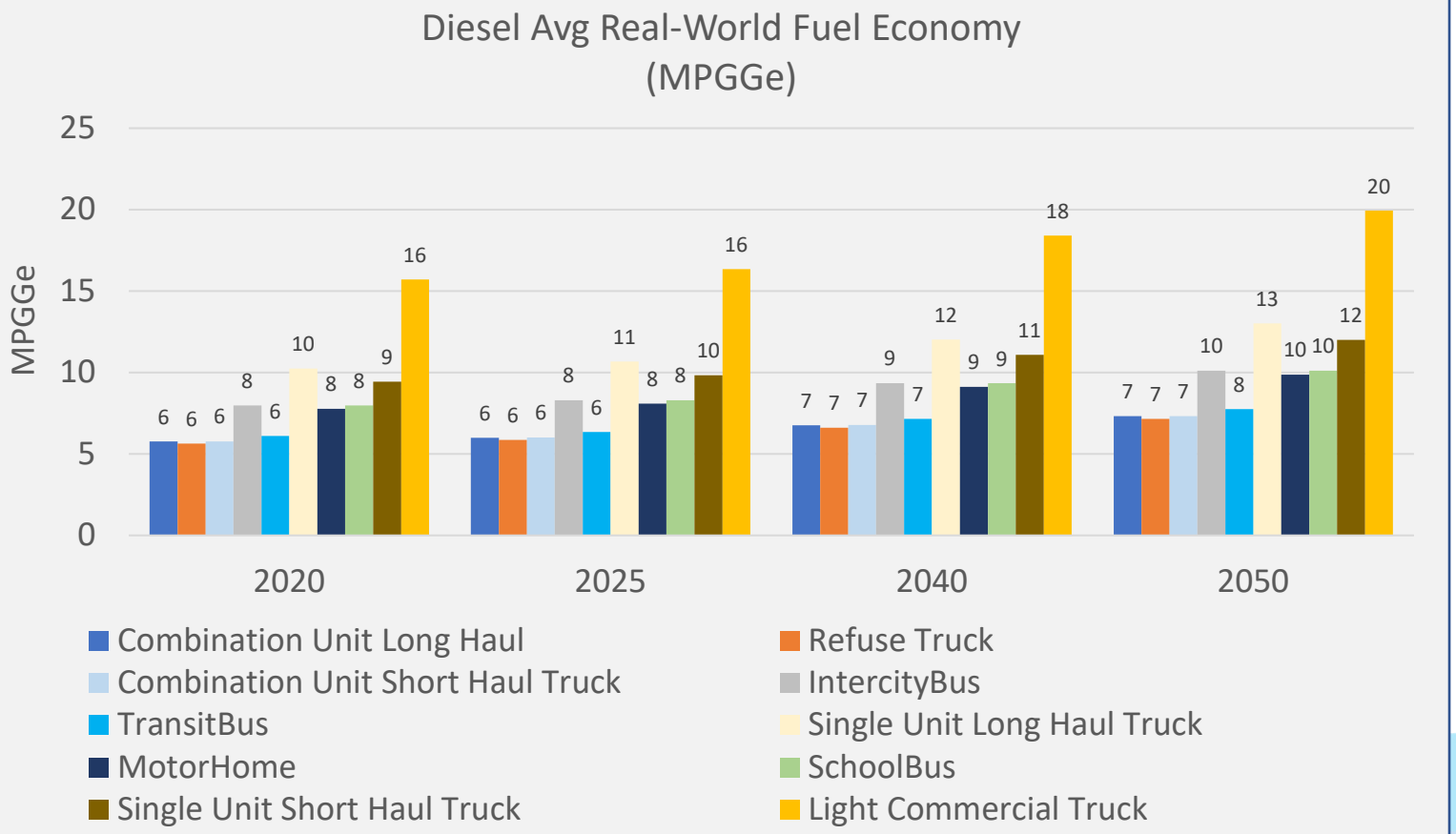
April 9, 2021

Agenda | Preliminary Results: GHGs and Energy

- **Reference Case**
- Scenario Approach
- Mitigation Cases
- Example of Individual Policy Effects
- Next Steps

Reference Case | Fuel Economy Assumptions





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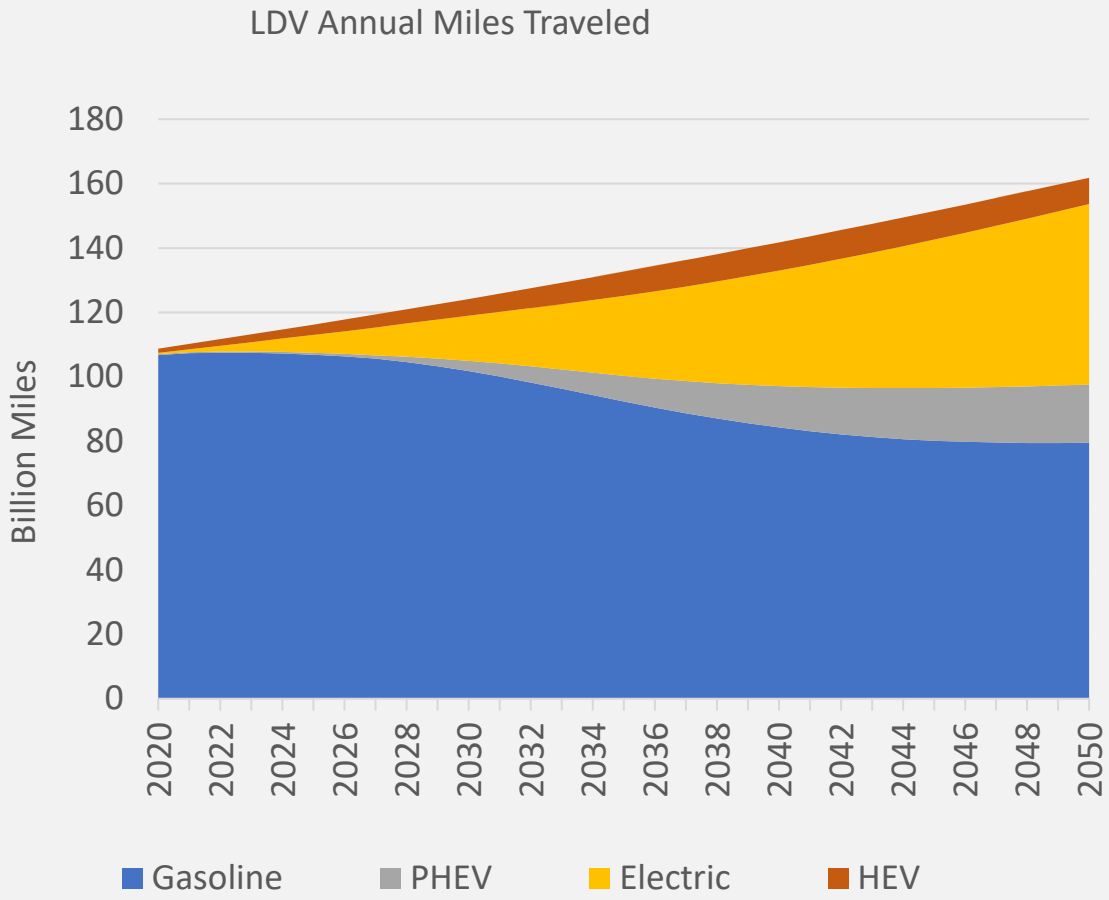
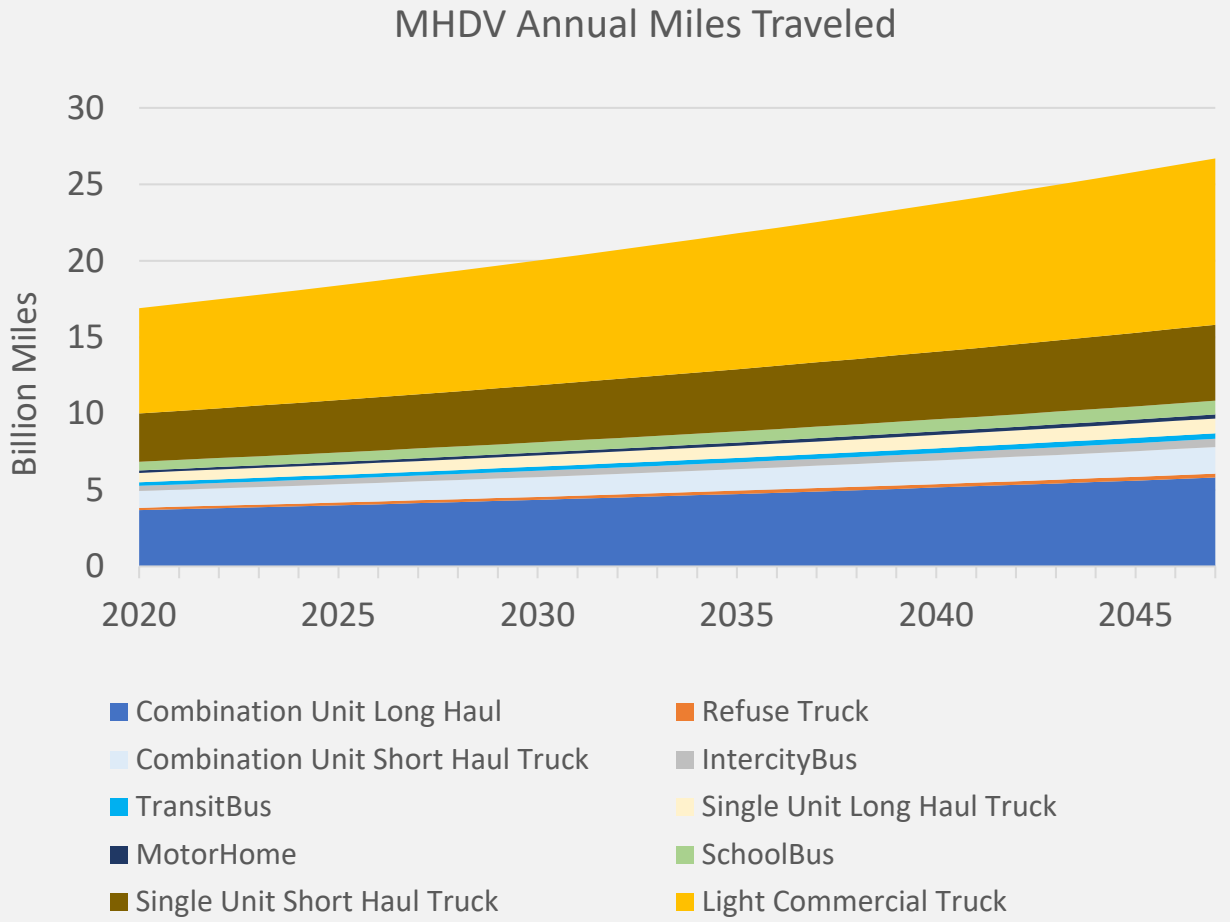
Reference Case | VMT Model Results





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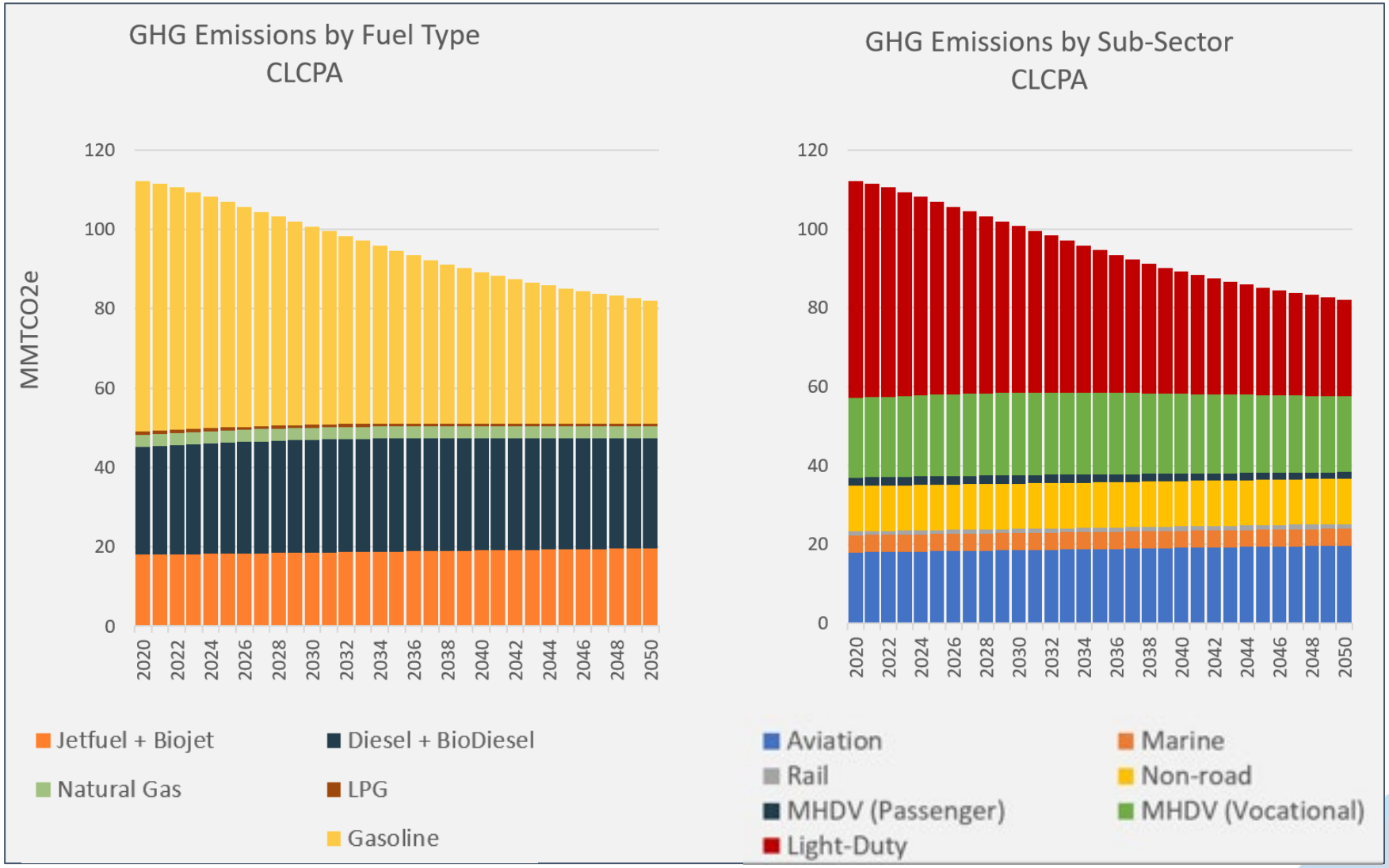
Reference Case | GHG Emissions*



*Figures use 20-year GWP from CLCPA GHG emission factors.

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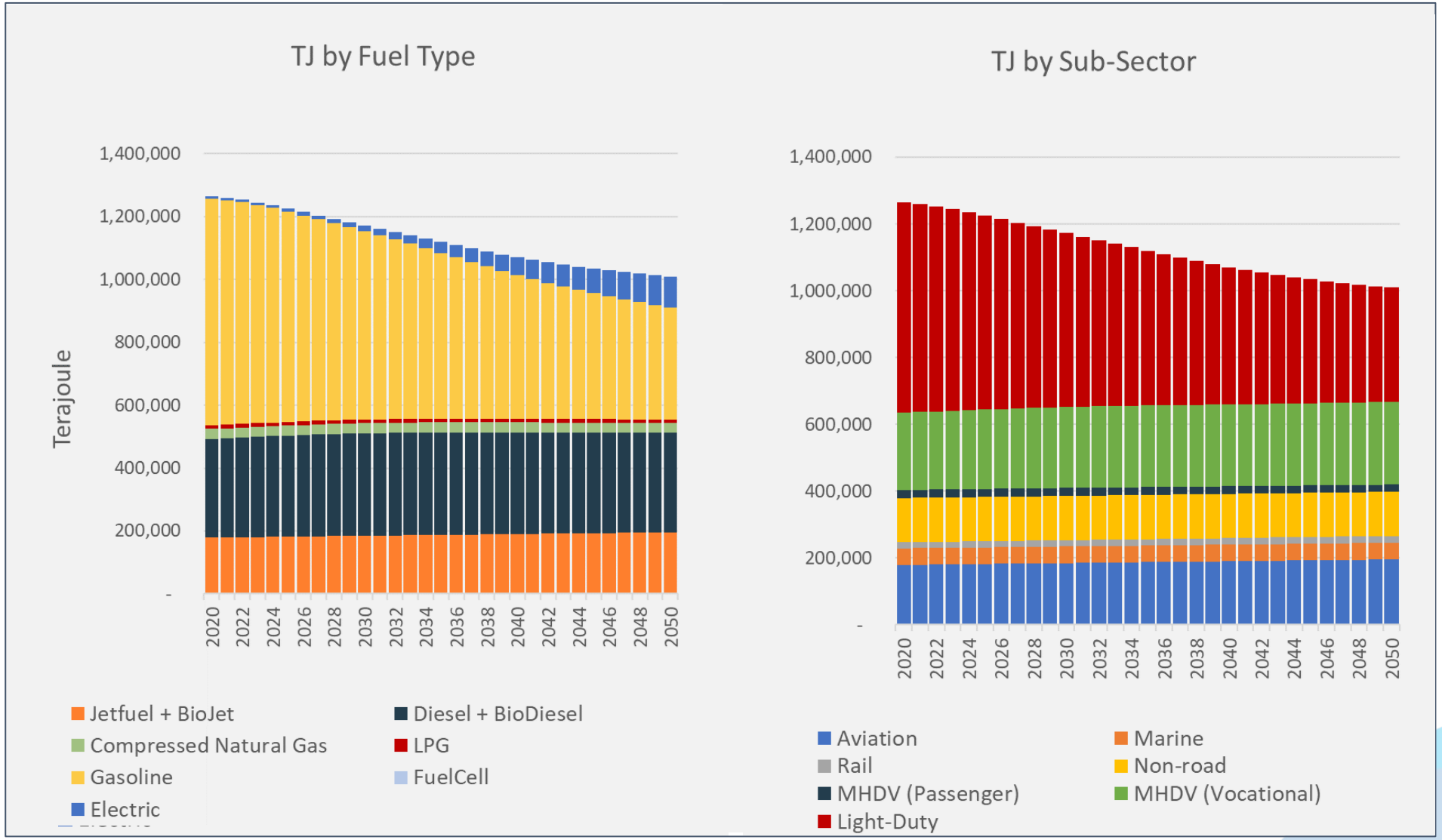
Reference Case | Final Energy



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Agenda | Preliminary Results: GHGs and Energy

- Reference Case
- **Scenario Approach**
- Mitigation Cases
- Example of Individual Policy Effects
- Next Steps

Scenario Approach | Mitigation Scenarios (1/2)

Simulated Policies	Mitigation 1	Mitigation 2	Mitigation 3	Mitigation 4
	Electrification Emphasis		Mixed Electrification/Hydrogen Emphasis	
	Moderate VMT/Mode Shift Policies	*Agressive VMT/Mode Shift Policies*	*Moderate VMT/Mode Shift Policies*	*Agressive VMT/Mode Shift Policies*
Cap-and-invest, LCFS, carbon price	$20/ton in 2030 // $100/tonne in 2050	$10/tonne in 2030 // $50/tonne in 2050	Same as M1	Same as M2
Ethanol blend within gasoline pool (2035)	15%	10%		
BD/RD blend within diesel pool (2035)	40%	15%		
Biojet blend within jet fuel pool (2050)	75%	50%		
Advanced Clean Cars II, feebate, vehicle purchase incentives	LDV sales increase to 100% BEV by 2035		LDV sales increase to 90% BEV, 10% FCEV% by 2035	
Advanced Clean Truck	Medium-/heavy-duty vehicle sales increase to 100% BEV by 2045 (timing varies by vehicle type)		Medium-duty vehicle sales increase to 50% BEV, 50% FCEV by 2045; Heavy-duty vehicle sales increase to 100% FCEV by 2045 (timing varies by vehicle type)	
EVSE access expansion	EVSE expands sufficiently so it is no longer a constraint to vehicle sales			
Hydrogen station access			Hydrogen station access expands so it is no longer a constraint on vehicle sales	
EV & FCEV Education/Outreach	Marketing campaigns increased familiarity by 2x by 2030		Same as M1	Same as M2

Scenario Approach | Mitigation Scenarios (2/2)

Simulated Policies	Baseline	Mitigation 1	Mitigation 2	Mitigation 3	Mitigation 4
		Electrification Emphasis		Mixed Emphasis	
		Moderate VMT/Mode Shift Policies	*Agressive VMT/Mode Shift Policies*	*Moderate VMT/Mode Shift Policies*	*Agressive VMT/Mode Shift Policies*
Smart growth	2050 Reference Case value for fraction of HH in mixed-use neighborhoods ranges from 4 to 74% across MSAs; 2050 Reference Case value for transit service level increases by 34%	20-25% increase in HH in mixed-use neighborhoods; 100% increase in transit service level	25-30% increase in HH in mixed-use neighborhoods; 200% increase in transit service level	Same as M1	Same as M2
Complete Streets	Start value for % walking or biking to work ranges from 0.7% to 12.1% across counties	5% of workers walk, bike, and take e-bikes by 2050*	10% of workers walk, bike, and take e-bikes by 2050*		
Employer telework + TDM measures	Start value ranges from 2 to 65% across counties		Share of workers and households participating in TDM programs increases by 35 percentage points in each county by 2050		

*E-bikes includes electric scooters, ebikes, bikes, shared bikes, electric skateboards

Agenda | Preliminary Results: GHGs and Energy

- Reference Case
- Scenario Approach
- **Mitigation Cases**
- Example of Individual Policy Effects
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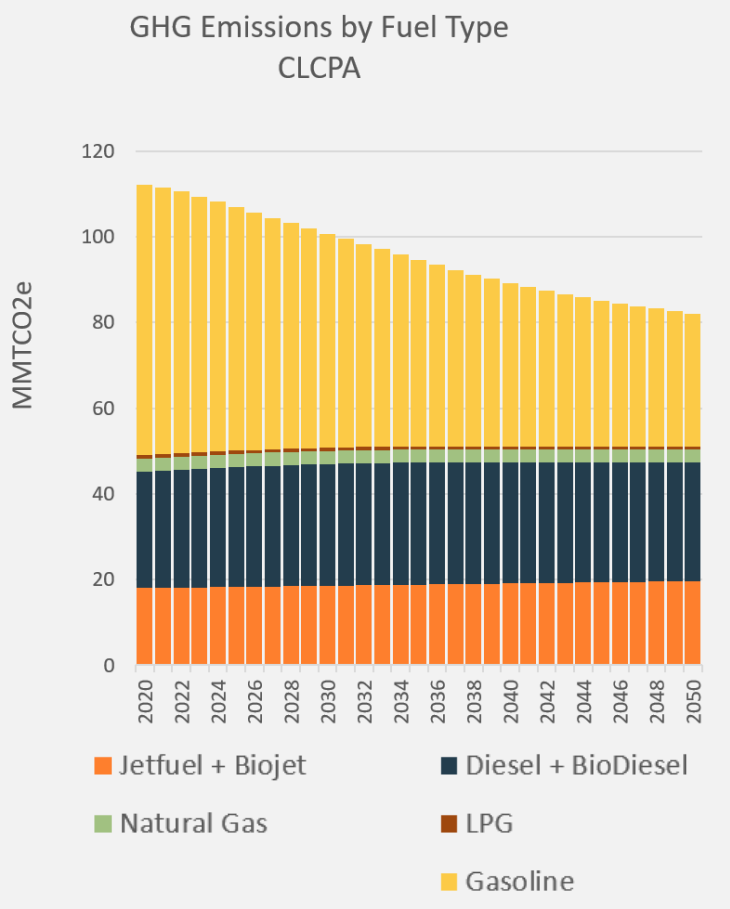
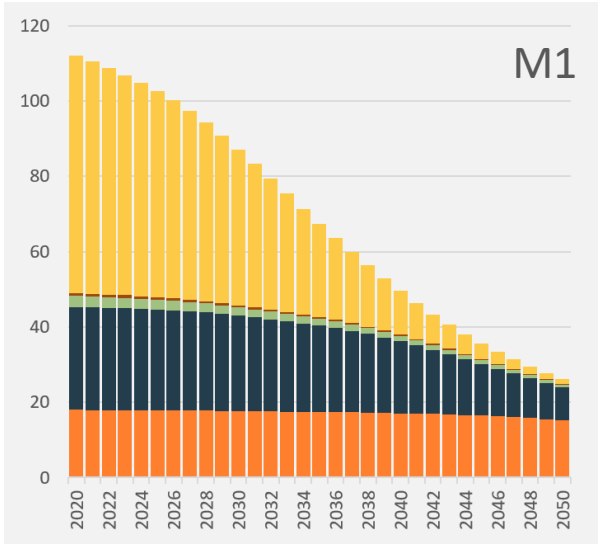
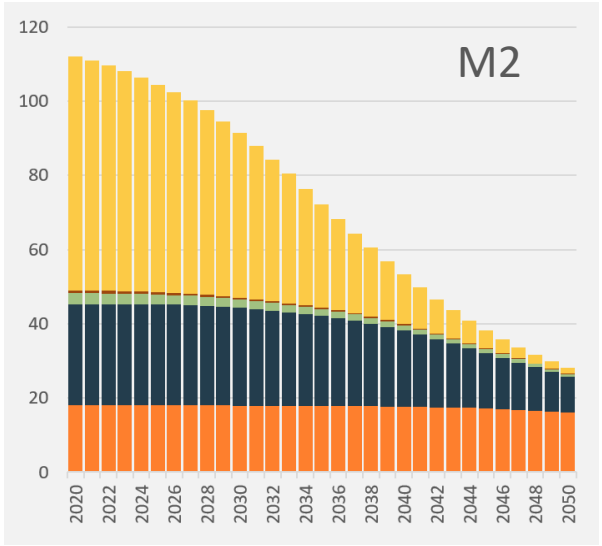
Mitigation Cases | GHGs Using CLCPA Emission Factors*

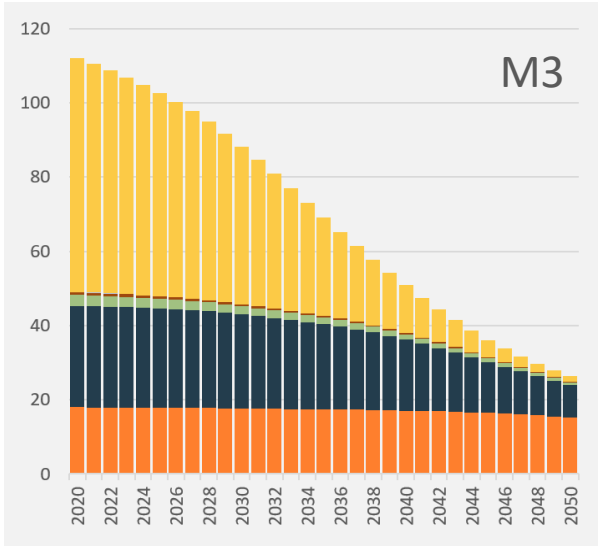
Comparison across scenarios

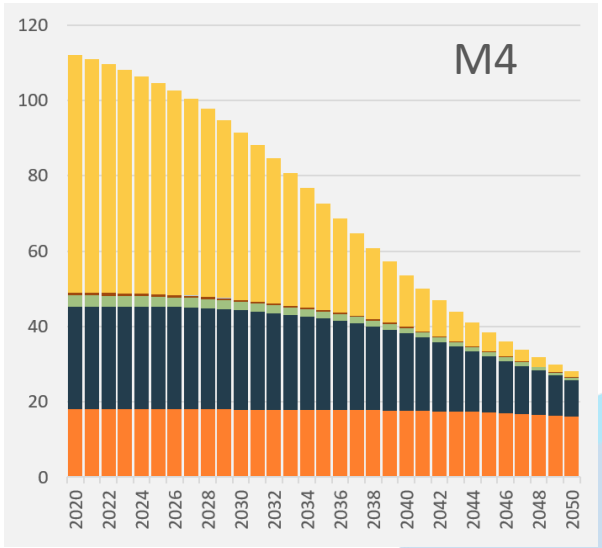
Reference











*Figures use 20-year GWP from CLCPA GHG emission factors , including upstream.

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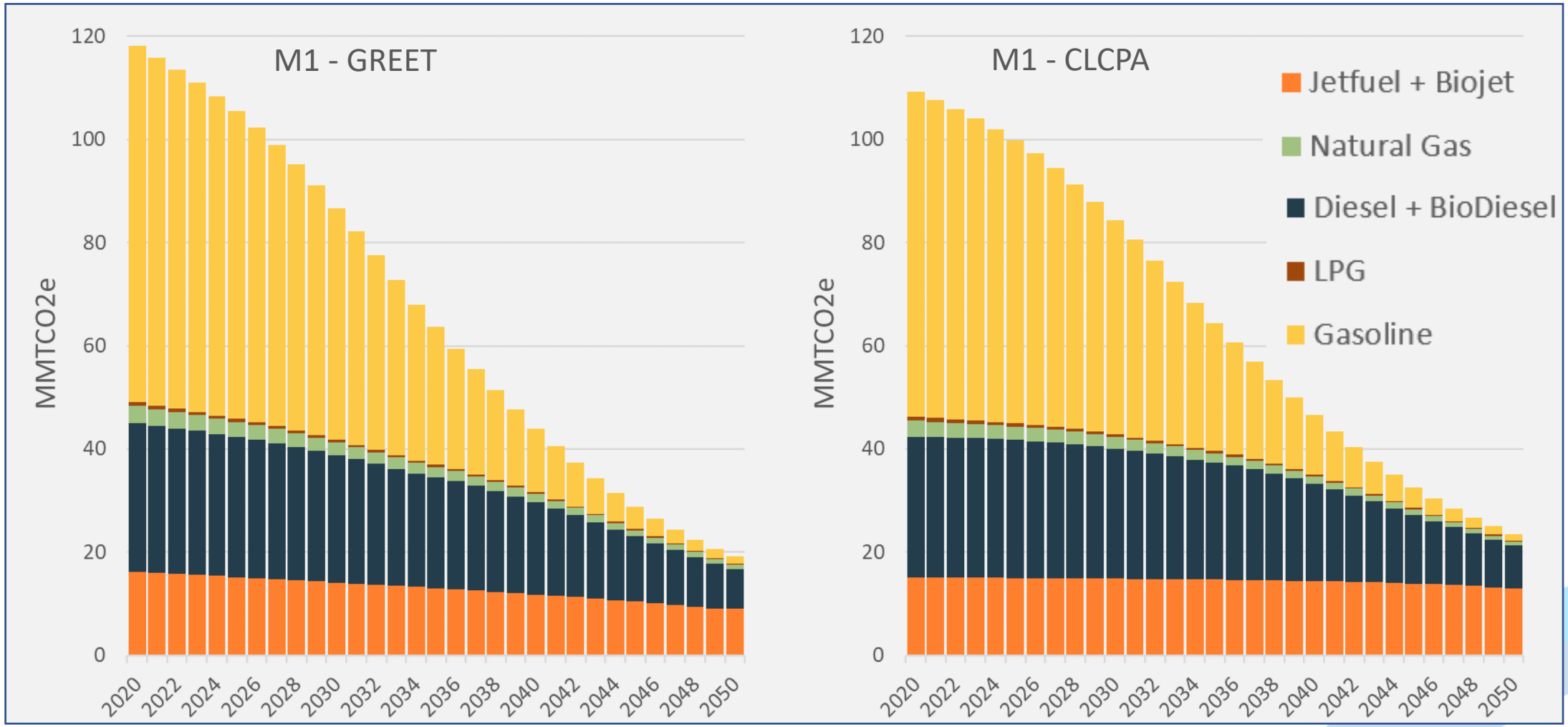
Mitigation Cases | GREET vs. CLCPA Emission Factors

GREET WTW GWP20 vs. CLCPA (GWP20 with upstream): GREET emissions 3.8 MMT lower, still >2050 CLCPA target



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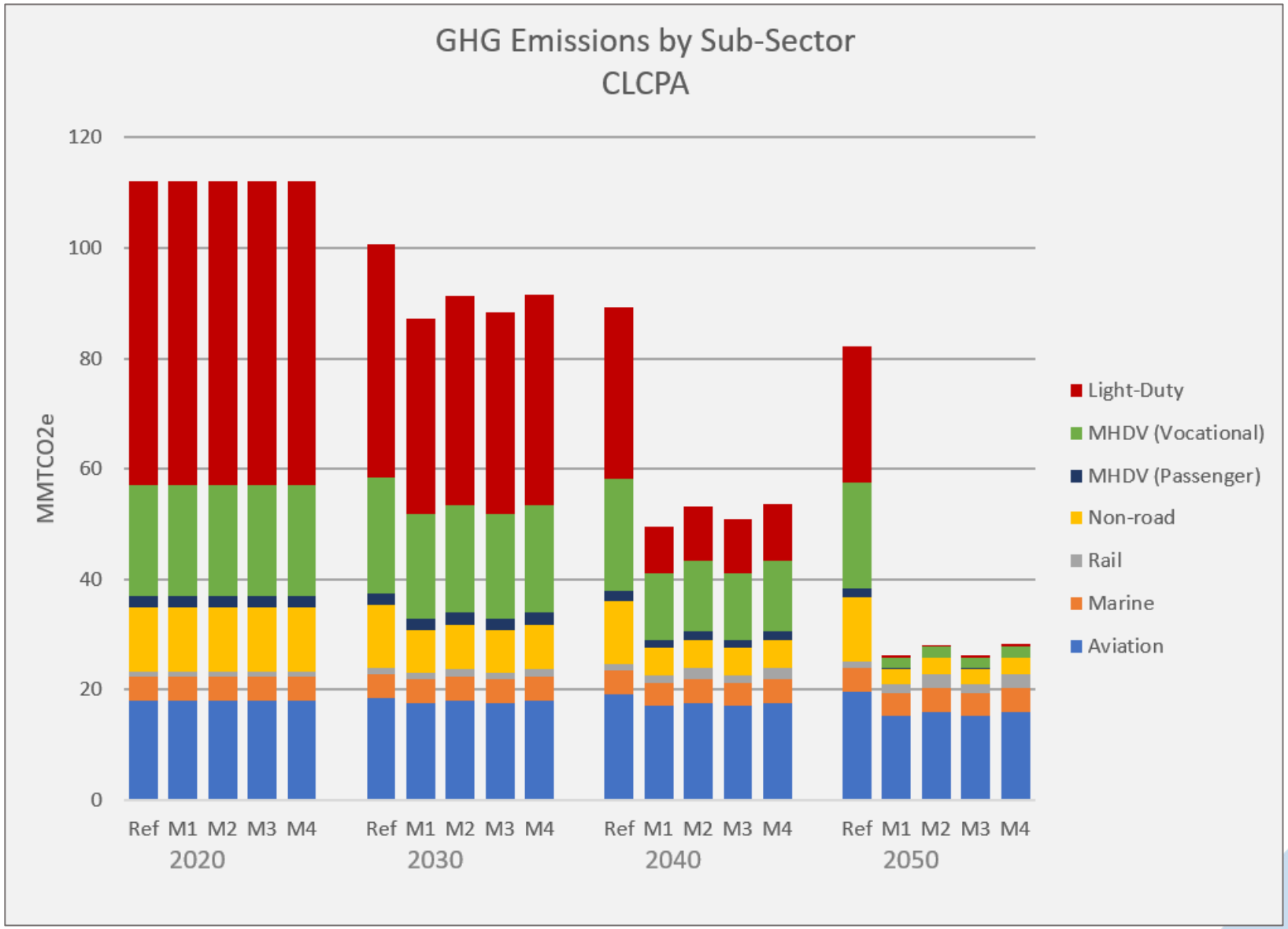
Mitigation Cases | GHG Emissions by Scenario & Year*



*Figures use 20-year GWP from CLCPA GHG emission factors, including upstream.

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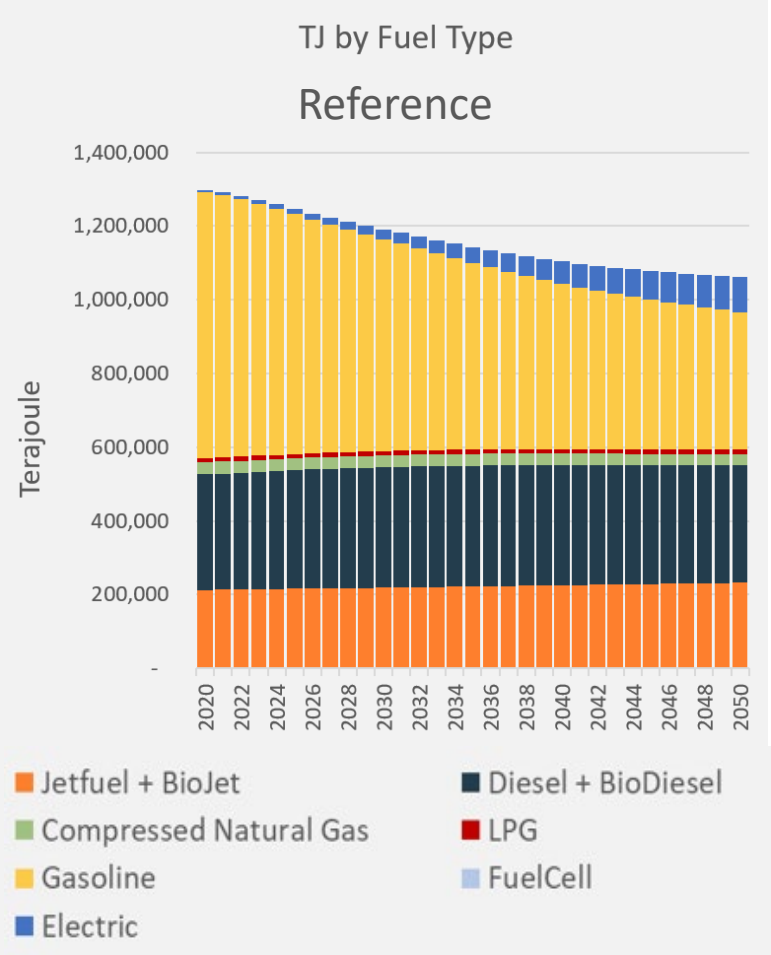
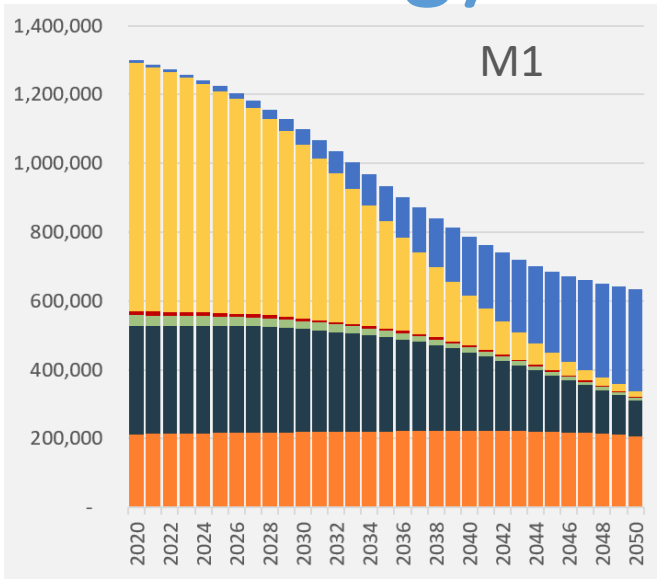
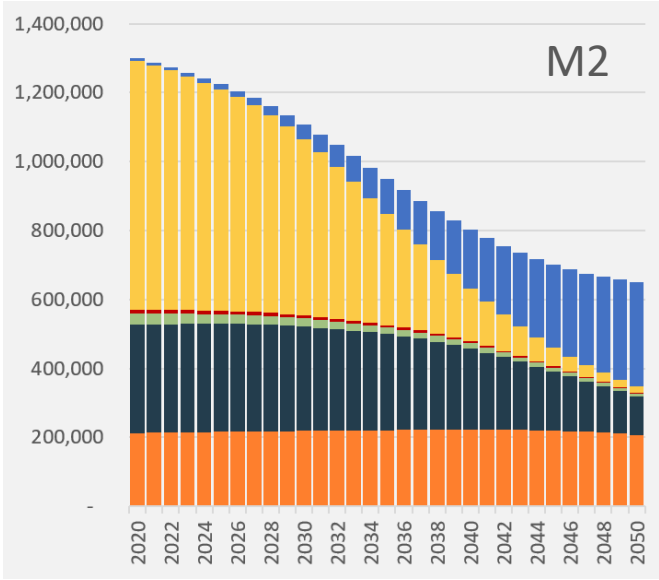
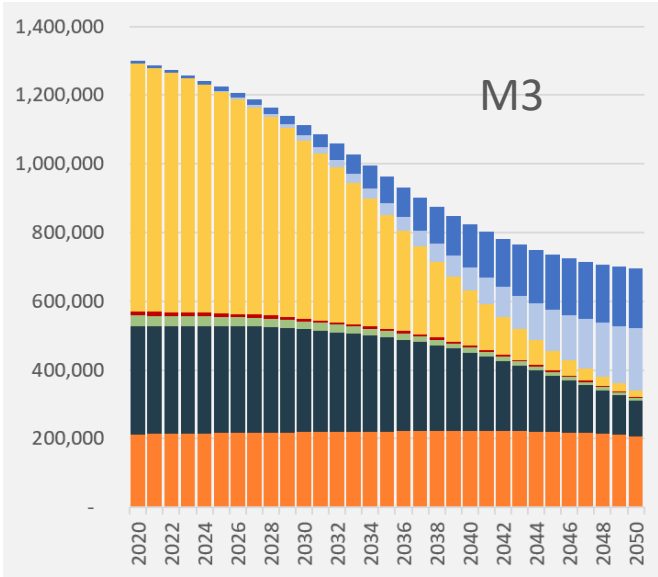
Mitigation Cases | Direct Energy Use

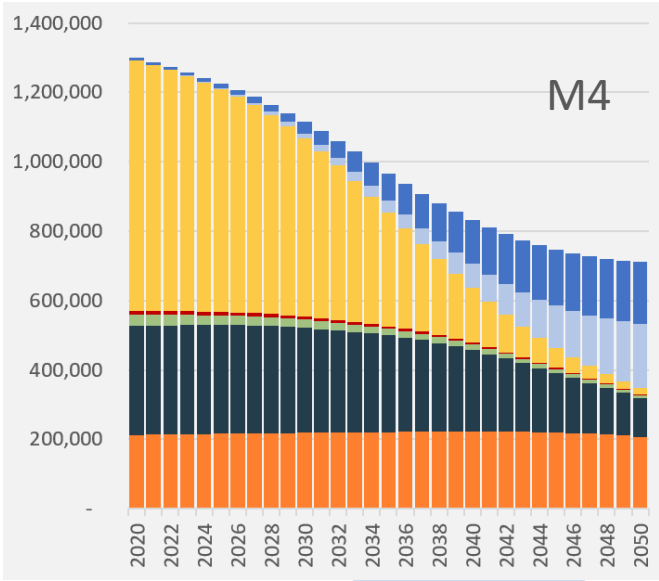
Comparison across scenarios











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Agenda | Preliminary Results: GHGs and Energy

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- **Example of Individual Policy Effects**
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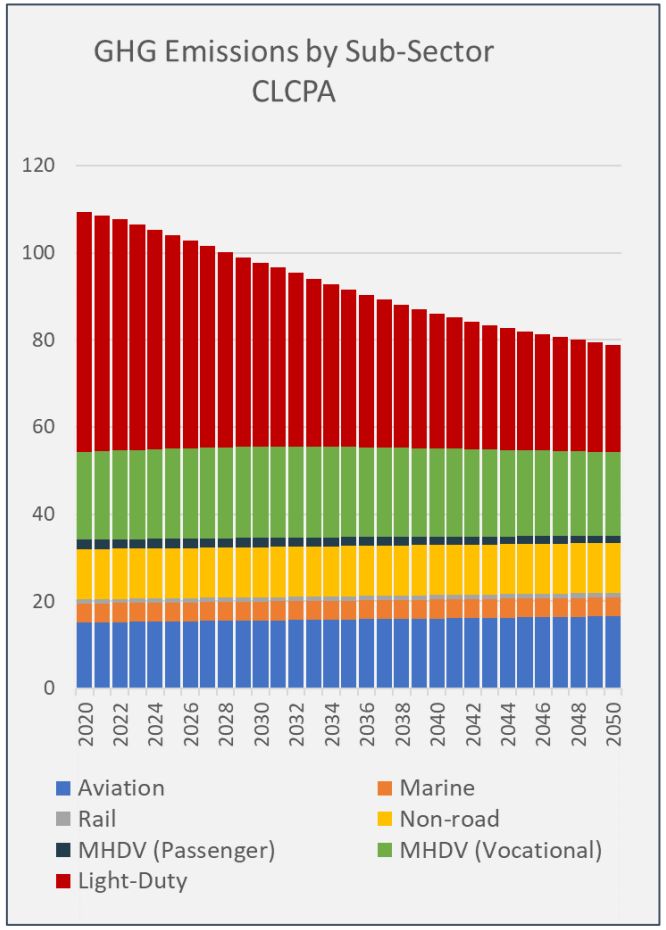
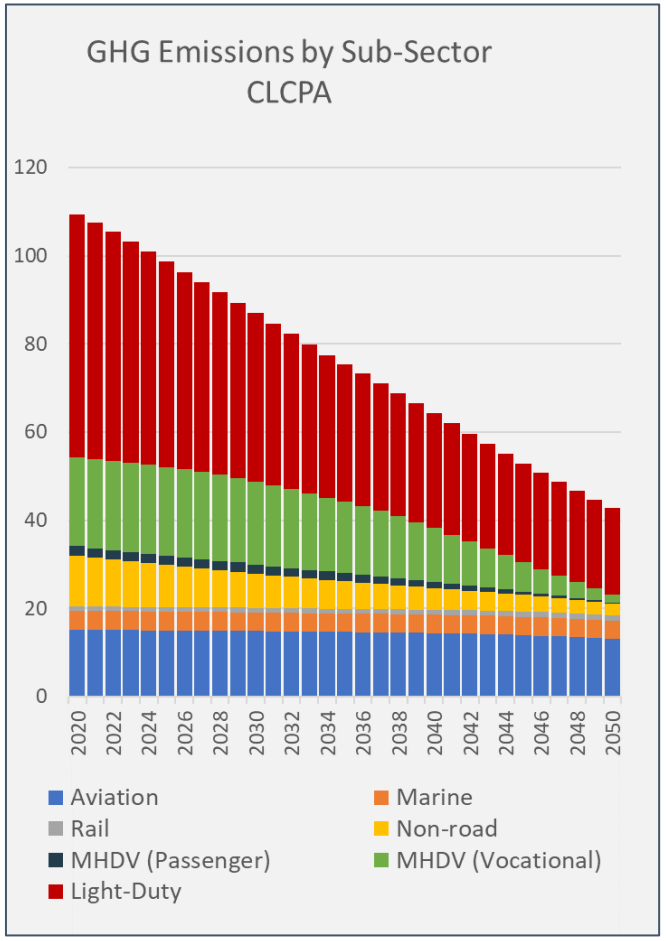
Example| Individual Policy Effects

Policy sequencing effects – Mitigation Scenario 1: Advanced Clean Cars 2 reduces 19.3 MMT in 2050

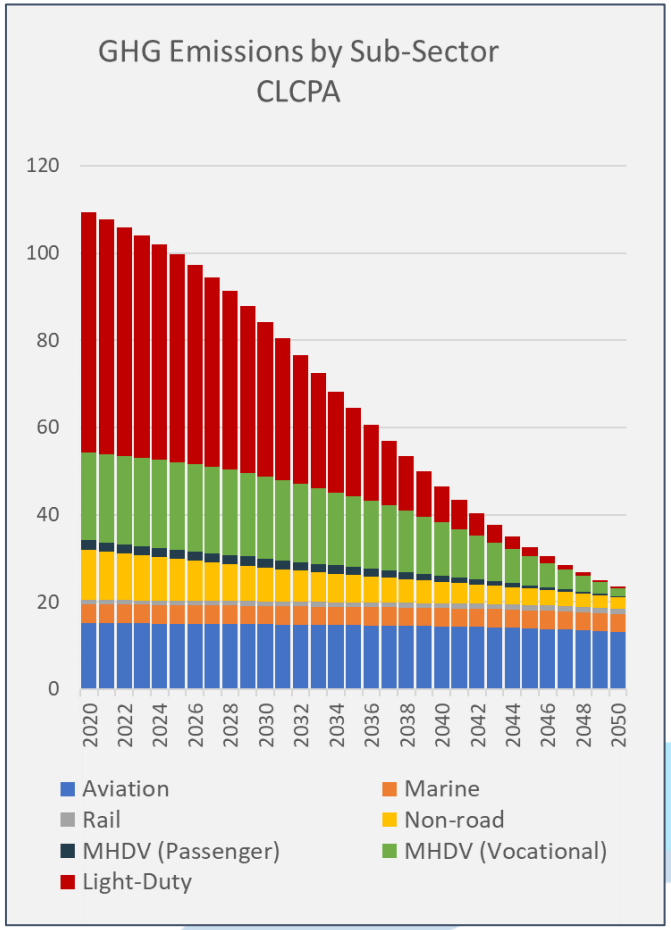
Reference Case



All Policies *except Advanced Clean Cars 2*



All Policies



*Figures use 20-year GWP from CLCPA GHG emission factors.

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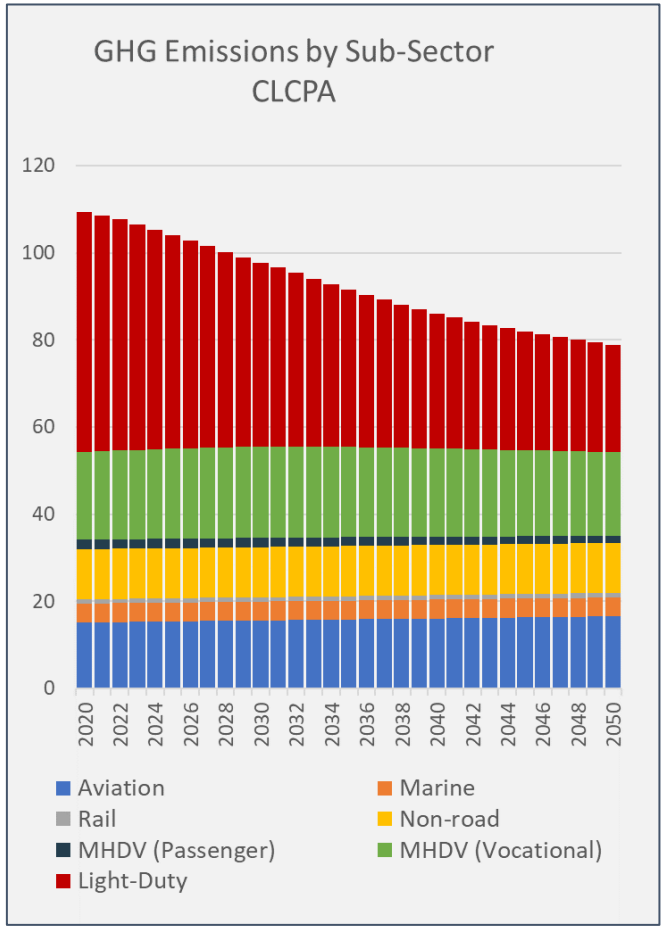
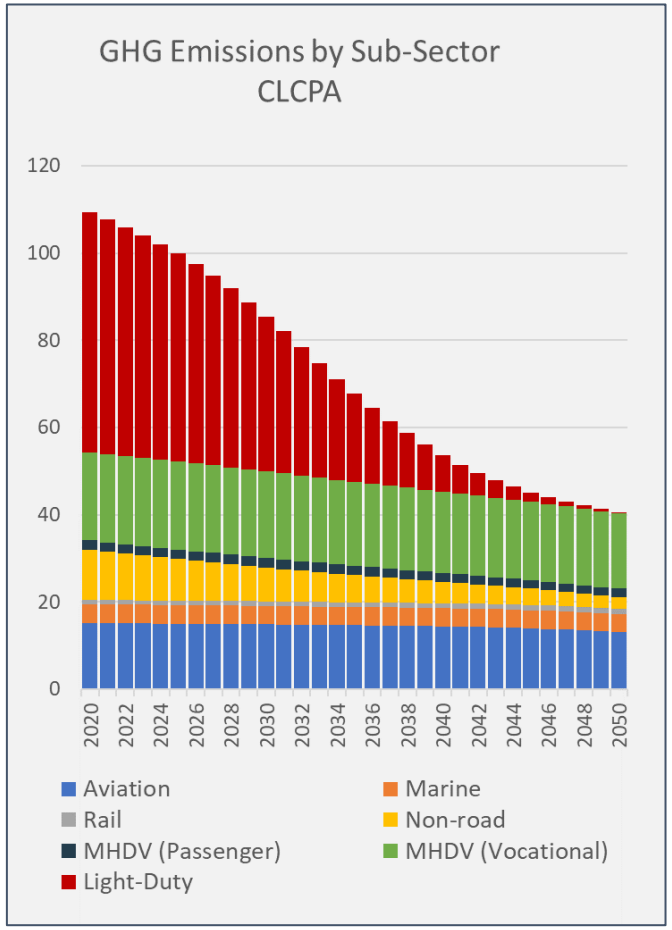
Example| Individual Policy Effects

Policy sequencing effects – Mitigation Scenario 1: Advanced Clean Trucks Rule reduces 16.7 MMT in 2050

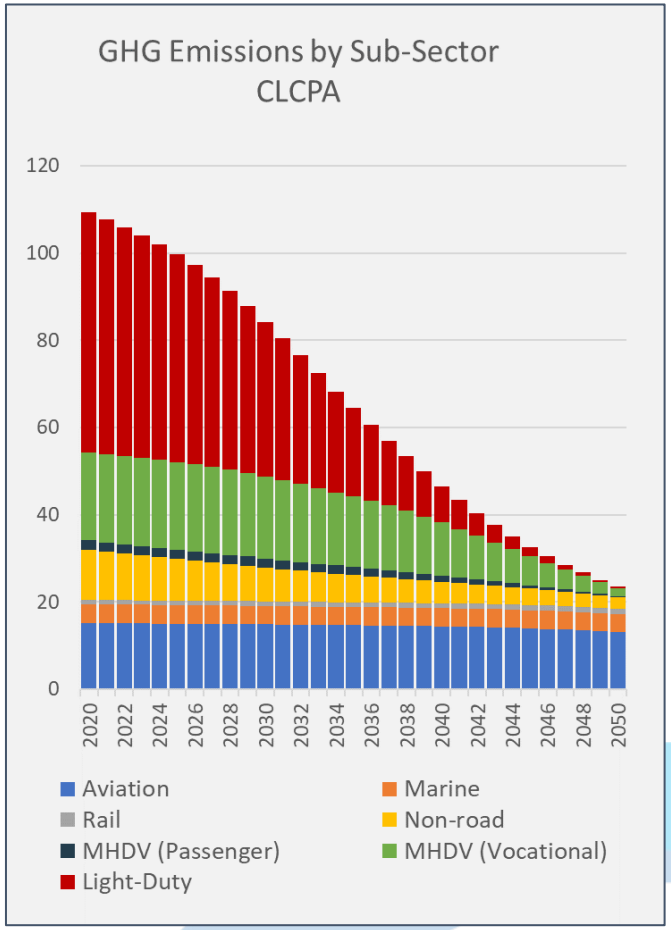
Reference Case



All Policies *except Advanced Clean Trucks*



All Policies



*Figures use 20-year GWP from CLCPA GHG emission factors.

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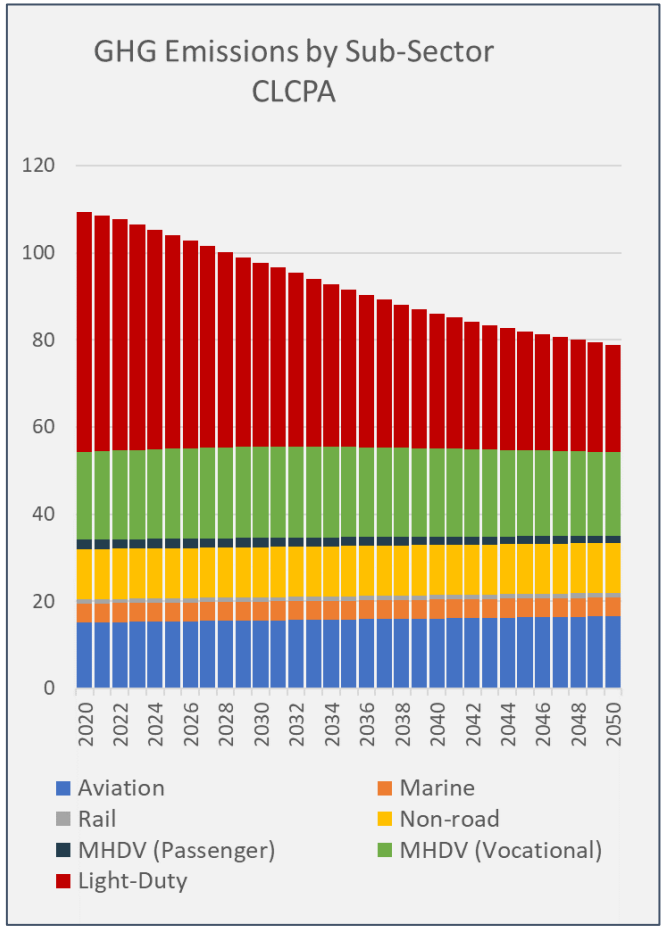
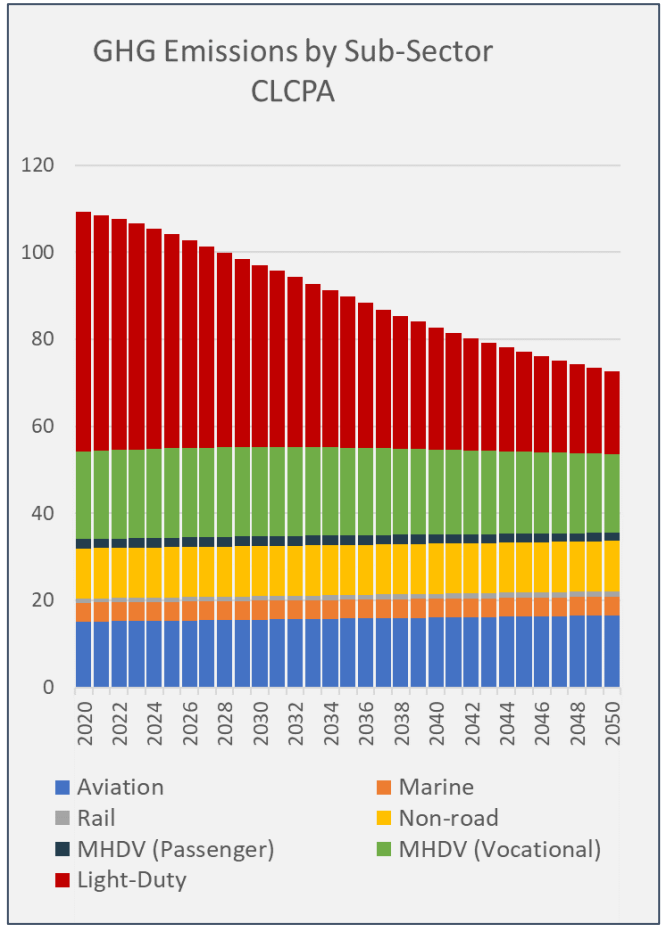
Example| Individual Policy Effects

Policy sequencing effects – Mitigation Scenario 1: VMT/SE reduces 3.8 MMT in 2050

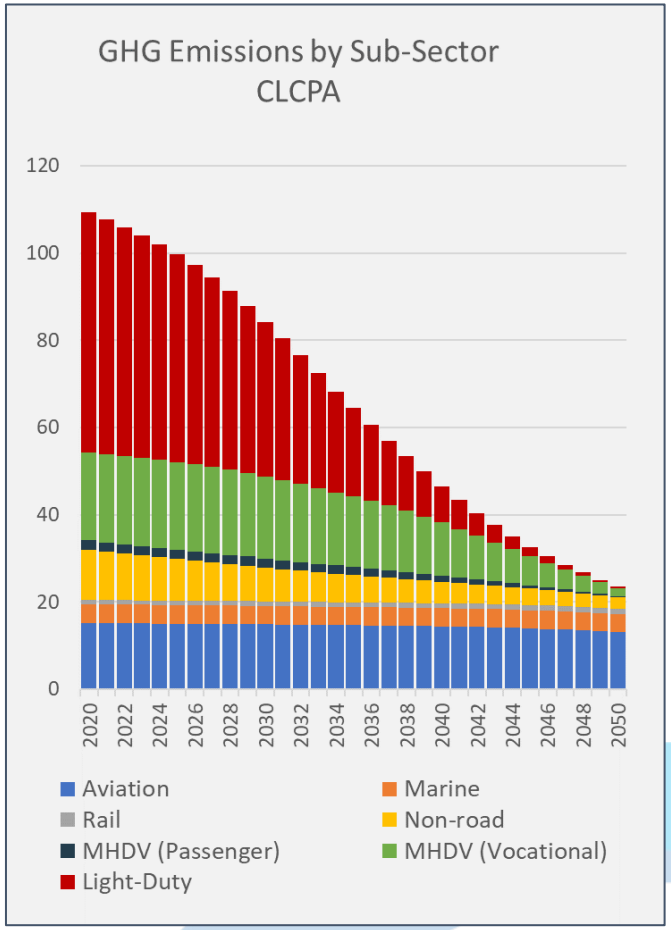
Reference Case



ONLY VMT/SE Policies



All Policies



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Agenda | Preliminary Results: GHGs and Energy

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Next Steps | Additional Analysis Underway

Activity	Estimated date
• ***GHGs***	complete
• ***Energy***	complete
• Criteria Pollutants	*expected end of April*
• Equity	*expected end of April*
• Societal Costs	*expected end of April*
• State Fiscal Costs	*expected end of April*

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Thanks!

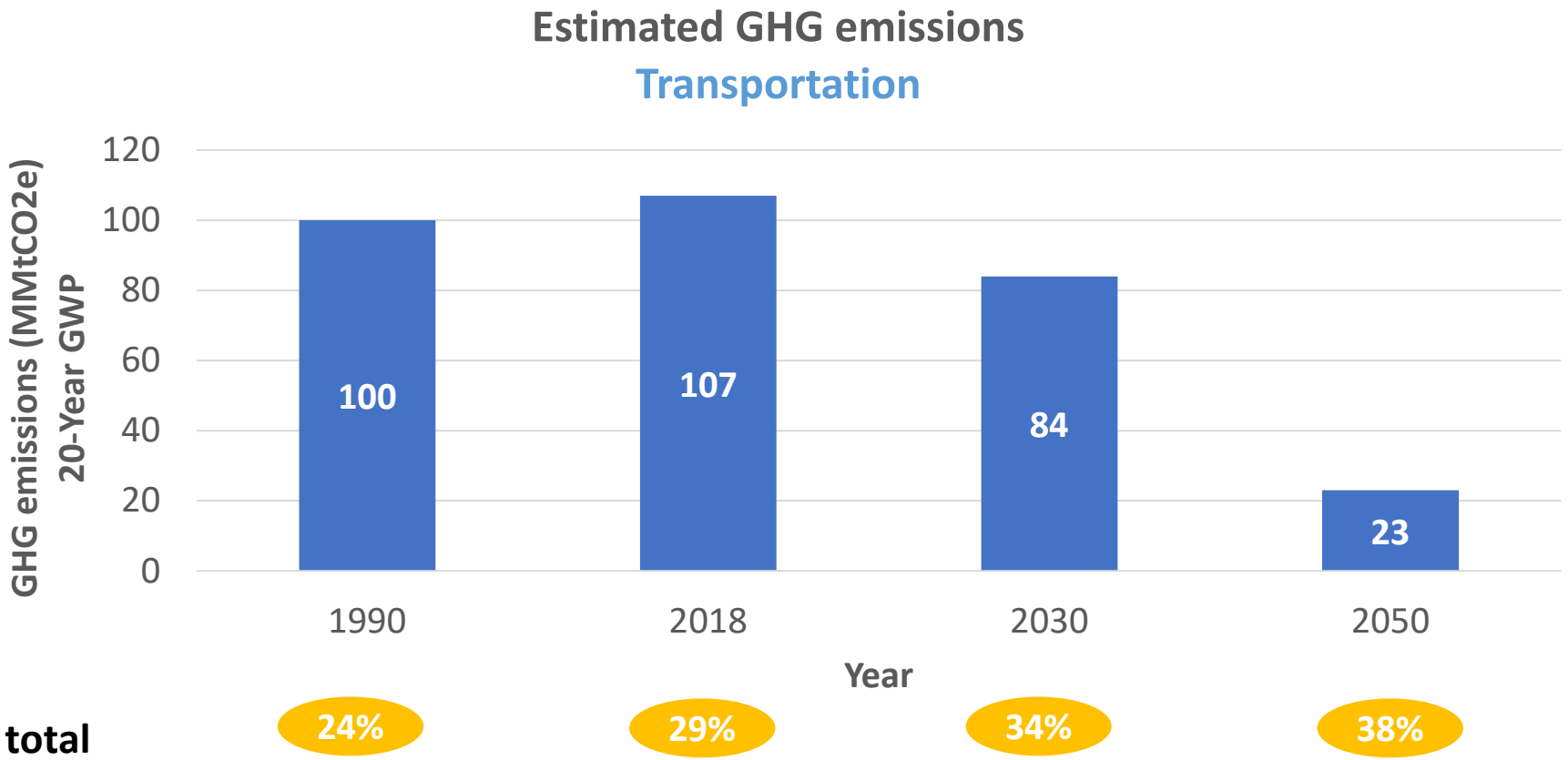
Questions?

Health and Equity Roundtable Report out

Review of Transportation Advisory Panel Recommendations Templates

- Electrification & Fuels
- Public Transportation
- Smart Growth
- Market Based Policies/Funding and Finance

Aggregate GHG emissions impact of Transportation panel recommendations



% of total NY emissions

Scope (2018 Subtotal):

- Fuel Combustion (80mmt)
- *Imported Fossil Fuels (27mmt)*

Electrification

Mitigation strategy summary

Draft Material

Initiative #	Description	Action type	Emissions impact	Ease of implementation	Cost
1	Transition to 100% zero-emission light duty vehicle sales	Regulatory, Financial, Legislative	High	Medium	$$$
2	Transition to zero emission Medium/Heavy Duty Vehicles & Non-Road Vehicles	Regulatory, Financial, Legislative	Medium	Medium	$$$

*Note: Draft recommendations and associated timeframes that include regulations will depend on the type of regulation and its governing body and legislation, State Administrative Procedure Act rulemaking requirements and timelines, an ongoing assessment of feasibility, impacts and analysis of what timeframes are needed to meet New York State's climate goals.

Mitigation strategy: 100% Zero Emission Passenger Vehicles – Overview

Draft Material

Description:	Transition to 100% zero-emission light duty vehicle sales		
Action type:	Regulatory, Financial, Legislative		
GHG reduction by 2030:	Medium	**GHG reduction by 2050:**	High
Cost and funding considerations:	$$$ - Nearly $1B in ratepayer and NYPA funding is already committed for EV charging station installations. ZEV incentives can be supported through a revenue-neutral feebate, but additional assistance may be needed to help LMI New Yorkers replace old gasoline vehicles with ZEVs		
Ease of implementation:	Medium – some elements of this strategy have already been implemented in NYS; others are new to NYS but have been tried elsewhere		

Risks / Barriers to success	Possible mitigants
1. Lack of consumer awareness/interest and consumer concerns about technology & charging 2. Potentially high cost of supporting charging infrastructure and ZEV incentives 3. Unmanaged charging could have significant costs for electric grid operators/ratepayers	1. Coordinated and cooperative marketing campaign with industry partners 2. ZEVs are expected to reach price parity with gasoline cars by 2028; charging stations are better investments with more ZEVs on the road 3. Utility managed charging programs and TOU rates can help shift charging to lower cost off-peak times

Mitigation strategy: 100% Zero Emission Passenger Vehicles – Components of the strategy

Draft Material

Components required for delivery *(Brief description of action required)*	**Implementation lead** *(Entity responsible for completing)*	**Time to implement** *(Time required to implement)*	**Other key stakeholders** (*Entities that need to be engaged)*
Adopt Zero Emission Vehicle sales regulations	DEC	1-2 years	NYSERDA, OEMs, car dealers, utilities
Feebate/ZEV purchase incentives: feebates would offer a rebate for ZEVs funded by a small fee on gasoline vehicles; higher rebates for LMI customers who buy new or used ZEVs. For LMI consumers. complement rebates with affordable financing options	DEC, NYSERDA, DOB	1-2 years	Car dealers, OEMs
ZEV Awareness-Building Activities: jointly fund consumer engagement activities (advertising, educational events, dealer engagement) with local partners and OEMs	NYPA, NYSERDA	6-12 months	Car dealers, OEMs, utilities, local businesses
Reduce ZEV sales barriers: allow direct-to-consumer sales by ZEV-only manufacturers, offer dealer incentives for franchise dealers	Legislature, DMV	6-12 months	OEMs, car dealers
Electrify for-hire vehicles: provide incentives or requirements for FHV owners to purchase ZEVs, support charging/fueling stations for FHVs	DEC, NYSERDA, NYPA, NYC	1-3 years	Taxi owners, ridehailing companies, charging station providers

Mitigation strategy: 100% Zero Emission Passenger Vehicles – Components of the strategy

Draft Material

Components required for delivery *(Brief description of action required)*	**Implementation lead** *(Entity responsible for completing)*	**Time to implement** *(Time required to implement)*	**Other key stakeholders** (*Entities that need to be engaged)*
Clean fuel regulations that support ZEV technology deployment	DEC, NYSERDA	1-2 years	Fuel producers, utilities, fleet users
EV Charging/Fueling Station investments, focused on disadvantaged communities, multi-unit dwellings, fast charging, EV-ready building codes: provide rebates and additional direct investment in EV charging stations and hydrogen filling stations	DPS, NYPA, Utilities, NYSERDA, NYGB, DOS	3-12 months	EV charging station developers
Utility Rate Design Changes: direct utilities to implement programs that encourage off-peak charging and/or controlled, managed charging, and to create appropriate rate options for high-powered charging	DPS	6 months-2 years	NYPA, NYSERDA, utilities, technology providers, EV charging station developers, fleet owners

Mitigation strategy: 100% Zero Emission Passenger Vehicles – Benefits and impacts

Draft Material

Anticipated Benefits and Impacts	
Disadvantaged communities	Enhanced incentives for residents of disadvantaged communities are essential for faster ZEV adoption in disadvantaged communities. Incentives that support used ZEV purchases and EV charging at multifamily buildings can be especially effective at increasing ZEV adoption among underserved populations. Local ownership of EV charging stations and workforce development can support economic opportunities in disadvantaged communities.
Health and co-benefits	Zero emission vehicles improve local air quality, with public benefits including improved public health, including a reduction in asthma and other respiratory illnesses. Complement electrification with power sector strategies to phase down reliance on peaking units in or near overburdened communities.
Just transition: businesses and industries, workers	Some ZEV components are made in NYS. New jobs will be created to service and fuel EVs. Installing charging stations will provide employment opportunities. Current repair technicians will likely need to be trained to service EVs. Businesses such as vehicle dealerships, parts manufacturing, gas stations, repair shops, and parts retailers may be adversely impacted as vehicle sales shift from internal combustion vehicles to ZEVs. Workforce development in disadvantaged communities.
Other	Regulatory strategies are aligned with other jurisdictions.

Mitigation strategy: Zero emission trucks, buses and heavy equipment– Overview

Draft Material

Description:	Transition to zero emission Medium/Heavy Duty Vehicles & Non-Road Vehicles		
Action type:	Regulatory, Financial, Legislative		
GHG reduction by 2030:	Medium	**GHG reduction by 2050:**	Medium
Cost and funding considerations:	$$$ - Incentives will be needed to encourage fleets to buy zero-emission trucks and help them install ZEV charging/fueling infrastructure until total cost of ownership improves compared to diesel trucks and private financing becomes more widely available		
Ease of implementation:	Medium – some elements of this strategy have already been implemented in NYS; others are new to NYS but have been tried elsewhere		

Risks / Barriers to success	Possible mitigants
1. High upfront costs of electric trucks, buses, and equipment 2. Fleets and private financial institutions have very little experience with the technology 3. High-powered charging and hydrogen fueling can be expensive to install and can lead to high demand charges that make operating ZEVs expensive compared to diesel	1. Total cost of ownership parity is expected by 2030 or sooner; private financing can mitigate upfront costs 2. Data collection and reports from early state-funded projects 3. Support for installing charging infrastructure from utilities, others; creative approaches to utility rates that create appropriate rate options for high-powered charging

Mitigation strategy : Zero emission trucks, buses and heavy equipment -- Components of the strategy

Draft Material

Components required for delivery *(Brief description of action required)*	**Implementation lead** *(Entity responsible for completing)*	**Time to implement** *(Time required to implement)*	**Other key stakeholders** **(***Entities that need to be engaged)*
Adopt Zero Emission Vehicle sales regulations	DEC	1-2 years	NYSERDA, OEMs, utilities
ZEV purchase incentives: - Provide incentives for the purchase of ZEV trucks and buses, with a focus on fleets operating in disadvantaged communities and small fleets - Provide incentives for the purchase of non-road ZEVs, including airport GSE, cargo handling equipment, construction and farm equipment - Provide incentives or offer buybacks for small engines, including electric yard and garden equipment and small marine vessels, and encourage local electrification requirements	DEC, DOT, NYSERDA, PANYNJ, other port facilities	1-5 years	OEMs, fleet operators, airlines, port operators, construction companies, agriculture industry, yard maintenance industry
ZEV Equipment Use Requirements for State Fleet, Contractors: require an increasing % of equipment and vehicles used for state-funded projects to be ZEVs, up to 100% by a set date, to be determined based on product and related infrastructure availability	DEC, DOT, OGS, Other State Agencies	3-5 years	Construction companies, manufacturers
Fleet-based ZEV Use Requirements (e.g. ports): require trucks in use at certain types of facilities, such as ports or airports, to be ZEVs by a set date, to be determined based on product and related infrastructure availability, and consider adoption of CA Advanced Clean Fleets rules or portions thereof	DEC, PANYNJ, other port facilities	3-5 years	Fleet operators, airlines

Mitigation strategy : Zero emission trucks, buses and heavy equipment -- Components of the strategy

Draft Material

Components required for delivery *(Brief description of action required)*	**Implementation lead** *(Entity responsible for completing)*	**Time to implement** *(Time required to implement)*	**Other key stakeholders** **(***Entities that need to be engaged)*
Clean fuel regulations that support ZEV technology deployment	DEC, NYSERDA	1-2 years	Fuel producers, utilities, fleet operators, airlines
Utility Rate Design Changes: direct utilities to implement programs that encourage off-peak charging and/or controlled, managed charging, and to create appropriate rate options for medium-duty and heavy-duty vehicles and fleets	DPS	6 months-2 years	NYPA, NYSERDA, utilities, technology providers, fleet operators
ZEV Charging/Fueling Station investments: provide rebates and additional direct investment in EV charging stations and hydrogen filling stations	DPS, NYPA, Utilities, NYSERDA, NYGB	3-12 months	Fleet operators
Support electrification-based solutions to idle reduction: - Work with utilities to increase use of cold ironing/shorepower for ships - Support the use of technologies to enable idle reduction - Reduce generator use on construction sites through temporary on-site power and DERs	NYSERDA, DPS, Utilities, OGS, DASNY	3-5 years	Fleet operators, marine operators, construction companies, developers
Develop strategies to ensure availability of fuel and power for emergency fleet operations and essential public transportation during power outages	DOT, DPS, utilities, Transit operators	3-5 years	Fleet operators

Mitigation strategy: Zero emission trucks, buses and heavy equipment – Benefits and impacts

Draft Material

Anticipated Benefits and Impacts	
Disadvantaged communities	Diesel trucks and port equipment are one of the largest sources of local air pollution in disadvantaged communities. Removing diesel trucks and port equipment from use and replacing them with ZEV trucks and equipment would have a sizable impact on improving air quality in disadvantaged communities. Local ownership of electric trucks and buses and their associated infrastructure can support economic opportunities in disadvantaged communities. Incentives can be targeted to disadvantaged communities, guided in part by results of community air monitoring.
Health and co-benefits	Although they comprise only a small portion of total vehicles in the state, diesel trucks and buses are responsible for 30% of total PM and NOx emissions from mobile sources. Policies that encourage electrification of trucks, buses, and non-road equipment will generate significant public health benefits. These benefits will accrue across the state but will be especially noticeable along major highways and thoroughfares and in areas proximate to heavy industrial traffic, such as warehouse districts and ports which are often located near disadvantaged communities. Adopt complementary in-use standards to reduce emissions from existing diesel fleet.
Just transition: businesses and industries, workers	Some ZEV trucks, buses, and construction equipment and their components are made in NYS. New jobs will be created to service and fuel ZEVs; training needed for current service technicians. Installing charging stations will provide employment opportunities. Businesses such as vehicle dealerships, parts manufacturing, gas stations, repair shops, and parts retailers may need to adapt as vehicle sales shift from internal combustion vehicles to ZEVs. Workforce development in disadvantaged communities.
Other	Regulatory strategies are aligned with other jurisdictions.

Public Transportation

Mitigation Strategy – Enhanced Public Transportation/Mobility

Draft Material

Initiative #	Description	Action type	Emissions impact	Ease of implementation	Cost
1	Identify implementable strategies to significantly enhance the availability; accessibility; reliability; and affordability of public transportation services with an emphasis on unserved/underserved communities. This includes: • Doubling the service availability/accessibility of municipally sponsored upstate and downstate suburban public transportation services statewide; and. • Implementing policies and programs that support system reliability/network expansion projects identified by the Metropolitan Transportation Authority (MTA) in their current five-year capital pan/twenty-year needs study.	Legislative, Regulatory, Financial	Low-Medium	Medium	$$$$

Transportation Oriented Development - Overview

Draft Material

Description:	Transportation Oriented Development		
Action type:	Legislative, Regulatory, Financial		
GHG reduction by 2030:	Low-Medium	**GHG reduction by 2050:**	Medium
Cost and funding considerations:	• Requires new incentives to incorporate community/public transportation friendly development/redevelopment. • Disincentivizing auto dependency/congestion through pricing/parking strategies. • Compels - as a condition of funding/environmental approval - Industrial Development Agencies (IDA) and Metropolitan Planning Organizations (MPO) to participate in the development/implementation of integrated transportation/land-use plans.		
Ease of implementation:	Medium/High – May infringe upon exiting local "Home Rule" governance authority.		

Risks / Barriers to success	Possible mitigants
1. Requires fundamental changes to local land use planning/local home rule. 2. May separate the construction/purchase of parking spaces from residential/commercial development. 3. Funding and finance policies to support recommended strategies.	1. Rely on incentives to encourage community-based development approach as opposed to requirements. 2. Develop integrated transportation/land-use plans. 3. Create special assessments/districts to support projects (e.g., TIF, Congestion/Parking Pricing, proceeds from market-based policies).

Convenience/Connectivity - Overview

Draft Material

Description:	Convenience/Connectivity		
Action type:	Legislative, Regulatory, Financial		
GHG reduction by 2030:	Low-Medium	**GHG reduction by 2050:**	Medium
Cost and funding considerations:	• Operating and capital costs to: ▪ Provide first mile/last mile connectivity through accessible and integrated infrastructure. ▪ Increase the number of destinations that are accessible by public transportation, walking and biking. ▪ Increase service frequency, reliability and hours of operations. ▪ Increase the number of mobility options (e.g., micro-transit, micro-mobility). ▪ Provide high-quality amenities at public transportation facilities/stops. ▪ Accelerating new phone/app-based application technologies that provide real-time schedule information/makes transit easier to use.		
Ease of implementation:	Medium – Requires expanding travel technology development/deployment to public transportation.		

Risks / Barriers to success	Possible mitigants
1. Access to/understanding of new technology/trip planning platforms. 2. Funding and finance policies to support recommended strategies. 3. Influences of emerging technologies on services, workforce, deployment of new technologies.	1. Partner with State/county departments of labor and health and human service organizations to create neighborhood-based mobility management/travel training centers. 2. Create special assessments/districts to support projects (e.g., TIF, Congestion/Parking Pricing, proceeds from market-based policies). 3. Develop/partner with existing community-based organizations on STEM initiatives.

Fleet Modernization - Overview

Draft Material

Description:	Fleet Modernization		
Action type:	Legislative, Regulatory, Financial		
GHG reduction by 2030:	Medium	**GHG reduction by 2050:**	High
Cost and funding considerations:	• Procuring new zero-emission public transportation vehicles appropriate for the community being served. • Partnering with utility companies to consider opportunities for transportation right-of-way to generate energy for public transportation services. • Investigating developments in hydrogen fuel cell bus technologies/other renewable fuels.		
Ease of implementation:	Medium – Requires new workforce skills to operate/maintain rollingstock; manufacturer capacity/capability to support.		

Risks / Barriers to success	Possible mitigants
1. Funding and finance policies to support recommended strategies. 2. Influences of emerging technologies on services, workforce, deployment of new technologies. 3. Costs related to infrastructure/availability of parts/supplies. 4. Availability of alternative fuels (e.g., electricity, hydrogen).	1. Create special assessments/districts to support projects (e.g., TIF, Congestion/Parking Pricing, proceeds from market-based policies). 2. Develop/partner with existing community-based organizations on STEM initiatives. 3. Establish price signals to suppliers/manufactures to ensure availability. 4. Provide direct capital subsidies to address incremental costs of zero-emission vehicles.

Mitigation strategies – Components of the Initiatives

Draft Material

Components required for delivery *(Brief description of action required)*	**Implementation lead** *(Entity responsible for completing)*	**Time to implement** *(Time required to implement)*	**Other key stakeholders** (*Entities that need to be engaged)*
Procure/deploy all-electric/zero-emission – expansion and replacement - public transportation vehicles/recharging capacity.	DOT/OGS	7-10 years	NYSDEC, NYSOGS, NYSERDA, Manufacturers utilities, municipal sponsors/authorities.
Provide new incentives to incorporate community-based/public transportation friendly development/redevelopment that mitigates harmful GHG emissions.	DOS/NYSERDA	1-2 years	DEC, DOT, OGS, municipal sponsors/authorities, NYS Commercial Association of Realters, Environmental Justice Alliance, NYS Association for Affordable Housing, other.
Enhance service availability; accessibility; and affordability.	DOT, municipal sponsors/authorities	2-5 years	Federal Transit Administration, Industrial Development Agencies.
Make ready costs for support facilities.	NYPA/Utilities	1-2 years	DEC, NYSERDA, DOT.
Utility Rate Design Changes	DPS	6 months-2 years	NYPA, NYSERDA, Utilities.
Require inclusion of public transportation considerations early in local/regional planning and development processes.	DOS	3-years	DOT, municipalities, developers/realters.

Mitigation strategies - Benefits and Impacts

Draft Material

Anticipated Benefits and Impacts	
Disadvantaged communities	• Mitigating transportation related pollution levels in overburdened communities by accelerating the deployment of zero-emission bus fleets/modernizing rollingstock support facilities; engage impacted communities in development of strategies • Enhancing service availability; accessibility; and affordability; of public transportation services for individuals in rural and urbanized areas. • Making public transportation easier to use/understand. • Providing direct connectivity to longer-distance bus/passenger rail services. • Avoid policies that lead to gentrification
Health and co-benefits	• Reducing harmful pollutants/enhancing air quality. • Mitigating higher asthma/other respiratory illnesses caused by carbon/pollutants. • Facilitating a holistic approach to community development/reducing the environmental footprint of transportation on communities. • Reducing per capita growth in vehicle miles traveled.
Just transition: businesses and industries, workers	• Creating new targeted opportunities/investments in STEM initiatives/disadvantaged communities. • Developing new supply chain/manufacturing capability/capacity and workforce. • Accelerating deployment/implementation of new technologies that support travelers/makes transit easier to use. • Developing/implementing new sustainable building practices and renewable energy innovation into stations/support facilities.
Other	• Provide increased access to existing/attract new retail, hospitality, entertainment venues located within an enhanced transportation improvement district.

Smart Growth

Mitigation Strategies – Smart Growth and System Efficiency

Draft Material

Initiative #	Description	Action type	Emissions impact	Ease of implementation	Cost
1	Support Transportation-Oriented Development (TOD) that enables greater use of public transportation and other low-carbon modes	Legislative, Agency/Program, Financial	Low/Medium	Hard	$$
2	Expand the availability of low carbon transportation modes (biking, walking, carpooling, ride-sharing, micro-transit) statewide	Agency/Program, Financial	Low/Medium	Medium	$
3	Increase Smart Mobility and connected & automated vehicle deployments across NYS to improve transportation system efficiency	Agency/Program, Regulatory, Financial	Low	Medium	$$

Mitigation strategy: Transportation Oriented Development – Overview

Draft Material

Description:	Broaden the traditional concept of Transit-Oriented Development into the concept of Transportation-Oriented Development (TOD) for purposes of aligning land use, development and transportation funding with the goals of doubling public transportation upstate and significantly increasing services downstate by 2035.		
Action type:	Legislative, Agency/Program, Financial		
GHG reduction by 2030:	Low	**GHG reduction by 2050:**	Medium
Cost and funding considerations:	$$ - will require considerable alignment and coordination and inclusion of supportive services in programs		
Ease of implementation:	Hard		
Example case studies:			

Risks / Barriers to success	Possible mitigants
Will require a great deal of inter-governmental, inter-program coordination. The regional, multi-municipal nature of the effort may invoke Home Rule concerns.	Consider building off of existing regional entities and plans, such as the REDCs, NYSERDA Regional Sustainability Plans, NYSERDA Clean Energy Regional Coordinators and DEC Climate Smart Regional Coordinators.

Mitigation Strategy – Transportation-Oriented Development – Components of the Strategy

Draft Material

Components required for delivery	Implementation lead	Time to implement	Other key stakeholders
Create policies that support local efforts to reduce or eliminate parking requirements to support infill development near public transportation.	DOT, DOS	1-2 years	Municipalities
Encourage and/or require local governments to offer density bonuses around transit, reduced parking requirements, complete streets, other programs that improve transportation system. Expand/emulate NYC Dept of City Planning policies that require easements and access improvements in exchange for density bonuses for projects around rail to other areas and transit entities in the State	DOS, DOT, MTA, NYC	1-3 years	Municipalities, planners, developers
Create a revolving fund or grant program to support GEIS' for re-zonings and projects in TOD districts or overlay zones—if a developer agrees to build according to the TOD zoning and accepts certain community benefits components, such as affordable housing, green infrastructure, green building or public spaces, the developer will pay back into the fund a portion of the cost of the GEIS.	DOT, DOS	1-2 years	Municipalities
Provide technical support (possibly through DOS Smart Growth, NYSERDA Regional Clean Energy Coordinators or DEC Climate Leadership Regional Coordinators and planning grants to local governments to improve their planning and zoning process to reflect transportation- and transit-oriented development.	DOT, DOS	1 year	REDCs, Chambers, planners, transit operators

Mitigation Strategy – Transportation-Oriented Development – Components of the Strategy

Draft Material

Components required for delivery	Implementation lead	Time to implement	Other key stakeholders
Support the inclusion of freight considerations in planning and zoning decisions • Incentivize location of intermodal facilities (i.e. rail/truck) near transportation corridors eliminating need for longer- distance deliveries • Develop policies on last-mile freight delivery/warehousing in the context of community planning	DOS, DOT	2-3 years	Freight operators, municipalities
Establish a definition and criteria for PTOD to be used by state, regional and local entities to evaluate projects and project funding and include in definitions of Priority Development Areas (see LULG initiatives); incorporate the definition of PTOD into the State Smart Growth Public Infrastructure Policy Act.	DOT, DOS	6-9 months	Transit agencies, developers
Produce research and materials that demonstrate links between planning & transportation, impacts on local finances • Develop public relations and marketing materials for the public, municipalities and stakeholders that cogently explain the benefits derived from linking municipal/county/regional planning and public transportation infrastructure, jobs, housing, equity and climate change, among others. Incorporate these materials and messages into all relevant state, regional and local venues. • Work with and support the LULG AP's recommendation to create an on-line, iterative, interactive Sustainable Development/Climate Handbook with case studies to help municipalities, CBOs and developers navigate and integrate state assistance • Help develop fiscal impact analyses of smart growth compared with sprawl, regarding both public infrastructure investments for each and tax revenues generated.	DOT, DOS, DEC, NYSERDA	1-2 years	REDCs, Chambers, municipalities, developers, transit operators

Mitigation Strategy – Transportation-Oriented Development – Benefits and Impacts

Draft Material

Anticipated Benefits and Impacts	
Disadvantaged communities	Expanding Public transportation, with concomitant land use alignment and coordination, will help lower-income households that spend a disproportionate amount of income and time commuting. Both TOD and PTOD provide enhanced opportunities for affordable/mixed-income housing within existing communities, which helps address displacement and gentrification. Engage communities in decision-making.
Health and other co-benefits	Any reduction in VMT/transportation-based GHG emissions will improve air quality and help reduce the incidence of disease caused or exacerbated by air pollution. Communities that are walkable/bikeable and provide safe and accessible outdoor spaces promote greater physical activity, which yields concomitant health outcomes (often referred to as "Active Living by Design"). Communities that enable and promote social interaction, partly through safe and accessible public gathering spaces and walkable design, will generate positive mental health outcomes by reducing social isolation, particularly for older New Yorkers who suffer greater incidences of depression and anxiety due to isolation. Access to health care facilities will also be enhanced. The health care system, like the energy system, has become more dispersed and distributed. Locating health clinics and other facilities within communities, and ensuring proximity and access to such services through walkable, bikeable and transit-friendly infrastructure, will help overcome health disparities of disadvantaged communities/communities of color.
Just transition: businesses and industries, workers	As jobs and job locations shift, public transportation and land use will need to align with those changes. In the past, lower-paying/-skilled jobs were an afterthought, leaving disadvantaged communities behind; this initiative allows the state to plan for job shifts to occur simultaneously with the transition to a clean energy economy.
Other	Investments in smart growth—particularly re-development of existing buildings in developed areas—yields significantly greater tax revenues per acre for a municipality and requires significantly less infrastructure costs (construction and maintenance) than sprawling development.

Mitigation strategy: Low-Carbon Modes – Overview

Draft Material

Description:	Facilitate creation of a multi-modal ecosystem with focus on connectivity, accessibility and first/last mile options		
Action type:	Agency/Program, Financial		
GHG reduction by 2030:	Low	**GHG reduction by 2050:**	Medium
Cost and funding considerations:	$ - requires inter-agency coordination and public/private coordination.		
Ease of implementation:	Medium		
Example case studies:			

Risks / Barriers to success	Possible mitigants
1. Required coordination among multiple parties (state, local government, transit, operators of other modes) 2. Challenging business model for shared mobility outside large cities	1. Show state leadership and provide the appropriate tools to other stakeholders that make it easier for them to coordinate 2. Provide operating support where appropriate and support local infrastructure improvements to make multiple modes possible

Mitigation Strategy – Low-Carbon Modes – Components of the Strategy

Draft Material

Components required for delivery	Implementation lead	Time to implement	Other key stakeholders
Prioritize, incentivize and expand access to funding for bike, pedestrian, transit, and complete streets projects that serve employment centers. • Expand micro-transit options and ride-sharing • Facilitate development of electronic mobility platforms offering seamless multi-modal trip planning and payment options to make public transportation more attractive, accessible and user-friendly • Require that TNCs, bike-share companies and micro-transit operators provide booking APIs to transit agencies operating electronic mobility platforms at transit agencies' request allowing seamless multi-modal trip planning and payment options for customers.	DOT, MTA, Transit operators	1-3 years	Transit operators, mobility providers, municipalities
Support the infrastructure required to shift freight to lower-emission modes, like rail	DOT	1-2 years	Freight operators, municipalities
Prioritize local projects that establish low-emission transportation zones, car-free streets, and similar concepts	DOT, DOS, NYSERDA	2-3 years	Municipalities
Support and inform the MTA's efforts to develop a "First-Mile/Last-Mile Toolkit"; adapt the tool-kit to Upstate transit areas.	DOT	2 years	Truckers, municipalities

Mitigation Strategy – Low-Carbon Modes – Components of the Strategy

Draft Material

Components required for delivery	Implementation lead	Time to implement	Other key stakeholders
Support Transportation Demand Management behavioral and perceptual changes, such as public art and aesthetic architectural design of stations.	DOT, NYSCA	1 year	Transit agencies
Support businesses in providing low-carbon transportation options: • Encourage and provide technical assistance to businesses seeking economic development incentives (local or state) to consult transit agencies early when seeking to locate or expand in areas with existing multi-modal options and provide services for employees (employee-based trip reduction programs, transit/micro-transit services, ride-sharing, bike-sharing, cycling accommodations, free/reduced transit passes) • Offer local and state tax credits for businesses that accommodate employee public transportation and TDM alternatives and for employees who use alternative mobility options.	DOS, DOT, NYSERDA, DEC, ESD	2-3 years	REDCs, Transit operators, planners, regional planning councils, Chambers, freight operators, economic development authorities

Mitigation Strategy – Low-Carbon Modes – Benefits and Impacts

Draft Material

Anticipated Benefits and Impacts	
Disadvantaged communities	Providing and expanding access to public transportation in the context of business location and economic development will largely help provide access to jobs among lower-income/lower-skilled employees since those individuals often need to travel the farthest and spend more money to commute to those jobs.
Health and other co-benefits	Any reduction in VMT/transportation-based GHG emissions will improve air quality and help reduce the incidence of disease caused or exacerbated by air pollution. Communities that are walkable/bikeable and provide safe and accessible outdoor spaces promote greater physical activity, which yields concomitant health outcomes (often referred to as "Active Living by Design"). Communities that enable and promote social interaction, partly through safe and accessible public gathering spaces and walkable design, will generate positive mental health outcomes by reducing social isolation, particularly for older New Yorkers who suffer greater incidences of depression and anxiety due to isolation. Access to health care facilities will also be enhanced. The health care system, like the energy system, has become more dispersed and distributed. Locating health clinics and other facilities within communities, and ensuring proximity and access to such services through walkable, bikeable and transit-friendly infrastructure, will help overcome health disparities if disadvantaged communities/communities of color.
Just transition: businesses and industries, workers	As jobs move and change in the transition to a clean energy economy, businesses will need to accommodate their employees' commuting needs.
Other	

Mitigation strategy: Smart Mobility & Connected / Automated Vehicles – Overview

Draft Material

Description:	Improve transportation system efficiency through policies, technologies, and investments that reduce congestion and increase safety using connectivity, automation, and other innovative approaches		
Action type:	Regulatory, Financial		
GHG reduction by 2030:	Low	**GHG reduction by 2050:**	Low
Cost and funding considerations:	$$ - Implementing connected and automated technologies for transportation will require new infrastructure investments but will generate GHG, economic, safety, and congestion reduction for mobility users statewide		
Ease of implementation:	Medium – some elements of this strategy have already been implemented in NYS; others are new to NYS but have been tried elsewhere		
Example case studies:	15-20% fuel efficiency improvements shown to be achievable through connected vehicles		

Risks / Barriers to success	Possible mitigants
1. Unproven technologies for connected, automated vehicles 2. Automated vehicles could increase overall VMT, including "empty VMT," increasing energy use and emissions 3. Multijurisdictional challenges for coordinating infrastructure compatibility across municipal boundaries	1. Support for R&D, pilot/demonstration projects 2. Policy measures to encourage/require automated vehicles to be ZEVs, discourage empty VMT 3. Need for state leadership from DOT to encourage collaboration, interoperability, data sharing across jurisdictions

Mitigation strategy: Smart Mobility & Connected / Automated Vehicles – Components of the strategy

Draft Material

Components required for delivery *(Brief description of action required)*	**Implementation lead** *(Entity responsible for completing)*	**Time to implement** *(Time required to implement)*	**Other key stakeholders** (*Entities that need to be engaged)*
Invest in R&D, demonstrations of emerging intelligent transportation systems (ITS), connected and automated vehicles	NYSERDA, DOT	1-5 years	Technology providers, local governments
Fund the broader adoption of technologies that prove effective in improving transportation system efficiency, such as smart parking systems, adaptive traffic lights, IoT-enabled streetlights	DOT, NYPA, NYSERDA, DPS	1-5 years	Technology providers, local governments, utilities
Enact policies discouraging “empty” AV miles traveled and requiring AVs used as for-hire vehicles to be ZEVs	DOT, DEC, Legislature	3-5 years	Auto industry, ridehailing industry
Support the adoption of open-source technologies and standard data collection protocols for transportation data and connected infrastructure	DOT, Thruway, local governments	1-3 years	Technology providers

Mitigation strategy: Smart Mobility & Connected/ Automated Vehicles – Benefits and impacts

Draft Material

Anticipated Benefits and Impacts	
Disadvantaged communities	Smart mobility solutions have the potential to improve quality of life in communities across New York, including disadvantaged communities. Reducing congestion in high-traffic areas will reduce local air pollution. ITS solutions that enable greater transit use and more shared mobility options could reduce the cost of transportation generally, making more transportation options more affordable to lower income New Yorkers.
Health and co-benefits	Congestion is a major source of local air pollution and alleviating major bottlenecks could have significant impacts on health and local air pollution. Connected and automated vehicles have the potential to greatly increase transportation safety, saving thousands of lives each year.
Just transition: businesses and industries, workers	New smart mobility technologies like connected and automated vehicles offer the potential for the growth of new industries in New York. Some leaders in smart mobility technologies are based in New York or have operations here. Automated vehicles may replace drivers in limited circumstances for specific types of transportation jobs.
Other	

Enabling Strategy Summary

Draft Material

Initiative #	Description	Action type	Ease of implementation	Cost
1	Create and expand partnerships with businesses, economic development authorities such as IDAs, and local and regional planners to increase smart growth and transit use; encourage the business and economic development community to work more closely with public transportation officials in business location and expansion projects	Agency/Program	Medium	$

Enabling Initiative – Planning & Collaboration Overview

Draft Material

Description:	Encourage the business and economic development community to work more closely with local planners, public transportation officials, and other transportation providers in business location and expansion projects. Launch an Expansive, Multi-Dimensional, Grass-Roots Public Education Campaign on the Links Among Land Use (Smart Growth), Public Transportation and Housing and their roles in reversing climate change.
Action type:	Agency/Program
Cost and funding considerations:	$; will utilize existing programs and resources, but would likely require consultant services.
Ease of implementation:	Medium
Example case studies:	See Appendix

Risks / Barriers to success	Possible mitigants
Some might view this as an impediment to business recruitment by adding another requirement or consideration as businesses make location decisions. Absence of a dedicated funding source.	Handle this as an educational matter, not a mandate; provide incentives, where feasible, such as in IDA tax policies, local planning/zoning incentives and enhanced programmatic assistance.

Enabling Initiative – Planning & Collaboration – Components of the Strategy

Draft Material

Components required for delivery	Implementation lead	Time to implement	Other key stakeholders
Encourage and/or require collaboration among local authorities, transit operators, freight operators, local and regional planners and economic development entities to more closely incorporate public transportation options into land use planning, transportation planning, and economic development decisions	DOS, DOT	1-2 years	Municipalities, planners, developers, Chambers, transit operators, freight operators, economic development authorities
Achieve Horizontal, Regional coordination among Public Transportation entities and Planning, Economic Development and Sustainability/Climate interests (including DOS Smart Growth, REDCs, Regional Planning Councils, NYSERDA and DEC Regional Coordinators, universities, CBOs and other relevant public and private entities).	DOS, DOT, NYSERDA, DEC	1 year	REDCs, Chambers
Increase communication, coordination and mutual assistance among ESD, the IDAs, local transit entities and local planners early in the business recruitment and location process to incorporate public transit planning expertise, service and accommodations into projects and locate along existing transit routes.	ESD	1 year	REDCs, Transit agencies, planners, regional planning councils
Develop partnerships with truck freight in community planning, particularly complete streets, and share the trip data to find a balance between walkable/bikeable streets and trucking accommodations.	DOT	1 year	Freight operators, municipalities
Work with IDAs to and transit agencies to develop and proliferate tax incentive policies that incentivize transit planning, infrastructure and access.	ESD, DOT, Transit Agencies	1-2 years	IDAs, Chambers, developers, planners
Ensure that transit entities and MPOs (where relevant) are consulted on any plan or GEIS/EIS being produced by a municipality for a development project or re-zoning that is proximate to, or impacts, public transit (rail station or BRT hub).	DOS, DOT	1 year	Transit agencies, planners/regional planning councils

Enabling Initiative – Planning & Collaboration Benefits and Impacts

Draft Material

Anticipated Benefits and Impacts	
Disadvantaged communities	Smart growth and expanded public transportation provides enhanced opportunities for affordable/mixed-income housing within existing communities, which helps address displacement and gentrification. A comprehensive, aggressive and persistent educational and awareness campaign provides greater opportunities to teach and infuse the concepts of equity into planning, development and public transportation. Engage communities in decision-making.
Health and other co-benefits	Any reduction in VMT/transportation-based GHG emissions will improve air quality and help reduce the incidence of disease caused or exacerbated by air pollution. Communities that are walkable/bikeable and provide safe and accessible outdoor spaces promote greater physical activity, which yields concomitant health outcomes (often referred to as "Active Living by Design"). Communities that enable and promote social interaction, partly through safe and accessible public gathering spaces and walkable design, will generate positive mental health outcomes by reducing social isolation, particularly for older New Yorkers who suffer greater incidences of depression and anxiety due to isolation. Access to health care facilities will also be enhanced. The health care system, like the energy system, has become more dispersed and distributed. Locating health clinics and other facilities within communities, and ensuring proximity and access to such services through walkable, bikeable and transit-friendly infrastructure, will help overcome health disparities if disadvantaged communities/communities of color.
Just transition: businesses and industries, workers	As jobs and job locations shift, public transportation and land use will need to align with those changes. In the past, lower-paying/-skilled jobs were an afterthought, leaving disadvantaged communities behind; this initiative allows the state to plan simultaneously with the transition to a clean energy economy. An educational component to this transition will raise public awareness about this esoteric and misunderstood concept.
Other	This educational campaign provides an ideal forum in which to raise awareness of the fiscal benefits of smart growth.

Market-Based Policies and Financing

Mitigation strategy summary Financing and Market-Based Policies

Draft Material

Initiative #	Description	Action type	Emissions impact	Ease of implementation	Cost
	Facilitating Private Financing	Enabling	N/A	medium	$
	Cap&Invest (TCI-P) or Carbon Pricing	Mitigation/Enabling	medium	medium	$
	Clean Fuel Standard	Mitigation/Enabling	medium	hard/medium	$
	Feebates (listed under Electrification)	Enabling	N/A	medium	$
	Curb Pricing	Mitigation	low	medium	$
	Congestion/Variable/Demand Parking Pricing	Mitigation/Enabling	low	hard	$
	Mileage Based User Fees	Enabling	N/A	hard	$$$
	Tax Increment Financing/Special Assessment Districts	Enabling	N/A	medium	$
	Registration Fees	Enabling	N/A	Easy	$

Mitigation Strategy – Clean Fuel Standard

Draft Material

Description:	Implement a Clean Fuel Standard to support electrification of transportation, achieve near-term emission reductions while the transition to electrification is underway and provide cleaner fuels for hard-to-electrify subsectors such as aviation; freight and passenger rail; and long-haul trucking. A clean fuel standard generally considers total fuel cycle emissions.		
Action type:	Regulatory (DEC)		
GHG reduction by 2030:	Medium (and enables electrification)	**GHG reduction by 2050:**	Low (enabling for electrification)
Cost and funding considerations:	Agency costs for program management and additional staff will be sizable if using NY-specific methodology. A substantial annual transfer would be expected from fossil fuel producers/ consumers to bioenergy producers, electric/hydrogen vehicle owners, charging infrastructure owners, and transit operators.		
Ease of implementation:	Hard if using NY-specific carbon intensity calculations instead of CARB pathways.		
Example case studies:	California Low Carbon Fuel Standard and Oregon Clean Fuel Standard		

Risks / Barriers to success	**Possible mitigants**
1. Some biofuels would not generate credits under CLCPA accounting; out-of-state waste emission reductions/sequestered emissions may not be creditable towards NY's emission limits under CLCPA methodology 2. Potential cost impacts on low income citizens, who are less able to afford electric vehicles. 3. Lack of regulatory infrastructure (staff/ITS systems)	1. Consider adopting CARB carbon intensity or set program stringency to align with achievable reductions. 2. Provide enhanced ZEV incentives for lower-income consumers; disadvantaged communities will benefit from ZEV and ZEVSE deployment for medium and heavy duty fleets. 3. Staff will need to be increased and IT systems developed; adoption of CARB carbon intensity would reduce the burden.

Mitigation Strategy – Clean Fuel Standard

Draft Material

Components required for delivery	Implementation lead	Time to implement	Other key stakeholders
Program Development	DEC/DPS/NYSERDA	1 year	Fuel producers and suppliers, airline industry, utilities, public transit operators, PANYNJ
Regulation Promulgation	DEC	1 year	Regulated industry
Develop staff and IT systems	DEC	unknown	ITS, DOB
Investment in fueling infrastructure for advanced fuels, such as green hydrogen, that have zero emissions (tailpipe and production)	NYSERDA	2-5 years	Fuel distributors, service station owners, clean energy providers

Mitigation strategy – Clean Fuel Standard

Draft Material

Anticipated Benefits and Impacts	
Disadvantaged communities	Reduction in localized air pollution in disadvantaged communities from electrification and lower-emission fuels. Benefits will be enhanced by complementary policies to support LMI access to affordable EVs and medium- and heavy-duty vehicle electrification.
Health and co-benefits	In the near term there may be modest reductions in some air pollutants (particularly particulate matter) due to fuel changes. Long term major health benefits will follow from vehicle electrification, the expansion of which may be accelerated by a Clean Fuel Standard
Just transition: businesses and industries, workers	Little initial impact on transportation fuel supply industries. Long term, fossil fuel industries will contract due to increased deployment of low carbon fuels, including vehicle electrification, with electricity and biofuels (and possibly hydrogen) supply industries expanding in their place. Workers from the conventional fossil fuel industry can transition to employment in the low carbon fuel industries, especially liquid biomass-based diesel substitutes.
Other	Implementation of CARB approach would be much simpler from an administrative perspective; CLCPA methodology would still have to be applied in determining progress towards CLCPA emission limits. Transfer of money from petroleum suppliers to electric rail transit operators (primarily MTA) would help fund transit priorities. Option for aviation fuels to opt in would create an opportunity to reduce aviation emissions.

Enabling initiative – Electrification Financing: Overview

Draft Material

Description:	Public & private approaches to electrification financing
Action type:	Financial; NYS agencies' programs & policies that augment public & private fleet electrification financing and EVSE investment and expansion.
Cost and funding considerations:	$$; A combination of existing funding (MHD EV incentive programs, NY Green Bank financing, PSC Make-Ready Program) and new funding (additional MHD EV incentives targeting DACs, financial support to subsidize FLPP, support for electrification transition feasibility studies, support for residual value risk analysis, and financing market gap solutions) will support this effort.
Ease of implementation:	Medium; new programs need to be established, but can be based on proven models
Example case studies:	Financial markets (first loss protection); NY Green Bank financing of distribution center electrification project; Highland Electric: Maryland school bus electrification program

Risks / Barriers to success	Possible mitigants
1. Need to find the right NYS entity to serve as product sponsor for first loss protection (FLP) 2. Current MHD EV program qualifications and restrictions are difficult for lower-income truck owners and small fleets to meet. 3. School districts & transit agencies' hesitancy to transition; statutory inability to 1) convert from CapEx-oriented procurement to OpEx long term service procurement; and 2) commit to long term bus electrification projects. 4. EV stakeholders find NY Green Bank's financing products & terms unattractive. EVSE projects have unfinanceable utilization risk. 5. Extending future transit fuel/maintenance operations savings to support recapitalization not a viable strategy given operations are highly subsidized by federal, State and local funds.	1. Enabling rules/legislation; collaboration with existing private market FLP providers. 2. Liberalized income-criteria & scrappage voucher-program qualifications to facilitate financing in disadvantaged communities. 3. Offer grants for evaluation/feasibility studies; enabling legislation for multi-year Energy Services Agreement (ESA) commitments. 4. Expansion of NYGB programs (incl. beyond NY State-only nexus); capital allocations (through expanded charter) to higher-risk electrification categories. NYSERDA provides a minimum level of revenue certainty to EVSE projects with high level of utilization risk. 5. Alternative financing models for public transit fleets may be needed.

Enabling initiative – Electrification Financing: Components of the strategy

Draft Material

Components required for delivery *(Brief description of action required)*	**Implementation lead** *(Entity responsible for completing)*	**Time to implement** *(Time required to implement)*	**Other key stakeholders** **(***Entities that need to be engaged)*
Establish a First Loss Protection product based on existing financial market instrument and practice • Identify a product sponsor (NY State agency/entity) and identify size and type of subsidy/incentive/authorization required to make this product marketable • Conduct Residual Value (RV) risk analysis to price the insurance product • Secure private-market practitioner involvement	NYSERDA, NY Green Bank	1-2 years	Commercial banks & insurance co's; fleet operators; EVSE developers, US DOE LPO; National Climate Bank
Expand MHD EV incentive programs, with a focus on higher incentives for fleets in DACs and small fleets	NYSERDA, DEC, NYSDOT	1-3 years	Fleet operators; EJ stakeholders

Enabling initiative – Electrification Financing: Components of the strategy

Draft Material

Components required for delivery *(Brief description of action required)*	**Implementation lead** *(Entity responsible for completing)*	**Time to implement** *(Time required to implement)*	**Other key stakeholders** **(***Entities that need to be engaged)*
Support feasibility studies for MHD fleets, including school districts & transit agencies, to identify benefits, costs, logistical challenges, financing options, other barriers to electrification • In addition to utility fleet assessment services, which focus primarily on charging of EVs	NYSERDA, State Ed, NYSDOT	6 months - 1 year	Utilities, OEMs & EVSE stakeholders; fleet operators; engineering firms; ESD & REDCs
Support additional financing options that expand EVSE adoption • Expand NYGB's mission to take on more risk in defined categories of electrification financing • Supplement CapEx financial support for EVSE (e.g., rebates) with revenue support (e.g. minimum revenue coverage) to qualifying EVSE infrastructure projects	NYSERDA, NY Green Bank, DPS	1-2 years	OEMs & EVSE stakeholders; commercial banks; utilities

Enabling initiative –Electrification Financing: Benefits and impacts

Draft Material

Anticipated Benefits and Impacts	
Disadvantaged communities	Liberalizing voucher qualifications for low-income applicants will drive EV adoption in these communities, and accelerate development of a liquid & deep used-EV commercial vehicle market.
Health and other co-benefits	Collectively, these initiatives will accelerate fleets' electrification transition. Since air quality around ICE/diesel fleet depots is generally impaired by diesel truck emissions, this will bring cleaner air and related health benefits to populations living in vicinity of depots (which are generally disadvantaged communities).
Just transition: businesses and industries, workers	Collectively, these initiatives will bring economic, employment and health benefits to disadvantaged communities: their businesses, employees, and populations. Job training programs are to be considered as complementary initiatives.
Other	These strategies complement public funding to support electrification and modernize transit bus fleets; more successful financing strategies can reduce the public funding needed for electrification incentives.

Mitigation strategy –Cap & Invest/Carbon Pricing Overview

Draft Material

Description:	Policies reduce emissions directly and support further emission reductions and the transition to a cleaner, more efficient transportation system. Transportation Panel recommends potential participation in the Transportation and Climate Initiative program (TCI-P) unless the Climate Action Council opts for a multi-sector carbon pricing approach that provides at least the same level of support for reducing transportation sector emissions.		
Action type:	Regulatory (NY Joins TCI-P); legislative (economy-wide carbon pricing policy)		
GHG reduction by 2030:	Medium (and enables other strategies)	**GHG reduction by 2050:**	Medium (and enables other strategies)
Cost and funding considerations:	This policy will directly reduce emissions and raise revenues by placing an auctioned allowance fee on fossil fuel component of on-road motor fuels. Fuel providers may choose to pass this cost onto consumers. Proceeds from the auction of allowances would be reinvested into improving infrastructure and reducing emissions. Efficient investment of revenues would yield a net positive to society, including improved public health. These policies would constitute an inter-economy transfer and would not impose a net resource cost.		
Ease of implementation:	Medium to hard. Transportation has been part of economy-wide cap-and-invest programs and the TCI-P program provides a regional transportation sector model to adopt, similar in many ways to RGGI. Many stakeholders are supportive with notable exception of some environmental justice organizations and their allies.		
Example case studies:	Carbon prices in Canada and Europe. Economy-wide cap-and-Invest in California and Quebec.		

Risks / Barriers to success	Possible mitigants
1. Potential for funds to be used for unrelated purposes. 2. Some EJ stakeholders are distrustful of market-based programs, which may not deliver equitable benefits to their communities. 3. The level of the TCI-P cap may fall short of the level of transportation reductions needed to meet CLCPA targets and may not raise enough proceeds to fully fund the TAP recommendations that require funding. 4. May increase fuel costs for rural and small city based community transit systems	1. A legislative “lock box” could ensure that proceeds can only be spent on clean transportation or other program purposes. 2. Engage impacted communities in decision-making and ensure investments reduce emissions and provide other benefits in disadvantaged communities and areas with high levels of transportation emissions. 3. Increase program stringency at program review or establish a separate program; target funding to most impactful investments. 4. Support electrification of smaller rural/city transit systems or consider exempting fuel used in small transit fleets

Mitigation strategy –Cap&Invest/Carbon Pricing
Components of the strategy

Draft Material

Components required for delivery *(Brief description of action required)*	**Implementation lead** *(Entity responsible for completing)*	**Time to implement** *(Time required to implement)*	**Other key stakeholders** **(***Entities that need to be engaged)*
Rulemaking process would be necessary for New York to join TCI-P	DEC, NYSERDA, DOT	1 year	Fuel industry, disadvantaged communities, public health practitioners
Alternative policy: multi-sector economy-wide carbon pricing or cap-and-invest policy – if included by Climate Action Council in Scoping Plan	NA	NA	NA

Mitigation strategy – Cap&Invest/Carbon Pricing
Benefits and impacts

Draft Material

Anticipated Benefits and Impacts	
Disadvantaged communities	Although a cap-and-invest policy does not necessarily achieve emissions reductions in specific locations, the investments can be targeted to achieve that goal. The highest and best use of the proceeds would be to invest more than at least 35-40% of the proceeds in programs that specifically reduce emissions and provide other benefits in disadvantaged communities. Engage disadvantaged communities in developing investment priorities that will reduce existing air quality disparities. Community air monitoring outcomes can be used to guide investment strategies.
Health and co-benefits	Health benefits would come from the investment of proceeds. Prioritizing investments in electric trucks and buses in areas of high pollution or high population density can maximize the reductions in air pollutants.
Just transition: businesses and industries, workers	Proceeds can be invested in ways that support a just transition for workers and disadvantaged communities. Investments can also lessen the impact on businesses such as helping convenience stores transition to providing EVSE and can also help ease the transition to new fuels technologies by funding opportunities to train mechanics to service new vehicles. Participation in the regional TCI-P would maintain level playing field for NY businesses in regional economy.
Other	Cap-and-invest programs ensure emissions reductions; carbon pricing does not. As a regional program, TCI-P ensures a designated level of regional reductions, but resulting reductions might vary among the participating states. Implementation of a cap-and-invest program should not be considered to preclude other strategies to fund maintenance of current infrastructure.

Mitigation strategy – Various market-based/financing policies Overview

Draft Material

Description:	Various market-based policies will support electrification, public transportation, smart growth and other transportation goals. These policies complement the other more specified strategies, including recommendations for TCI-P participation, clean fuel standard, private financing strategies and feebates		
Action type:	Regulatory, financing, legislative		
GHG reduction by 2030:	low	**GHG reduction by 2050:**	low
Cost and funding considerations:	All policies are intended to be self-funding and will provide financial support for other policies and goals		
Ease of implementation:	Various		
Example case studies:	Oregon - VMT/MBUF pilot; London - Congestion Pricing; Seattle - Curb Pricing; Hudson Yards/#7 Line Extension - Tax Increment Financing; Demand Parking Pricing – Washington DC; California – registration fees to fund EVSE		

Risks / Barriers to success	Possible mitigants
1. Individuals may object to paying for services, like parking, that were previously free or lower cost 2. Drivers may object to incurring fees for access to locations that were previously complimentary, especially in EJ Communities 3. Home rule would preclude state action without local partnership for some policies	1. Fees can fund access to improved transit service and other alternatives to driving 2. Provides more livable communities 3. Engage with localities; provide them with portion of proceeds

Mitigation strategy – Various market-based/ financing policies Components of the strategy

Draft Material

Components required for delivery *(Brief description of action required)*	**Implementation lead** *(Entity responsible for completing)*	**Time to implement** *(Time required to implement)*	**Other key stakeholders** **(***Entities that need to be engaged)*
Congestion/Variable Pricing/Demand Parking – coordinate with municipalities; State Legislature; Federal Highway Administration	DOT, municipalities	1-3 years	Municipalities, parking authorities,
Vehicle registration fees. Legislation would be required.	DMV	1 year	Car dealers, AAA
Mileage-Based User Fees – evaluate pricing level to maintain investment level first with and eventually without gas tax revenues. Legislation would be required	DOT, DTF	3-years	Fuel/charging providers, AAA, public transportation sponsors
Tax Increment Financing/Special Assessment Districts	Municipalities/DTF	1-2 years	Municipalities, public transportation sponsors, developers
Curb Pricing	Municipalities/DTF	1-2 years	Public transportation sponsors, developers

Mitigation strategy – Various market-based/ financing policies Benefits and impacts

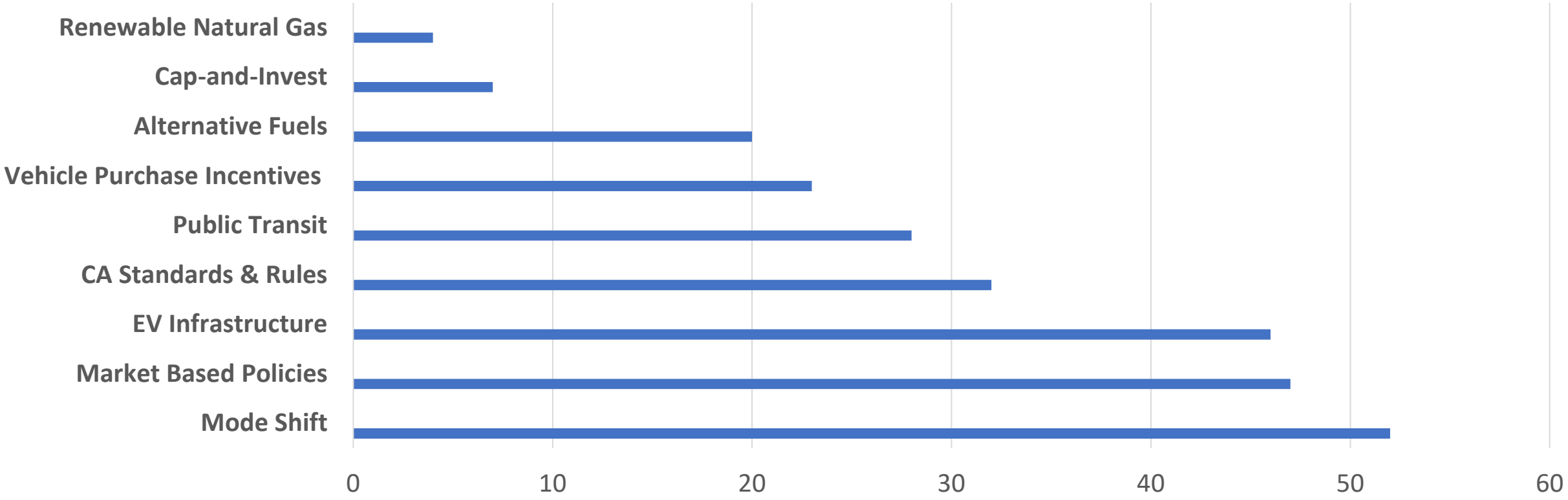
Draft Material

Anticipated Benefits and Impacts	
Disadvantaged communities	As a direct result of these funding mechanisms, disadvantaged communities will benefit from reduced pollution in congested urban areas, increased infrastructure investment and from enhanced transit access. These funding mechanisms can raise revenue to support emission reduction activities put forward in the other Transportation Advisory Panel recommendations, which are targeted toward disadvantaged communities.
Health and co-benefits	As a direct result of these funding mechanisms, there would be a decline in peak hour pollution with resulting public health benefits. These funding mechanisms can raise revenue to support emission reduction activities put forward in the other Transportation Advisory Panel recommendations, which will result in broader health and economic benefits.
Just transition: businesses and industries, workers	Projects funded by tax increment financing will create jobs; may potentially drive-up housing costs
Other	

Summary of Comments Received by Transportation Advisory Panel

Draft Material

The Transportation Advisory Panel received comments from 69 organizations/individuals discussing the following subjects:



Just Transition Principles Review

Stakeholder-Engaged Transition Planning & Collaborative Planning for a Measured Transition Toward Long-Term Goals

- A diverse range of stakeholders were engaged during the recommendation development process including:
  - Two TAP Public Engagement Meetings
  - Five Expert Roundtables
  - Cross Panel coordination meetings held with other Advisory Panels
- Consumer engagement and stakeholders key to the continued development of each strategy have been identified.
- Proposals to make local planning processes more collaborative and inclusive in finding solutions that help increase low-carbon transportation options are recommended.

Just Transition Principles Review

Realize Vibrant, Healthy Communities Through Repair of Structural Inequities & Equitable Access to High Quality, Family-Sustaining Jobs

- Recommendations are designed to help accelerate decarbonization in and around LMI and EJ communities.
- Public Transportation increases and Smart Growth recommendations support connecting workers to employment and community sustainability.

Climate Adaption Planning and Investment for a Resilient Future

- A focus on enhancing active mobility options, more public transportation frequency, and smart growth to provide a level of resiliency in the transportation system.

Protection and Restoration of Natural and Working Lands Systems & Resources & Redevelopment of Industrial Communities

- Smart Growth development will help concentrate land uses and development in areas that are targeted for growth and redevelopment while preserving natural and working lands from development pressures.

Additional panel perspectives summary

Initiative	Summary of views

Appendix

Open Discussion

- Final comments on recommendations for submission to the Climate Action Council

Future Meetings

- Climate Action Council Meeting – April 12, 9AM – 4PM
- Expert Freight Roundtable – April 30, 2 – 4PM
- Climate Action Council Meeting – May 10