Appendix E: GHG Reduction Measures Implementation Table

Drawing on existing regional, county-wide, and municipal climate action plans, NYS's Scoping Plan, Climate Smart and Clean Energy Community Programs, the results of the 2022 GHG Inventory, and the lived and professional expertise of the CCAP Committee and sector-based focus groups, the project team developed short- and long-term strategies, measures, and tools to reduce GHG emissions across the region. In this context, measures refer to specific actions or strategies designed to directly reduce emissions, with quantifiable GHG reduction estimates. Tools, by contrast, are the resources, techniques, or approaches that support the successful implementation of these measures, but they do not have measurable GHG reductions on their own. Given the diverse nature of the project area, not every strategy, measure, or tool will be equally applicable in every municipality. Municipal leaders, planners, local industries, partners, and individuals can use this section as a menu of options, selecting, adapting, and sequencing actions to best fit local priorities. Over time, this framework can guide plan updates, inform grant applications, and serve as a baseline for tracking progress, ensuring that strategies evolve alongside changing climate conditions, technology, and policy.

GHG Reduction Targets:

- 2035: Foundational efforts emphasize tools, regional capacity building, and awareness of current state and federal programs. Under the existing trends scenario, the region is projected to achieve a 10% reduction in emissions by 2035, while the ambitious scenario targets a cumulative 20% reduction. The reduction potential of each measure will vary depending on regional capacity and uptake.
- 2050: Targets are aligned with the CLCPA goals, which assume expanded state and federal funding and programming. The 2050 reductions build upon the ambitious 2035 scenario and include additional actions necessary to achieve the CLCPA target of reducing emissions 85% below 1990 levels by 2050.

A: Transportation & Land Use

Strategy A1. Increase Zero and Near Zero Emission Passenger Vehicle Adoption					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Measure 1: Invest in zero and near zero emission passenger vehicles	Mid: 3-10 yrs	Electric Power Industry & Workforce	Municipalities/Counties DPW Utilities Private fleets owners Utilities Auto dealers/manufacturers GTC	New York State Municipalities/Counties Private fleet owners	**154,152**	**308,303**	**924,910**	**1,233,213**
Tool 1 : Adopt fleet efficiency policies and fleet inventories for municipalities and businesses	>1 yr	Electric Power Industry & Workforce	Municipalities/Counties DPW Utilities Private fleets owners Utilities/NYPA NYSERDA	Municipalities/Counties Private fleet owners				
Tool 2 : Develop municipal and business EV infrastructure plans	Short-Mid: 1-10 yrs	Electric Power Industry & Workforce	Municipalities/Counties Utilities NYSERDA Parking operators/enforcement GTC	Municipalities Property owners				
Tool 3 : Expand and incentivize EV charging infrastructure for residents and in municipal and private parking lots/garages at points of interest. Consider other behavioral incentives for EV drivers.	Short-Mid: 1-10 yrs	Electric Power Industry & Workforce	Municipal fleets Utilities/NYPA Employers Developers Parking operators/enforcement	Municipalities Businesses DOT Private land owners				
Tool 4 : Expedite and standardize the permitting process for installation of alternative fuel and electric vehicle charging infrastructure	Short: 1-3 yrs	Electric Power Industry & Workforce Regional Capacity	NYS Department of State Code Enforcement Utilities Municipalities	Municipalities New York State				
Tool 5 : Invest in educational campaigns to educate the public and/or fleet operators on EVs including costs, maintenance, driving experience, noise, safety, etc.	Short: 1-3 yrs	Electric Power Industry & Workforce Regional Capacity	Utilities Municipalities/Counties NYSERDA GTC	Municipalities Utilities Nonprofits				

A: Transportation & Land Use

Strategy A2. Increase Zero and Near Zero Emission Bus & Truck Adoption					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MTCO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Measure: Invest in zero and near zero emission public transit vehicles	Mid-Long: 10+ yrs	Electric Power Industry & Workforce	RGRTA NYSERDA NYPA NYSDOT Bus operators	New York State RGRTA	**11,136**	**22,273**	**22,273**	**44,545**
Measure: Invest in zero and near zero emission school bus fleet	Mid-Long: 3- 10+ yrs	Electric Power Industry & Workforce	School Districts Utilities/NYPA NYSERDA Bus operators	New York State School Districts	**2,248**	**4,495**	**15,734**	**20,229**
Measure: Invest in zero and near zero emission trucks	Mid-Long: 3- 10+ yrs	Electric Power Industry & Workforce	Private fleet operators Warehouse operators Utilities NYSERDA NYSDOT	New York State Private businesses	**7,341**	**14,681**	**44,043**	**58,725**
Tool 1: Expand zero emission charging and refueling infrastructure and upgrades for bus and truck facilities	Mid: 3-10 yrs	Electric Power Industry & Workforce	RGRTA Truck operators Utilities/NYPA Industrial park owners/IDA GTC	Municipalities Private business				
Tool 2: Invest in shore power to provide long-haul trucks, construction vehicles, and municipal vehicles with access to external electrical power while parked at designated locations.	Mid: 3-10 yrs	Electric Power Industry & Workforce	NYS DOT Private fleet operators Truck stops Utilities	New York State Municipalities				

Strategy A3. Reduce Single Occupancy Vehicle Trips & VMT					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MTCO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Measure: Implement strategies to reduce single-occupancy vehicle trips and VMT	Ongoing		GTC Municipalities/Counties NYSDOT RGRTA Employers	New York State Municipalities RGRTA	**76,749**	**153,498**	**92,099**	**245,597**
Tool 1: Continue to expand active transportation infrastructure and access to micro-mobility modes especially in NYS DAC communities and communities with environmental risks	Short-Mid: 1-10 yrs		GTC Municipalities/Counties RGRTA NYSDOT School districts Advocacy	New York State Municipalities RGRTA				

A: Transportation & Land Use

Strategy A3. Reduce Single Occupancy Vehicle Trips & VMT					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MTCO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Tool 2: Continue to invest in educational campaigns and implement programs and policies to encourage people to walk, bike, or take public transportation by subsidizing participation.	Short-Mid: 1-10 yrs	Regional Capacity	GTC Municipalities RGRTA Employers Health Departments	Municipalities Employers				
Tool 3: Work with RGRTA, large employers, municipalities, fleets etc. to promote transportation demand management strategies to increase the share of employees who walk/bicycle or take public transportation to reduce VMT	Short-Mid: 1-10 yrs		GTC Municipalities/Counties RGRTA Employers Institutions	RGRTA GTC				
Tool 4: Continue to evaluate public transportation service gaps to determine where new and enhanced routes should be located, especially in NYS DAC communities and communities with environmental risks. Advocate for funding to support local action	Short-Mid: 1-10 yrs		GTC RGRTA NYSDOT	Municipalities/Counties Business associations				
Tool 5: Create and expand “Buy Local/Buy Green” campaign to reduce VMTs	Short-Mid: 1-10 yrs		GTC Municipalities/Counties Chamber of Commerce/ Tourism	Municipalities/Counties Business associations				
Tool 6: Implement traffic calming measures. Identify roadways for road diets to reduce speeds region wide	Short-Mid: 1-10 yrs		GTC Municipalities DOT	New York State Municipalities				
Tool 7: Create anti-idling zones centered around NYS DAC and communities with environmental risks, school zones, pedestrian-centric areas, and transit stations where appropriate	Short-Mid: 1-10 yrs		GTC Municipalities School Districts Law Enforcement	New York State Municipalities				
Tool 8: Encourage replacing traffic lights with roundabouts where it is feasible to reduce time idling and improve traffic safety	Short-Mid: 1-10 yrs		DOT GTC Municipalities/Counties	New York State Municipalities/Counties				
Tool 9: Invest in Intelligent Speed Assistance (ISA) technology for municipal and commercial fleet vehicles to reduce speeding and increase pedestrian and driver safety	Short-Mid: 1-10 yrs		Municipalities Private fleet owners Insurers Tech providers	Municipalities Private fleet owners				

A: Transportation & Land Use

Strategy A4. Support Adaptation and Resiliency in the Land Use					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MTCO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Tool 1: Implement Smart Growth planning, Complete Street policies in land use, zoning reform, and comprehensive planning to prioritize mixed use development in urban and village centers and preventing sprawl into agricultural land	Ongoing	Agriculture & Working Lands	Municipalities New York State NYS DOS Farmland protection boards GTC	Municipalities				
Tool 2: Conduct a regional level climate vulnerability assessment with an emphasis on NYS DAC and communities with environmental risks for climate adaptation planning	Short-Mid: 1-10 yrs	All Sectors	Municipalities/Counties New York State GTC	Municipalities				
Tool 3: Adopt climate adaptation policies to reduce runoff, encourage native plants, manage stormwater, and promote overall biodiversity	Short-Mid: 1-10 yrs	Agriculture & Working Lands	Municipalities Soil and Water Districts NYSERDA	Municipalities New York State				
Tool 4: Expand and maintain green spaces to mitigate the heat island effects associated impervious surfaces	Mid: 3-10 yrs		Municipalities/Counties Community groups Developers	Municipalities				
Tool 5: Support and implement strategies put forth by County or Municipal Hazard Mitigation Plans	Ongoing	Agriculture & Working Lands	Municipalities/Counties	Municipalities				
Tool 6: Develop and implement a regional program to help communities plan for climate adaptation and resiliency	Short-Mid: 1-10 yrs	Agriculture & Working Lands	G/FLRPC Municipalities/Counties	Municipalities/Counties				
Tool 7: Encourage developers to coordinate with RGRTA early in the site selection process to ensure alignment with transit service capabilities.	Ongoing		Developers Municipalities RGRTA	Municipalities Developers				

B. Built Environment

Strategy B1. Advance Decarbonization of Buildings and Infrastructure					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	Timeframe	Sector Intersection	Leadership & Key Partners	Authority to Implement	Existing Trend MTCO2e	Ambitious MTCO2e	2050 Pathway to CLCPA Goal MTCO2e	CLCPA Target MTCO2e
Measure: Transition to air-source and ground sourced heat pumps and heat pump water heaters in all buildings	Mid–Long: 3-10+ yrs	Electric Power Industry & Workforce	Municipalities Code Enforcement Officers NYSERDA Developers Property Owners	New York State Municipalities Property Owners Residents Business Owners	**413,935**	**827,869**	**827,869**	**1,655,739**
Measure: Reduce embodied carbon (the greenhouse gas emissions that occur when building materials are produced, transported, and used) from all buildings	Mid–Long: 3-10+ yrs	Electric Power Industry & Workforce	Municipalities Code Enforcement Officers NYSERDA DEC Developers	New York State Municipalities Businesses	**99,743**	**199,487**	**199,487**	**398,974**
Measure: Increase energy efficiency in all buildings (including weatherization, mold and asbestos abatement etc.)	Mid–Long: 3-10+ yrs	Land Use Electric Power Industry & Workforce	Municipalities Code Enforcement Officers NYSERDA Developers Housing Agencies	New York State Municipalities Property Owners Residents Business Owners	**290,407**	**580,815**	**1,161,629**	**1,742,444**
Measure: Adopt Zero-Emission Codes and Standards for all buildings	Mid–Long: 3-10+ yrs	Land Use Electric Power Industry & Workforce	Municipalities Code Enforcement Officers NYSERDA	Municipalities New York State	**120,867**	**241,735**	**483,470**	**725,205**
Tool 1: Explore a pilot program for geothermal energy and networks on a community scale in new and existing developments	Mid–Long: 3-10+ yrs	Land Use Electric Power Industry & Workforce	Municipalities NYSERDA Developers Utilities	Municipalities Developers New York State				
Tool 2: Invest in policies and programs to reduce energy costs and consumption by optimizing energy use (energy audits and benchmarking) to lower GHG emissions in buildings	Short: 1-3 yrs	Land Use Electric Power Industry & Workforce	Municipalities NYSERDA Property Owners	New York State Municipalities Property Owners				
Tool 3: Establish financing mechanisms for energy efficiency upgrades for buildings with focus on NYS DAC and communities with environmental risks	Mid–Long: 3-10+ yrs	Land Use Electric Power Industry & Workforce	New York State Municipalities Green banks NYSERDA Utilities	New York State Municipalities Green banks				
Tool 4: Incentivize the development of buildings with low embodied carbon (LEC) such as localized construction materials, deconstruction, reuse of materials, and recycling to minimize construction waste	Mid–Long: 3-10+ yrs	Land Use Electric Power Industry & Workforce	Municipalities NYSERDA Developers Waste/reuse markets	New York State Municipalities				
Tool 5: Provide gap funding to support pre-weatherization work in older building stock, with a focus on NYS DAC and communities with environmental risks	Short-Mid: 1-10 yrs	Land Use Electric Power Industry & Workforce	Municipalities NYSERDA Utilities Housing agencies	New York State Municipalities/Counties				
Tool 6: Incentivize building envelope insulation efforts and energy efficiency purchases in all existing buildings	Short-Mid: 1-10 yrs	Land Use Electric Power Industry & Workforce	Municipalities NYSERDA Developers	New York State Municipalities Utilities				

B. Built Environment

Strategy B1. Advance Decarbonization of Buildings and Infrastructure					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MTCO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Tool 7: Create educational programs for businesses, homeowners, and renters to support the transition to more energy efficient technologies (such as energy efficient appliances and changing user behavior) and financial assistance options that help address cost-related challenges	Short: 1-3 yrs	Land Use Electric Power Industry & Workforce	Counties NYSERDA Developers AMPED Clean Energy Hub	Municipalities Advocates				
Tool 8: Utilize Land Banks to repurpose vacant and derelict properties	Mid: 3-10 yrs	Land Use Electric Power Industry & Workforce	Municipalities Land Banks IDAs Developers	Municipalities Land Bank Boards				
Tool 9: Adopt energy efficiency standards for rental properties with the certificate of occupancy	Mid–Long: 3- 10+ yrs	Land Use Electric Power Industry & Workforce	Municipalities Code Enforcement Officers NYSERDA Utilities Residents Landlords	Municipalities Advocates				
Tool 10: Continually educate planning and permitting staff on state-wide guidance and policies, energy codes, and methods for incentivizing and implementing decarbonization of buildings	Ongoing	Land Use Electric Power Industry & Workforce	Municipalities NYSERDA Department of State	Municipalities				
Tool 11: Develop and adopt building standards for historic buildings in local buildings and zoning codes to allow for opportunities to increase energy efficiency, including weatherization in historical preservation districts. Educate planning boards and historic preservation groups on these updates	Short-Mid: 1- 10 yrs	Land Use Electric Power Industry & Workforce	Municipalities NYSERDA Developers	Municipalities Historic Preservation Boards SHIPO NYSERDA				

C. Electric Power

Measure/Tool	Timeframe	Sector Intersection	Leadership & Key Partners	Authority to Implement	Existing Trend MTCO2e	Ambitious MT-CO2e	2050 Pathway to CLCPA Goal MTCO2e	CLCPA Target MTCO2e
Measure: Increase large-scale renewable energy generation to supply clean electricity to the region, in appropriate areas	Mid–Long: 10+ yrs	Land Use Agriculture & Working Lands	Utilities Developers NYSERDA Municipalities Landowners	New York State Municipalities	**6,132**	**12,264**	**61,322**	**73,586**
Measure: Increase the adoption of small and medium scale renewables (like rooftop and parking lot solar installations), with an emphasis on commercial land in NYS DAC communities and communities with environmental risks	Short-Mid: 1- 10 yrs	Land Use Agriculture & Working Lands	Utilities Developers NYSERDA Municipalities Property owners	New York State Municipalities	**49,283**	**98,566**	**197,133**	**295,699**
Measure: Support the development and construction of zero-emission nuclear power plants (including small nuclear reactors) to support a reliable and affordable electric grid	Long: 10+ yrs	Land Use Agriculture & Working Lands	Utilities Developers NYSERDA NYPA Municipalities	New York State Municipalities	This measure was not measured or quantified in the spreadsheet. Additional data will be explored for future iterations of the CCAP and in the status report.			
Tool 1: Conduct feasibility studies and pilot programs to site region-wide renewable energy installations to maximize local power generation, with an emphasis on NYS DACs and communities with environmental risks	Short-Mid: 1- 10 yrs	Electric Power Land Use Agriculture & Working Lands	Utilities Developers NYSERDA Municipalities	New York State Municipalities Utilities G/FLRPC				
Tool 2: Conduct Microgrid and battery storage feasibility pilot studies	Short-Mid: 1- 10 yrs	Electric Power Land Use Agriculture & Working Lands	Utilities NYSERDA NYPA Municipalities Large institutions	Municipalities Property owners Utilities				
Tool: Expand municipal and emergency operation resiliency with the integration of battery storage and microgrid technologies	Mid: 3-10 yrs	Electric Power Land Use Agriculture & Working Lands	Utilities NYPA Municipalities/Counties Emergency Management	New York State Municipalities				
Tool 3: Capitalize on existing state and federal funding opportunities, and pilot innovative financing strategies (e.g., zero-to-low interest financing, gap funding) to support energy efficiency and renewable energy projects	Short: 1-3 yrs	Electric Power Land Use Agriculture & Working Lands	NYSERDA Municipalities/Counties Green Banks IDAs	Municipalities				
Tool 4: Expand on existing model zoning and policy language for renewable energy and battery storage projects. Target outreach to municipalities with moratoriums for renewable energy and battery storage in place	Ongoing	Electric Power Land Use Agriculture & Working Lands	Municipalities/Counties Department of State NYSERDA	Municipalities				
Tool 5: Partner with utilities and other energy stakeholders to increase grid capacity, create, meet, and expand their energy goals ensuring customer affordability remains a key consideration	Mid–Long: 3- 10+ yrs	Electric Power Land Use Agriculture & Working Lands	Utilities Developers NYSERDA Municipalities	Municipalities New York State Utilities				
Tool 6: Encourage the adoption of Community Choice Aggregation and other innovative renewable energy project agreements	Short- Mid: 1-10 yrs	Electric Power Land Use	Municipalities/Counties NYSERDA	Municipalities Advocates				

C. Electric Power

Strategy C2. Create regional support mechanisms to advance electric power and energy initiatives					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Tool 1: Develop targeted programs for reaching high energy users. Use pilot projects to promote this technology's success (ex. IDA)	Mid: 3-10 yrs	Land Use Industry & Workforce	NYSERDA IDAs Large energy consumers	IDAs Property owners				
Tool 2: Utilize existing AMPED Clean Energy Hub to provide education and technical assistance about funding and rebate programs for residents and business owners	Short: 1-3 yrs	Land Use Industry & Workforce	AMPED Clean Energy Hub Municipalities/Counties Advocates	Municipalities				
Tool 3: Utilize existing Clean Energy Communities program to provide education and technical assistance about funding and rebate programs for municipalities	Short: 1-3 yrs	Land Use Industry & Workforce	G/FLRPC NYSERDA Municipalities/Counties	Municipalities				
Tool 4: Facilitate ongoing region-wide conversations about the role of renewable energy	Short: 1-3 yrs	Land Use Industry & Workforce Regional Capacity	NYSERDA G/FLRPC AMPED Clean Energy Hub Higher education/Extension	G/FLPRC				
Tool 5: Provide service and educational material on energy conservation, reduction, and demand response practices (for example, charging your EV at night, smart meters) through active community outreach and engagement.	Short: 1-3 yrs	Land Use Industry & Workforce Regional Capcity	NYSERDA G/FLRPC AMPED Clean Energy Hub Higher education/Extension Utilities	Municipalities Utilities				
Tool 6: Reduce emissions leakage through monitoring, identifying, and upgrading utilities	Mid term: 3-10 yrs	Land Use Industry & Workforce	NYSERDA Utilities	Municipalities				

D. Agriculture & Working Lands

Strategy D1. Remove carbon from the region through sustainable forestry and land use practices					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Measure: Reduce carbon emissions through regional sustainable forest and land use management practices and reforestation	Mid–Long: 3- 10+ yrs	Land Use	Cornell Cooperative Extension Farmers Private land owners NYS Department of Agriculture & Markets Soil & Water Districts	Landowners Counties New York State	Carbon Sequestration- Offset of Emissions			
Measure: Increase carbon storage in soils through biochar production from slashing and thinning biomass	Mid–Long: 3- 10+ yrs	Land Use	Cornell Cooperative Extension Farmers NYS Department of Agriculture & Markets DEC NYSERDA Biomass facilities	Private operators New York State	Carbon Sequestration- Offset of Emissions			
Tool 1: Support programs to conserve open space in collaboration with land trust organizations, private landowners, and municipalities	Short-Mid: 1-10 yrs	Land Use	Cornell Cooperative Extension Farmers Land Trusts NYS Department of Agriculture & Markets	Land Trusts Municipalities/Counties				
Tool 2: Establish a tree fund to increase and replace lost tree cover and avoid deforestation across strategic land types, including NYS DAC and communities with environmental risks, to enhance carbon sequestration. Increase tree inventory data and establish regional tree canopy goals	Short-Mid: 1-10 yrs	Land Use	Cornell Cooperative Extension Farmers NYS Department of Agriculture & Markets	Municipalities/Counties				
Tool 3: Increase land restoration activities to enhance the carbon sequestering potential of forestlands	Mid term: 3-10 yrs	Land Use	Cornell Cooperative Extension Private land owners NYS Department of Agriculture & Markets Soil & Water Districts DEC Land Trusts	Landowners Municipalities/ Counties				
Tool 4: Promote and expand the utilization of forest carbon credits program	Mid term: 3-10 yrs	Land Use	Cornell Cooperative Extension Private land owners NYS Department of Agriculture & Markets DEC	Landowners, New York State				
Tool 5: Provide biochar education and encourage pilot projects	Short-Mid: 1-10 yrs	Land Use	Cornell Cooperative Extension NYS Department of Agriculture & Markets DEC	Higher education/Extensions, Farmers				

D. Agriculture & Working Lands

Strategy D2. Remove carbon from the region through sustainable agricultural practices					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Measure: Decrease methane emissions	Mid term: 3-10 yrs	Electric Power Waste Management	Cornell Cooperative Extension NYS Department of Agriculture & Markets DEC	Farm owners New York State	**103,725**	**207,449**	**414,898**	**622,347**
Measure: Decrease fertilizer use	Short-Mid: 1-10 yrs		Cornell Cooperative Extension Farmers NYS Department of Agriculture & Markets Soil & Water Districts	Farm owners New York State	This measure was not measured or quantified in the spreadsheet. Additional data will be explored for future iterations of the CCAP and in the status report.			
Measure: Increase energy efficiency through sustainable agricultural practices and use clean energy	Mid term: 3-10 yrs	Land Use Electric Power	Farmers NYSERDA Utilities NYS Department of Agriculture & Markets	Farm owners New York State	**3,325**	**6,650**	**13,299**	**19,949**
Tool 1: Incorporate water smart land management practices	Short-Mid: 1-10 yrs	Land Use	Farmers Cornell Cooperative Extension Soil & Water Districts	Farm owners New York State				
Tool 2: Encourage crop and livestock diversification to improve resilience to pests, diseases, and climate variability. For example agroforestry, intercropping, silvopasture and polyculture can enhance biodiversity	Short-Mid: 1-10 yrs	Land Use	Cornell Cooperative Extension Private landowners	Farm owners				
Tool 3: Support local agricultural entities to develop and implement education and outreach programs that will enhance carbon farming, carbon sequestration, increase soil health, promote climate resilience and adaptation, and crop productivity	Short: 1-3 yrs	Regional Capacity	Cornell Cooperative Extension Farmers NYS Department of Agriculture & Markets Soil & Water Districts	Counties Higher education/Extensions				
Tool 4: Train local agencies to audit GHGs for farm operations and provide resources to lower emissions. (Like an energy audit, but for ag practices)	Short: 1-3 yrs	Regional Capacity	Counties Cornell Cooperative Extension Farmers NYS Department of Agriculture & Markets NYSERDA	New York State Counties				
Tool 5: Facilitate conducting and sharing of climate-related agriculture research and technology (like precision agriculture, remote sensing, and data analytics) with local farmers in the agriculture industry. Establish monitoring and evaluation mechanisms can help assess the effectiveness of implemented measures and tools.	Short: 1-3 yrs	Land Use Regional Capacity	Cornell Cooperative Extension Farmers NYS Department of Agriculture & Markets Municipalities/ Counties NYS Farm Bureau	Municipalities/ Counties Higher education/Extensions Farm owners				

D. Agriculture & Working Lands

Strategy D2. Remove carbon from the region through sustainable agricultural practices					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Tool 6: Increase financial resources to support farmers with manure management	Short-Mid: 1-10 yrs	Land Use	Cornell Cooperative Extension Farmers NYS Department of Agriculture & Markets Municipalities/ Counties NYS Farm Bureau	New York State County Farm owners				
Tool 7: Implement and expand the operations of food and methane waste digestors with appropriate regulation and guidelines.	Mid term: 3-10 yrs	Materials Management	Farmers NYS Department of Agriculture & Markets DEC Developers Utilities	New York State Developers Farm owners				
Tool 8: Support existing Nutrient Management Spear Program to support farmers to manage fertilizer use in a climate smart way and promote best practices for soil health, increase adoption of cover crops and reduced tillage	Short: 1-3 yrs	Land Use	Cornell Cooperative Extension Farmers Soil & Water Districts	Higher education/Extensions, Farm owners				
Tool 9: Site appropriate land for agrivoltaics, create a reporting and monitoring program to track system operation, compliance, and performance	Mid term: 3-10 yrs	Land Use Electric Power	Municipalities/Counties Developers Farmers Utilities NYSERDA	Municipalities Property owners New York State Public Service Commission				
Tool 10: Develop purchase agreements for the sale of bio-energy. Encourage and pilot community-scale bio-energy production and distribution and the development of a carbon market	Mid term: 3-10 yrs	Electric Power	Utilities Developers IDAs Farmers NYSERDA	Project owners Utilities IDA boards				
Tool 11: Support and implement strategies put forth in Agriculture and Farmland Protection Plans	Short: 1-3 yrs	Land Use Regional Capacity	County Ag Boards Municipalities	Municipalities/Counties Land owners				
Tool 12: Incorporate strategies for efficient water use and management to address water scarcity and improve agricultural productivity. For example, rainwater harvesting, drip irrigation, and soil moisture management	Short-Mid: 1-10 yrs	Land Use	Soil & Water Districts Farmers	Farm Owners				

E. Materials Management

Strategy E1. Increase Landfill Diversion					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Measure: Increase landfill diversion by reducing the per capita waste numbers in the Region and elongating landfill lifespans	Mid: 3-10 yrs		Municipalities/Counties Waste haulers Businesses School Districts	New York State Municipalities/Counties	**65,941**	**131,881**	**197,822**	**329,703**
Tool 1: Expand composting facilities, programs, and funding for medium to large waste producers to reduce the amount of food in landfill, in accordance to NYS Food Donation and Food Scraps Recycling law. Over time, extend support to include small scale waste producers.	Short-Mid: 1-10 yrs	Agriculture & Working Lands Buildings Industry	Municipalities/Counties Private composters Higher education DEC Large waste generators	New York State Municipalities/Counties DEC				
Tool 2: Provide programs and funding for large food waste producers to reduce amount of food landfilled.	Short: 1-3 yrs	Industry	Municipalities/Counties Large institutions DEC	New York State Municipalities/County				
Tool 3: Encourage and incentivize medium to large food waste producers and municipalities to write and fulfill goals of Organics Management and local Solid Waste Management plans	Mid term: 3-10 yrs	Industry	Municipalities/Counties Waste haulers Large waste generators DEC	New York State Municipalities				
Tool 4: Develop partnerships with municipalities, schools, and private entities (like CAFOS) to support pilot programs on organics management/waste reduction	Short-Mid: 1-10 yrs	Buildings Industry	Municipalities/Counties Private haulers Large institutions CAFOs School districts Private industry	Counties				
Tool 5: Develop a construction and demolition waste reduction program and policies for new construction and renovation focused on reuse, contractor training, and market capacity building for reclaimed material.	Mid term: 3-10 yrs	Buildings Agriculture & Working Lands Industry & Workforce	Builders/Contractors Reuse centers IDA DEC	New York State Municipalities/Counties				
Tool 6: Support innovation of alternative materials for single use plastics	Mid-Long: 10+ yrs	Buildings Agriculture & Working Lands Industry & Workforce	Higher education Manufacturers DEC	Private Sector DEC				
Tool 7: Encourage waste districts locally, ensure that garbage, recycling, and food waste is all included in a single pick up to reduce VMTS.	Short-Mid: 1-10 yrs	Buildings Transportation	Waste haulers Municipalities/Counties	Municipalities/Counties Waste Haulers				
Tool 8: Create a demand and develop a market for circular material regionally and locally to reduce VMT's and overall waste.	Mid term: 3-10 yrs	Buildings Transportation	IDA Higher education Private sector	IDA EDA				
Tool 9: Increase tipping fees or tax to include externality costs (AKA Pay-As-You-Throw (PAYT)	Mid term: 3-10 yrs		Municipalities/Counties Waste haulers DEC	New York State Municipalities				

E. Materials Management

Strategy E2. Sustainability Manage Landfills and Wastewater Treatment Facilities					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Measure: Encourage landfills and wastewater treatment facilities to use the latest technology of methane capture for active and closed landfills	Mid-Long: 3- 10+ yrs	Electric Power Land Use	Landfill owners/operators Wastewater Treatment Plant Operators DEC NYPA Utilities	Facility owners New York State	**32,404**	**64,809**	**518,470**	**583,279**
Tool 1: Encourage end of life for landfills to maximize use for local residents in the area - i.e. Open space, photovoltaic power, etc.	Mid: 3-10 yrs	Electric Power Land Use	Municipalities/Counties Developers Landfill owners/operators DEC	Municipalities/Counties New York State				
Tool 2: Incentive early implementation of Landfill Gas recovery systems and review policies that incentivize early implementation	Mid: 3-10 yrs	Electric Power	Landfill operators Wastewater Treatment Plant Operators Municipalities/Counties DEC NYPA Utilities	New York State Municipalities/Counties				

Strategy E3. Build capacity for the region to reduce, reuse, and recycle material					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Tool 1: Expand education and awareness on recycling, composting, and waste reduction, especially at schools and public institutions.	Short: 1-3 yrs	Regional Capacity	Municipalities School Districts NYSP2I	New York State Municipalities				
Tool 2: Support sustainable procurement policies for public institutions region-wide	Short-Mid: 1-10 yrs	Regional Capacity	Municipalities/Counties School Districts Higher education	State Municipalities/Counties School Districts Higher education				
Tool 3: Support existing goals and programs outlined in the latest New York State Solid Waste Management Plan	Ongoing	Regional Capacity	Municipalities/Counties DEC	Municipalities/Counties				
Tool 4: Encourage reuse, repair, and upcycling through programming, education, incentives, and incubator projects.	Short-Mid: 1-10 yrs	Regional Capacity	IDA School Districts Businesses	Municipalities/Counties Purchasing officers				
Tool 5: Encourage the standardization and adoption of recycling and waste diversion strategies for public places and events	Short-Mid: 1-10 yrs		Municipalities School Districts DPW Event organizers	Municipalities				

E. Materials Management

Strategy E3. Build capacity for the region to reduce, reuse, and recycle material					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Tool 6: Provide a space for waste diversion research for specific materials (i.e. textile recycling etc.)	Ongoing		Higher education DPW Industry groups	Counties Higher education				
Tool 7: Provide and promote e-waste and other hard to dispose of item collection in strategic locations	Short-Mid: 1-10 yrs		Municipalities/Counties DEC	Municipalities				
Tool 8: Promote model policies for municipalities to reduce waste and promote circularity	Short-term		G/FLRPC Counties DEC Department of State	New York State Counties				
Tool 9: Support the hiring of personnel working on landfill diversion county-wide	Short-term		Municipalities/Counties	Municipalities				

F. Industry & Workforce Development

Strategy F1. Decarbonize industrial processes in the Region					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MTCO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Measure: Decarbonize and retrofit industrial processes by adopting zero emission technologies, improving energy efficiency, and transitioning to carbon-free and renewable energy sources	Long: 10+ yrs	Electric Power	Manufacturers IDAs Utilities NYSERDA NYPA	Businesses IDAs State	**136,284**	**272,568**	**545,136**	**817,704**
Tool 1: Create a working group of regional industry leaders to decarbonize industrial processes	Short-Mid: 1-10 yrs	All sectors	IDA EDA Utilities NYSERDA Higher education/Extension G/FPRPC	EDA IDA				
Tool 2: Prioritize siting industries in the region on brownfield sites and near current infrastructure to support energy reduction and employee access	Mid: 3-10 yrs	All sectors	IDA EDA Developers DOT RGRTA	Municipalities IDA				
Tool 3: Provide programming, education, and financial incentives for energy reduction in the industry sector	Short: 1-3 yrs	All sectors	G/FLRPC NYSERDA Trade groups Higher education Workforce Development Boards	State Utilities				

F2. Strengthen the Green Workforce					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Tool 1: Develop a working group with employers, employees, and other regional partners to identify workforce needs and gaps to support collaboration in planning for the future of the regional workforce	Short: 1-3 yrs	All sectors	IDAs Trade groups/Unions Higher education Workforce Development Boards Employers	County Workforce Development Boards				
Tool 2: Provide outreach, education, and technical assistance for employers by partnering with educational institutions, expanding training capacity, and updating training content for existing industries	Short: 1-3 yrs	All sectors	Trade groups/Unions Higher education Employers BOCES NYSERDA	Higher education BOCES Workforce Development Boards				

F. Industry & Workforce Development

F2. Strengthen the Green Workforce					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Tool 3: Build a clean energy workforce development training center that targets NYS DAC and communities with environmental risks and provides services to connect residents with jobs in energy efficiency fields	Mid:3-10 yrs	All sectors	IDA Higher education NYSERDA NYPA Developers	Municipalities/Counties Higher education IDA				
Tool 4: Use building demonstration sites as locations for community education and outreach	Short: 1-3 yrs	All sectors	Municipalities Property owners NYSERDA Utilities	Municipalities Property owners				
Tool 5: Define and integrate clean energy pathways into skilled trade and educational programs.	Short-Mid: 1-10 yrs	All sectors	Trade groups/Unions Higher education Employers BOCES	School districts				
Tool 6: Launch marketing campaigns about what it takes to be in the clean and renewable energy space. Target middle and high school students	Short: 1-3 yrs	All sectors	School districts Workforce development boards Employers	County School districts Workforce development boards				

G. Building Regional Capacity

G1. Build Citizen Support for Climate Action					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Tool 1: Provide community-wide education on rebates and incentives related to funding for climate-related improvements	>1	All sectors	G/FLRPC NYSERDA AMPED Clean Energy Hub Municipalities/Counties	Municipalities/Counties				
Tool 2: Create a recurring community climate public forum for region-wide sustainability goals	Short: 1-3 yrs	All sectors	G/FLRPC NYSERDA AMPED Clean Energy Hub Municipalities Higher education/Extensions	G/FLRPC				
Tool 3: Support community organizations serving NYS DACs and communities with environmental risks to assist with accessibility of affordable clean energy and energy efficiency improvements	Short: 1-3 yrs	All sectors	G/FLRPC Community organizations AMPED Clean Energy Hub, Municipalities/Counties	Municipalities New York State				
Tool 4: Support the increased participation in Climate Solution Accelerator's Color Your Community and Color Your Organization Green groups	Ongoing	All sectors	G/FLRPC Municipalities Climate Solutions Accelerator School Districts	Municipalities				

G1. Build Municipality Capacity for Climate Action Support for Climate Action					GHG Reductions by 2035		GHG Reductions by 2050	
Measure/Tool	**Timeframe**	**Sector Intersection**	**Leadership & Key Partners**	**Authority to Implement**	**Existing Trend MTCO2e**	**Ambitious MT-CO2e**	**2050 Pathway to CLCPA Goal MTCO2e**	**CLCPA Target MTCO2e**
Tool 1: Increase the participation of local municipalities to pursue Climate Smart Communities and Clean Energy Communities certification and begin implementing action items	>1	All sectors	G/FLRPC Municipalities/Counties DEC NYSERDA	Municipalities/Counties				
Tool 2: Develop a region-wide or sector-based green bank for loans, credit enhancements, and the creation of new grant financing methods	Mid-Long: 3- 10+ yrs	All sectors	Counties IDAs NY Green Bank	Counties Green bank board				
Tool 3: Take advantage of state and federal finance mechanisms for climate mitigation and adaptation projects	Short: 1-3 yrs	All sectors	Municipalities/Counties State/Federal agencies G/FLRPC	Municipalities/Counties				
Tool 4: Create a GHG inventory dashboard for municipalities	Ongoing	All sectors	G/FLRPC NYSERDA	G/FLRPC New York State				
Tool 5: Support the creation of municipal and regional positions that will bolster and support climate action	Short: 1-3 yrs	All sectors	Municipalities/Counties	Municipalities/Counties				
Toll 6: Advocate for supportive policies at local, state, and federal levels can create a conducive environment for sustainable practices. For example, tax incentives, grants, or subsidies for farmers adopting sustainable methods	Ongoing	All sectors	Municipalities/Counties Associations of Towns Chamber of Commerce/IDAs	Municipalities/Counties Elected Officials				