

# New York State Climate Action Council

## Agriculture and Forestry Advisory Panel

March 2<sup>nd</sup>, 2021  
Meeting 9



**Climate Action  
Council**

# Procedure for Public Input

## The Advisory Panel welcomes public comments and questions both during and in between its meetings

- > To submit feedback to Panel Members and agency staff during the meeting, members of the public can use the WebEx Chat function located in the right bottom corner.
  - Comments and questions submitted through WebEx will be aggregated and submitted to panel members to be included in deliberations.
- > To submit feedback between Advisory Panel meetings, please email [agriculture.forestry@agriculture.ny.gov](mailto:agriculture.forestry@agriculture.ny.gov)



# Agenda

- > Welcome
- > Roll Call
- > Agricultural Related Recommendation Template  
– Brian Steinmuller
- > Forest Management/Avoided  
Conversions/Bioeconomy Subgroup status and  
next steps
- > Next Meeting: March 16<sup>th</sup>, 2021

# **Ag Related Recommendations**

# Mitigation strategy – Alternative Manure Management: Overview

*Draft Material*

<b>Description:</b>	Alternative Manure Management - Reduce methane emissions by implementing practice systems specifically planned and designed for each farm, such as cover and flare systems, anaerobic digester systems, and other/innovative systems that collect, capture and combust methane from manure storages or prevent methane production from manure storage.		
<b>Action type:</b>	Agricultural Emission Reduction / (Executive, Financial, Legislative)		
<b>GHG reduction by 2030:</b>	Medium – High	<b>GHG reduction by 2050:</b>	High
<b>Cost and funding considerations:</b>	\$\$, funding from EPF through AEM Base, CRF, and AgNPS Program (water quality), Federal funds, private investment where practices provide a sufficient return, NYSERDA (related to energy generation)		
<b>Ease of implementation:</b>	Easy for systems with a track record of use in NYS and medium for more advance manure management systems.		
<b>Example case studies:</b>	Climate Resilient Farming Program; Carbon Farming Report; Manure Storage GHG Mitigation (Info Sheets #2 and #3); Cornell PRO-DAIRY Environmental Systems (research and on-farm case studies); NYSERDA Programs/projects.		
<b>Risks / Barriers to success</b>	<b>Possible mitigants</b>		
<ul style="list-style-type: none"> <li>• New processes, technologies, costs, and returns to evaluate</li> <li>• Storage retrofit and bedding challenges.</li> <li>• Operation and maintenance necessary for optimal methane capture and combustion</li> <li>• Methane loss risk relative to ambient manure storage baseline</li> <li>• Gaps in applied research as well as in-field leak monitoring processes</li> <li>• Potential nutrient imbalances with increase in imported organic waste processing</li> <li>• Quantifying and verifying outcomes</li> </ul>	<ul style="list-style-type: none"> <li>• AEM Planning – develop specific mitigation strategies for each farm</li> <li>• Performance based funding; building performance measures into access to public funds; include GHG monitoring into implementation of new GHG mitigation practices</li> <li>• Increase adoption of cover and flare systems for existing manure storages. Track performance of GHG reductions of completed projects</li> <li>• More public and private sector investment</li> <li>• More private sector engineering, technology, operation, and verification support.</li> <li>• Mitigation services for other sectors (e.g., food waste, energy)</li> <li>• Dairy farmer-led industry priorities toward net zero GHG</li> <li>• University and on-farm research partnerships to continue to identify effective, value-generating manure management systems for a range farm management scenarios</li> </ul>		

# Mitigation strategy – Alternative Manure Management: Components of the strategy

<b>Components required for delivery</b> <i>(Brief description of action required)</i>	<b>Implementation lead</b> <i>(Entity responsible for completing)</i>	<b>Time to implement</b> <i>(Time required to implement)</i>	<b>Other key stakeholders</b> <i>(Entities that need to be engaged)</i>
Expand funding for NYS Climate Resilient Farming Program & AgNPS. Increase payment rates, access, technical assistance, and eligible manure management practice systems, build equity into programs.	NYSAGM/NYSSWCC/SWCDs	Ongoing	CCE/PEs/Cornell/NYSERDA/ USDA /Farmers/Lenders
Expand funding for NYSERDA for advancement of renewable energy, methane mitigation, <b>including measurement and abatement of methane leakage</b> , and future innovations.	NYSERDA	5 Years	NYSAGM/Farmers/PEs/Cornell/NYS DEC
Expand Public/Private Partnerships - Align manure management systems designed for renewable energy, organic waste management, and methane mitigation with markets (existing or future; LCFS; industry net zero initiatives; etc.) and private sector investment.	Renewable Energy and Waste Industry/NYSAGM/PEs/Cornell/CCE/NYSERDA/USDA/Farmers/Lenders	5 Years	NYSSWCC/SWCDs
Increase technical assistance and engineering capacity for feasibility assessment, planning, design, operation, maintenance, and monitoring of systems.	Renewable Energy and Waste Industry/PEs/ Cornell/CCE NYSERDA/USDA/NYSAGM/NYS NYSSWCC/SWCDs	5 Years	Farmers/NYSDEC/Lenders
Refine policies to encourage new manure storages funded through the state programs to incorporate methane mitigation strategies including retrofit capacity.	NYSAGM/NYSSWCC/SWCDs	6-12 months	CCE/PEs/Cornell/NYSERDA/ USDA/Farmers

# Mitigation strategy – Alternative Manure Management: Components of the strategy

<b>Components required for delivery</b> <i>(Brief description of action required)</i>	<b>Implementation lead</b> <i>(Entity responsible for completing)</i>	<b>Time to implement</b> <i>(Time required to implement)</i>	<b>Other key stakeholders</b> <i>(Entities that need to be engaged)</i>
Pursue further methane leakage research and monitoring to guide systems and management to minimize losses and optimize GHG reduction benefit.	NYSAGM/NYSERDA/Cornell	Ongoing	CCE/PEs/Cornell/USDA /Farmers
Through training, expand capacity of technical service providers and farm staff to design, build, operate, and maintain alternative manure management systems.	NYSAGM/Cornell/PEs/SWCDs	12-24 months	CCE/NYSERDA/USDA/Farmers/NYS Farm Bureau/Other farm organizations
Implement long-term funding support for alternative manure management applied research and outreach, including processes for realizing additional value from manure and analyses for strategic development/siting of methane mitigating manure and organic waste management systems.	NYSAGM/NYSERDA/Cornell/NYS DEC	6-12 months	SWCDs/CCE Farmers/ PEs/
Develop a NYS-funded loan guarantee program to stimulate investment in alternative manure management systems.	NYSAGM/NYSERDA/Cornell/Lenders	12-24 months	NYSSWCC/SWCDs
Develop NYS-bulk buying programs to reduce core material and equipment costs (covers, flares, separators, standardized controls, other components, etc.). Similar to solar industry and energy efficient heating programs.	NYSAGM/NYSERDA/NYSDEC/Renewable Energy and Waste Industry	2-4 years	Farmers/NYSDEC/Lenders
Through policy and funding, improve cross-sector sale/transfer of commodities (e.g., organic co-products or “waste”, gas pipelines, electric grid connections).	NYSAGM/NYSERDA/NYSDEC	12-24 months	CCE/PEs/Cornell/USDA/Farmers

# Mitigation strategy – Alternative Manure Management: Benefits and impacts

*Draft Material*

## Anticipated Benefits and Impacts

### Disadvantaged communities

Increasing planning, technical services and financial assistance improves access to programs and effective practices for all farmers. Emphasis on access to conservation technical assistance and funding programs to historically underserved and disadvantaged community members, including farmers identifying as BIPOC, women owned, low income, veteran, or beginning. Improvements in food production capacity, resiliency and diversity have a positive effect on disadvantaged communities. Consider providing a higher percentage of cost share funding for state programs designed to assist historically underserved farmers, in implementing GHG reductions strategies.

### Health and co-benefits

Manure management improvements for methane mitigation have the potential to elevate local food production and resiliency, water quality, air quality, storm/flood mitigation, public infrastructure protection, drought resiliency, habitat, scenic vistas/tourism, economic development, renewable energy, higher use of organic waste, and jobs by reducing the negative impacts of climate change from short-lived climate pollutants. NYSDEC regulates emissions from engines and flares associated with alternative manure management systems. Flares associated with ambient temperature covered manure storages are exempt from registration and permitting, because emissions, such as hydrogen sulfide, sulfur dioxide, nitrogen oxides, carbon monoxide, particulate matter, and volatile organic compounds, are below regulatory thresholds. Engines and flares associated with anaerobic digester systems process gases in higher concentrations, so such emissions are regulated via registration or permit for monitoring and compliance with State and federal air quality standards.

### Just transition: businesses and industries, workers

Inter-generational family transfer, improved access for historically underserved and beginning farmers, youth engagement, internships and educational opportunities, public and private sector job creation, on-farm job creation.

### Other

# Mitigation strategy – Precision Feed & Forage

*Draft Material*

## Management: Overview

<b>Description:</b>	Precision Feed and Forage Management – Reduce methane and nitrous oxide emissions while achieving desired ruminant growth and lactation goals. Strategy acknowledges that additional methane emission reduction may be realized from feed additives developed in the future.		
<b>Action type:</b>	Agricultural Emission Reduction (methane and nitrous oxide) / (Executive, Financial, Legislative)		
<b>GHG reduction by 2030:</b>	Medium (based on feed and forage mgt. only; higher potential with future feed additives)	<b>GHG reduction by 2050:</b>	Medium (based on feed and forage mgt. only; higher potential with future feed additives)
<b>Cost and funding considerations:</b>	\$, funding from EPF through AEM Base, CRF, and AgNPS Program (water quality), Federal Programs, private investment where practices provide a sufficient return.		
<b>Ease of implementation:</b>	Easy for implementation of precision feed and forage management <b>with continued and enhanced training delivered to farms/industry.</b>		
<b>Example case studies:</b>	Carbon Farming Report; Dairy Manure Mgt and GHG Opportunities (Info Sheet #2); Cornell Net Carbohydrate and Protein System research and extension; Precision Feed Management projects in NYC Watershed.		

<b>Risks / Barriers to success</b>	<b>Possible mitigants</b>
<ul style="list-style-type: none"><li>• New processes, technologies, costs, and returns to evaluate.</li><li>• Demands sustained, adaptive management by farmers and advisors for most benefit.</li><li>• Learning curve by farmers, advisors, and feed industry.</li><li>• Gaps in applied research.</li><li>• Weather and market disruptions can influence performance (low quality forage).</li></ul>	<ul style="list-style-type: none"><li>• University and on-farm research partnerships to continue to identify efficient, site specific management strategies.</li><li>• More public and private sector investment.</li><li>• More public and private sector planning capacity.</li><li>• Dairy farmer-led industry priorities toward net zero GHG.</li><li>• Improved methods of monitoring performance throughout forage and feeding systems on farms.</li></ul>

# Mitigation strategy – Precision Feed & Forage Management: Components of the strategy

Components required for delivery <i>(Brief description of action required)</i>	Implementation lead <i>(Entity responsible for completing)</i>	Time to implement <i>(Time required to implement)</i>	Other key stakeholders <i>(Entities that need to be engaged)</i>
Expand outreach and education of precision feed and forage management to more farmers, nutritionists, and feed industry professionals.	Cornell/CCE/ Farmers/ Independent Nutritionists/ Feed Industry Nutritionists/ CCAs/SWCDs/NRCS	Ongoing	Milk Cooperatives and Processors
Expand access to precision feed and forage management monitoring (e.g., for feeding, production, intake) and decision tools (e.g., CNCPS) applicable to a range of farm conditions and management. Increase on-farm use of methane module within CNCPS and develop statewide benchmarks to gauge improvement overtime.	Cornell/CCE/Farmers/ Independent Nutritionists/ Feed Industry Nutritionists/ CCAs/SWCDs/NRCS	Ongoing	Milk Cooperatives and Processors

# Mitigation strategy – Precision Feed & Forage Management: Components of the strategy

Components required for delivery <i>(Brief description of action required)</i>	Implementation lead <i>(Entity responsible for completing)</i>	Time to implement <i>(Time required to implement)</i>	Other key stakeholders <i>(Entities that need to be engaged)</i>
Implement long-term funding support for precision feed and forage management applied research and outreach (including basic and applied research for methane mitigating feed additives).	NYSAGM/NYSSWCC /Cornell/SWCDs	2 Years and Continuous	Milk Cooperatives and Processors
Establish a Payment for Ecosystem Services (PES) mechanism to provide a new incentive structure for establishing and maintaining practice systems.	NYSAGM/NYSSWCC /SWCDs	6-12 months	Farmers/USDA/ Cornell/CCE
Explore establishment of a co-product market (e.g., food “wastes” supplied from food processors, retailers, or institutions) for best uses (including as livestock feed).	Food Processors/Food Retailers/Food Institutions/DEC	2 Years	Cornell/CCE/ Farmers/ Independent Nutritionists/Feed Industry Nutritionists/ NYSAGM

# Mitigation strategy – Initiative Precision Feed & Forage Management: Benefits and impacts

## Anticipated Benefits and Impacts

<b>Disadvantaged communities</b>	<p>Increasing planning, technical services and financial assistance improves access to programs and effective practices for all farmers. Emphasis on access to conservation technical assistance and funding programs to historically underserved and disadvantaged community members, including farmers identifying as BIPOC, women owned, low income, veteran, or beginning. Improvements in food production capacity, resiliency and diversity have a positive effect on communities. <b>Consider providing a higher percentage of cost share funding for state programs designed to assist historically underserved farmers, in implementing GHG reductions strategies.</b></p>
<b>Health and co-benefits</b>	<p>Precision feed and forage management improvements have the potential to elevate local food production and resiliency, water quality, air quality, storm/flood mitigation, public infrastructure protection, drought resiliency, habitat, scenic vistas/tourism, economic development and jobs by reducing the negative impacts of climate change from short-lived climate pollutants.</p>
<b>Just transition: businesses and industries, workers</b>	<p>Inter-generational family transfer, improved access for BIPOC and beginning farmers, youth engagement, internships and educational opportunities, public and private sector job creation, on-farm job creation, climate conservation corps (e.g. tree corps), and others.</p>
<b>Other</b>	

# Mitigation strategy – Initiative Soil Health: Overview Draft Material

<b>Description:</b>	Reduce net GHG emissions and increase carbon sequestration and other environmental benefits through <u>adoption</u> of soil health management practices (also referred to as Regenerative Agricultural Practices).		
<b>Action type:</b>	Agricultural Emission Reduction/Sequestration (Executive, Legislative, Financial)		
<b>GHG reduction by 2030:</b>	Low	<b>GHG reduction by 2050:</b>	Medium
<b>Cost and funding considerations:</b>	\$\$, funding from EPF through Climate Resilient Farming, AEM Base Program, AgNPS Program (water quality), and other state and federal programs, seek new and enhanced funding sources, including private investments as many soil health practices have the potential to generate cost savings, improve yields and quality, and diversify farm products.		
<b>Ease of implementation:</b>	Easy, infrastructure and cost-share funding programs exist to support soil health including the implementation of regenerative farming practice systems; Medium, develop soil health standard to help further adoption of BMPs, develop an annual acre goal for the most common practices (cover and double crops/reduced tillage); Hard, quantification and verification tools.		
<b>Example case studies:</b>	Carbon Farm Study, Healthy Soils NY, Soil Health Characterization Report, Whole Farm Nutrient Balance (Cornell Spear Program), US Climate Alliance Toolkit, CaRPE Report		

Risks / Barriers to success	Possible mitigants
<ul style="list-style-type: none"> <li>Upfront costs to adoption</li> <li>Uncertainty in potential mitigation and impermanence of increasing soil carbon – Difficult to verify</li> <li>Proving additionality</li> <li>Equipment affordability and access</li> <li>Planting windows – highly dependent on weather conditions throughout growing season</li> <li>Need for continual research, field trials, and pilot projects for data collection and monitoring</li> <li>(Im)Balance of imports/exports of carbon (soil health) and nutrients at the farm, landscape, and regional scales.</li> </ul>	<ul style="list-style-type: none"> <li>Increase CRF and AgNPS funding, increase payment rates and access to cost-share programs, increase technical assistance,</li> <li>Increase adoption of soil health practices; Support cover &amp; double-crop practices, encourage coupling of practices (e.g. no-till &amp; cover cropping together)</li> <li>Make efforts under Healthy Soils NY visible to farmers and public</li> <li>Advance quantification and measurement and reporting tools</li> <li>Advance research in perennial grain production</li> <li>Convert annual cropland to perennial hayland/pasture where appropriate (e.g., steep slopes, highly erodible lands, etc.)</li> <li>Expand on-farm planning to include explicit carbon sequestration goals</li> <li>Establishing a Payment for Ecosystem Services (PES) mechanism to assist in incentivizing long-term adoption</li> </ul>

# Mitigation strategy — Initiative Soil Health:

## Components of the strategy

*Draft Material*

<b>Components required for delivery</b> <i>(Brief description of action required)</i>	<b>Implementation lead</b> <i>(Entity responsible for completing)</i>	<b>Time to implement</b> <i>(Time required to implement)</i>	<b>Other key stakeholders</b> <i>(Entities that need to be engaged)</i>
Increase financial support for currently available and implemented practices - Expand funding for NYS CRF, AEM Base, AgNPS; increase payment rates, increase access, build equity into programs, increase technical assistance, encourage adoption of a system of practices, develop soil health standard, establish annual goal for common practices.	NYSAGM/NYSSWCC/SWCDs	6-12 months	USDA/CCE Farmers
Quantification and measurement - Develop tools for verification of benefits, invest in remote sensing to quantify adoption of practices.	NYSAGM/NYSSWCC/Cornell	Continual	SWCDs/USDA/NYSERDA/ Farmers/ESF/TNC
Support perennials - Convert annual cropland to perennial hayland/pasture and where appropriate (e.g. steep slopes, highly erodible lands, etc.).	NYSAGM/NYSSWCC/SWCDs	6-12 months	CCE/Farmers/USDA
Establish and maintain a comprehensive research strategy in soil health to bring new practices and approaches that increase sequestration rates, productivity, other environmental benefits, and scale for adoption.	NYSAGM/Cornell/SUNYs/USDA	Continual	NYSSWCC/SWCDs/ Farmers/Other Colleges and Universities
Support continued development and implementation of precision/digital agricultural tools and sustainable intensification, which is the sustainable increase in yields on current cropland to reduce stress on marginal cropland to support this mitigation strategy.	NYSAGM/NYSSWCC/Cornell/CCE/SWCDs	3-5 years	Farmers/NYSERDA/ USDA
Establish a Payment for Ecosystem Services (PES) mechanism to provide a new incentive structure for establishing and maintaining practice systems.	NYSAGM/NYSSWCC/SWCDs	6-12 months	Farmers/USDA/Cornell/ CCE
AEM Planning – Conduct comprehensive on-farm planning to include carbon sequestration goals, GHG emission, nutrient management, and soil health.	NYSAGM/NYSSWCC/SWCDs	Continual	Farmers/CCE/Cornell/ USDA

# Mitigation strategy – Initiative Soil Health: Components of the strategy

*Draft Material*

<b>Components required for delivery</b> <i>(Brief description of action required)</i>	<b>Implementation lead</b> <i>(Entity responsible for completing)</i>	<b>Time to implement</b> <i>(Time required to implement)</i>	<b>Other key stakeholders</b> <i>(Entities that need to be engaged)</i>
Make efforts visible to farmers and public through outreach campaign making information more available, expand regenerative agricultural practices in marketing programs (e.g. NY Grown & Certified).	NYSAGM/CCE	12-24 months	NYSSWCC/SWCDs/ Farmers
Expand education and outreach to support practice adoption & encourage coupling of practices into systems for maximum benefit. Emphasize agricultural and soil health instruction in schools to connect students with farms and farmers and knowledge of ecological benefit of healthy soils.	NYSAGM/NYSSWCC/ Cornell/SWCDs/CCE/ SWCDs	Continual	USDA/NYSERDA/ Farmers/ESF
Expand capacity of SWCDs and partners to aid on farm implementation of soil health and nutrient management practices.	NYSAGM/NYSSWCC/ SWCDs	Continual	Farmers/CCE/Cornell/ USDA
Identify practice systems that can generate revenue, identify variety of public and private funding sources	NYSAGM/NYSSWCC/ Cornell/CCE/SWCDs	6-12 months	Farmers/NYSERDA/ USDA
Peer to peer networking to elevate adoption of SH practices (local farmer SH discussion groups). Seek feedback from groups/communities not currently engaged in practices and programs (e.g. holding focus groups or surveys).	NYSAGM/NYSSWCC/ SWCDs/Cornell/CCE	6-12 months	Farmers/USDA/NYS Farm Bureau/FVI/ Other farm organizations

# Mitigation strategy – Initiative Soil Health: Benefits and impacts

*Draft Material*

## Anticipated Benefits and Impacts

### Disadvantaged communities

Increasing planning, technical services and financial assistance improves access to programs and effective practices for all farmers. Emphasis on access to conservation technical assistance and funding programs to historically underserved and disadvantaged community members, including farmers identifying as BIPOC, women owned, low income, veteran, or beginning. **Consider providing a higher percentage of cost share funding for state programs designed to assist historically underserved farmers, in implementing GHG reductions strategies.** Improvements in food production capacity, resiliency and diversity have a positive effect on disadvantaged communities. Additional focus will be on connecting availability of fresh, local food to disadvantaged communities through programs like NY Fresh Connect, farm to school programs, and others. Emphasize agricultural and soil health instruction in schools to connect students with farms and farmers and knowledge of ecological benefit of healthy soils.

### Health and co-benefits

Increased soil health; adaptation and resilience to extreme weather (increased water retention during drought and erosion prevention during extreme precipitation), potential profitability of harvesting a double-crop, and improved water quality due to nutrient and sediment retention.

### Just transition: businesses and industries, workers

Inter-generational family transfer, improved access for historically underserved including, BIPOC and beginning farmers, youth engagement, internships and educational opportunities, public and private sector job creation, on-farm job creation, climate conservation corps (e.g. tree corps), and others.

### Other

# Mitigation strategy – Nutrient Management: Overview

*Draft Material*

<b>Description:</b>	Nutrient Management - Reduce nitrous oxide emissions while achieving desired crop yield and quality through continued and expanded nutrient management planning and implementation on crop fields, hay fields, pastures, orchards, vineyards, and other agricultural lands receiving nutrients.		
<b>Action type:</b>	Agricultural Emission Reduction (N20) (Executive, Financial, Legislative)		
<b>GHG reduction by 2030:</b>	Low-medium (based on fertilizer N and manure use efficiency)	<b>GHG reduction by 2050:</b>	Medium-high (based on fertilizer N and manure use efficiency)
<b>Cost and funding considerations:</b>	\$, funding from EPF through Climate Resilient Farming, AEM Base Program, AgNPS Program (water quality), other state and federal programs, and private sector investment where practices provide a reasonable return.		
<b>Ease of implementation:</b>	Easy for implementation of nutrient management. Medium for more advanced as well as future approaches.		
<b>Example case studies:</b>	Carbon Farming Report; N Fertilizer Mgt (Info Sheet #5); Cornell Nutrient Management Spear Program.		

Risks / Barriers to success	Possible mitigants
<ul style="list-style-type: none"> <li>• New processes, technologies, costs, and returns to evaluate.</li> <li>• Demands sustained, adaptive management by farmers and crop advisors for most benefit.</li> <li>• Learning curve by farmers, crop advisors, and fertilizer industry.</li> <li>• Gaps in applied research as well as field monitoring technology.</li> <li>• Weather variability changes N efficiency performance.</li> <li>• Lack of necessary equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• On-farm research partnerships to continue to identify efficient, site specific management strategies (N eff. with crop yield and quality).</li> <li>• More public and private sector investment.</li> <li>• More public and private sector planning capacity.</li> <li>• Fertilizer industry-led priorities focused on 4Rs of nutrient mgt.</li> <li>• Improved methods of monitoring performance via crop yield measurement and N use efficiency.</li> <li>• Peer-to-peer crop yield and N efficiency contests.</li> <li>• Crop insurance options.</li> </ul>

# Mitigation strategy – Nutrient Management:

## Components of the strategy

<b>Components required for delivery</b> <i>(Brief description of action required)</i>	<b>Implementation lead</b> <i>(Entity responsible for completing)</i>	<b>Time to implement</b> <i>(Time required to implement)</i>	<b>Other key stakeholders</b> <i>(Entities that need to be engaged)</i>
Technical Assistance - Increase cost-share support for technical assistance (planning) and SH/NM practice implementation through AEM Programs, such as the Climate Resilient Farming Program. Seek feedback from groups not currently engaged in practices and programs to remove obstacles (e.g. holding focus groups or surveys).	NYS NYSAGM/NYS NYSSWCC/SWCDs	6-12 months	CCE/CCAs/Cornell/ USDA/ Fertilizer Industry/ Farmers
Increase Financial Support - Expand cost-share eligibility in AEM Programs, such as the Climate Resilient Farming Program, for equipment needed by farms to implement more advanced soil health and nutrient management practices. Build equity into programs	NYS NYSAGM/NYS NYSSWCC/SWCDs	6-12 months	CCE/CCAs/Cornell/ USDA/ Fertilizer Industry/ Farmers
Evaluation - Improved methods of monitoring performance via crop yield measurement, N use efficiency, and farm nutrient balances (for farm-wide N management). Document benefits of NM to farmers, policymakers, and public	Cornell/CCE/CCAs/Fertilizer Industry/ Farmers	Continuous	NYS NYSAGM/NYS NYSSWCC/SWCDs
Collaboration with industry led Nutrient Management Initiatives/services. N efficiency x yield crop contests for peer-to-peer competition and informational opportunities.	Fertilizer Industry/CCA/ Farmers/Cornell	Continuous	CCE/Cornell/ USDA/ NYS NYSAGM/NYS NYSSWCC/SWCDs

# Mitigation strategy – Nutrient Management: Components of the strategy

*Draft Material*

<b>Components required for delivery</b> <i>(Brief description of action required)</i>	<b>Implementation lead</b> <i>(Entity responsible for completing)</i>	<b>Time to implement</b> <i>(Time required to implement)</i>	<b>Other key stakeholders</b> <i>(Entities that need to be engaged)</i>
Expand capacity of custom farming service providers to aid on farm implementation of nutrient management practices.	NYS NYSAGM/NYS NYSSWCC/SWCDs	6-12 months	CCE/CCAs/Cornell/ USDA/ Fertilizer Industry/ Farmers
Expand capacity of service providers and partners to aid on farm implementation of nutrient management practices.	NYS NYSAGM/NYS NYSSWCC/SWCDs	6-12 months	CCE/CCAs/Cornell/ USDA/ Fertilizer Industry/ Farmers
Implement long-term funding support for nutrient management applied research and outreach (management approaches, technology, new inputs with lower GHG inputs, etc.).	Cornell/CCE/CCAs/ Fertilizer Industry/ Farmers	Continuous	NYS NYSAGM/NYS NYSSWCC/SWCDs
Increase outreach, that's consistent with the research and technical standards used in NY, to make steps taken by farmers more visible to consumers.	Fertilizer Industry/CCA/ Farmers/CCE/Cornell/ USDA/NYSAGM/NYS-NYSSWCC/SWCDs	Continuous	
Establish a Payment for Ecosystem Services (PES) mechanism to provide a new incentive structure for establishing and maintaining practice systems.	NYSAGM/NYSSWCC/ SWCDs	6-12 months	Farmers/USDA/Cornell/ CCE/American Farmland Trust
Continue and enhance training for planners and farmers.	NYSAGM/NYSSWCC/ SWCDs/Cornell/CCE	Continuous	USDA/Farmers/CCAs

# Mitigation strategy –Nutrient Management: Benefits and impacts

## Anticipated Benefits and Impacts

### Disadvantaged communities

Increasing planning, technical services and financial assistance improves access to programs and effective practices for all farmers. Emphasis on access to conservation technical assistance and funding programs to historically underserved and disadvantaged community members, including farmers identifying as BIPOC, women owned, low income, veteran, or beginning. **Consider providing a higher percentage of cost share funding for state programs designed to assist historically underserved farmers, in implementing GHG reductions strategies.** Improvements in food production capacity, resiliency and diversity have a positive effect on disadvantaged communities.

### Health and co-benefits

Nutrient management improvements have the potential to elevate local food production and resiliency, water quality, air quality, storm/flood mitigation, public infrastructure protection, drought resiliency, habitat, scenic vistas/tourism, economic development and jobs.

### Just transition: businesses and industries, workers

Inter-generational family transfer, improved access for historically underserved and beginning farmers, youth engagement, internships and educational opportunities, public and private sector job creation, on-farm job creation, climate conservation corps (e.g. tree corps), and others.

### Other

# Mitigation strategy – Agroforestry: Overview

*Draft Material*

<b>Description:</b>	Agroforestry - Adding trees into areas of agricultural production to reliably increase carbon sequestration and other environmental benefits.		
<b>Action type:</b>	Agricultural Emission Reduction/Sequestration (Legislative, Executive, Financial)		
<b>GHG reduction by 2030:</b>	Low	<b>GHG reduction by 2050:</b>	Low - Medium
<b>Cost and funding considerations:</b>	\$, funding from EPF through Climate Resilient Farming and AgNPS Program (water quality); Watershed-wide funding opportunities; Federal Funding, USDA Programs, (CSP, CRP, EQIP), private investment where practices provide a sufficient return.		
<b>Ease of implementation:</b>	Easy for implementation of buffers; Medium for silvopasturing and alleycropping; Medium for ensuring survivability of tree plantings		
<b>Example case studies:</b>	Buffers: AgNPS, USC Buffer Pilot, Watershed Groups; Silvopasture: CRF Program, CCE field research, Cornell Forest Connect; Plantation Silvopasture, Woodland Silvopasture )Angus Glen Farms, Schuyler County, Alleycropping:		

Risks / Barriers to success	Possible mitigants
<ul style="list-style-type: none"> <li>• Upfront costs to adoption</li> <li>• Land access and transfer</li> <li>• Workforce gaps</li> <li>• Gaps in research, field trials, pilot projects, and market analyses in agroforestry systems</li> <li>• Long-term management and maintenance</li> <li>• Tree species selection and survivability</li> </ul>	<ul style="list-style-type: none"> <li>• Increase adoption of agroforestry practices; support (research (applied R&amp;D &amp; case studies of economics of practices), edu., &amp; technical asst) for farms diversifying operations nut/orchard/maple. that have revenue potential for farm</li> <li>• Set goals for acres of practices implemented (based on ~3M acres available land) # acres technically available &amp; # acres feasible for implementation</li> <li>• <b>Buffers:</b> increasing incentives for implementation through existing programs; developing new incentive structures for buffers (PES), elevating workforce to plan, design, implement and <u>establish</u> buffers</li> <li>• <b>Silvopasture:</b> expand the Climate Resilient Farming Program to include a track for agroforestry/silvopasture; expand education and technical assistance; expand programs that plan, design and implement intensively managed rotational grazing systems</li> <li>• <b>Alleycropping:</b> conduct field trials and pilot projects, expand education and technical assistance</li> </ul>

# Mitigation strategy – Initiative Agroforestry: Components of the strategy

*Draft Material*

<b>Components required for delivery</b> <i>(Brief description of action required)</i>	<b>Implementation lead</b> <i>(Entity responsible for completing)</i>	<b>Time to implement</b> <i>(Time required to implement)</i>	<b>Other key stakeholders</b> <i>(Entities that need to be engaged)</i>
Expand NYS Climate Resilient Farming Program to include agroforestry track. Set acreage targets for priority practices.	NYSAGM/NYSSWCC/SWCDs	6-12 months	Cornell/CCE/USDA/Farmers
Continue emphasis on forested buffers through AgNPS and Source Water Buffer Program, USDA CRP/CREP.	NYSAGM/NYSSWCC/SWCDs/Land Trusts	6-12 months	USDA/ Farmers/ Watershed Coalitions/munis.
Expand Trees for Tributaries Program, Non-Ag NPS, DEC Division of Fish and Wildlife Programs.	DEC/NYSAGM/NYSSWCC	1-2 years	SWCDs/CCE/Farmers/Watershed Coalitions
Expand education and technical assistance for beginning farmers and generational transfer. Assist farmers with business planning and modeling. Expand supply chain development for new products.	NYSAGM/CCE/Cornell	Continual	American Farmland Trust/Land Trusts/CCE/SWCDs/Farmers/Landowners/Farm Bureau/Financial lenders
Alleycropping: conduct field trials and pilot projects, expand education and technical assistance .	NYSAGM/NYSSWCC/Cornell/CCE/SWCDs	2-4 years	Farmers/Farm Bureau/ Other farm orgs.
Silvopasture: expand programs that plan, design, and implement intensively managed rotational grazing systems with a focus on proper site and species selection for adding trees.	NYSAGM/NYSSWCC/SWCDs/CCE	2-4 years	Farmers/DEC/TNC/USDA

# Mitigation strategy – Initiative Agroforestry:

## Components of the strategy

Components required for delivery <i>(Brief description of action required)</i>	Implementation lead <i>(Entity responsible for completing)</i>	Time to implement <i>(Time required to implement)</i>	Other key stakeholders <i>(Entities that need to be engaged)</i>
Establish a Payment for Ecosystem Services (PES) mechanism to provide a new incentive structure for establishing and maintaining practice systems.	NYSAGM/NYSSWCC/SWCDs	6-12 months	Farmers/USDA/Cornell/CCE
Farmland access: Assist farmers in securing long term leasing and farm transfer to beginning farmers – long term leases required for long term perennial systems.	NYSAGM/NYSSWCC/American Farmland Trust/Land Trusts	Continual	Cornell/CCE/Financial Lenders
Expand education and technical assistance for beginning farmers and generational transfer	DEC/NYSAGM/NYSSWCC	1-2 years	SWCDs/CCE/Farmers/Watershed Coalitions
Conduct outreach to financial lenders/insurance providers	NYSAGM/CCE/Cornell	Continual	American Farmland Trust/Land Trusts/CCE/SWCDs/Farmers/Land owners/Farm Bureau/Financial lenders
Collaboration with federal partners to better align federal and state policy priorities	NYSAGM/NYSSWCC/Cornell/CCE/SWCDs	2-4 years	Farmers/Farm Bureau

# Mitigation strategy – Initiative Agroforestry: Benefits and impacts

*Draft Material*

## Anticipated Benefits and Impacts

### Disadvantaged communities

Increasing planning, technical services and financial assistance improves access to programs and effective practices for all farmers. Emphasis on access to conservation technical assistance and funding programs to historically underserved and disadvantaged community members, including farmers identifying as BIPOC, women owned, low income, veteran, or beginning. Improvements in food production capacity, resiliency and diversity have a positive effect on disadvantaged communities. Consider providing a higher percentage of cost share funding for state programs designed to assist historically underserved farmers, in implementing GHG reductions strategies.

### Health and co-benefits

Agroforestry practice systems have the potential to elevate local food production, diversify farm incomes and increase farm profitability. Systems also provide resiliency, water quality, air quality, storm/flood mitigation, public infrastructure protection, drought resiliency, habitat, scenic vistas/tourism, market diversification, economic development and jobs.

### Just transition: businesses and industries, workers

Inter-generational family transfer, improved access for historically underserved including, BIPOC and beginning farmers, youth engagement, internships and educational opportunities, public and private sector job creation, on-farm job creation, climate conservation corps (tree corps), and others. Business development, support for new agrobusinesses.

### Other

Woody perennial buffers are small reliable practices that have a high value of carbon sequestration per acre. Silvopasture and alleycropping have the potential to increase income streams for farms, providing an economic return on investment.

## Enabling (or Support) Strategy Summary

Initiative #	Description	Action type	Ease of implementation	Cost
All Ag Strategies	AEM Planning for Climate Mitigation/Adaptation	Planning (Exec/Financial)	Medium	\$
All Ag Strategies	Establish a program for long-term, annual monitoring and benchmarking of GHG mitigation, carbon sequestration, and adaptation performance across applicable areas of management on farms in NYS. Information products provide useful, farm-level data for confidential benchmarking by farmers as well as publicly available data through farm case studies (with farmer agreement) and aggregated datasets to support future policy, research, implementation.	Monitoring (Executive/Financial/Legislative)	Medium	\$

# Enabling initiative – Initiative #[AEM Planning for Climate Mitigation/Adaptation]: Overview

<b>Description:</b>	AEM Planning for Climate Change Mitigation/Adaptation
<b>Action type:</b>	Planning/Evaluation/Estimating Impact (Executive/financial)
<b>Cost and funding considerations:</b>	\$; funding that supports AEM planning; expansion of models, planning framework, education and training of SWCDs and AEM planning workforce, pilot plans on various sizes and types of farms, potential for farmers to develop their own plans (also with training, minimum standards, and at certain scales)
<b>Ease of implementation:</b>	Easy for overview planning; moderate for comprehensive planning, including forest management, energy consumption, feed management, etc.
<b>Example case studies:</b>	COMET Planner, COMET Farm, Forestry Management, NYSERDA Ensave Agricultural Energy Audits, CNCPS and Precision Feed and Forage Management Guidelines, CNMP Guidelines, USDA-NRCS Carbon Planning Guidance, other existing tools/guidelines

<b>Risks / Barriers to success</b>	<b>Possible mitigants</b>
<ul style="list-style-type: none"> <li>• Funding for planning template</li> <li>• Maintaining strong emphasis on water quality and soil health planning, while planning for GHG and adaption</li> <li>• Workforce demands and gaps</li> <li>• Farm interest / incentives gaps for planning efforts</li> <li>• Coarse models and quantification methodology</li> <li>• Challenges with matching scales and levels of planning rigor with various levels of yet defined goals/outcomes.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase state and federal funding</li> <li>• Assemble technical advisory committee to develop planning protocols appropriate to scale(s) and accuracy(s) of existing models and methods, farmer interests/goals, and mitigation/adaptation goals</li> <li>• Develop protocols proportional to scale and accuracy of existing tools</li> <li>• Add GHG mitigation and climate adaptation to existing plans for water quality/soil health</li> <li>• Train additional SWCDs and AEM Planners for intentional climate mitigation/adaptation planning and implementation</li> <li>• Depending on applicability and scale, develop tools and train farmers to develop their own plans</li> <li>• Inform and educate farmers on climate impact and mitigation opportunity, match incentives to plans</li> <li>• Invest in model evaluation and development and quantification methods</li> </ul>

# Enabling initiative – Initiative #[AEM Planning for Climate Mitigation/Adaptation]: Components of the strategy

<b>Components required for delivery</b> <i>(Brief description of action required)</i>	<b>Implementation lead</b> <i>(Entity responsible for completing)</i>	<b>Time to implement</b> <i>(Time required to implement)</i>	<b>Other key stakeholders</b> <i>(Entities that need to be engaged)</i>
Form technical advisory panel.	NYSAGM/NYSSWCC	Month 1 of year 1	Cornell/SWCDs/ Farmers/USDA/CCE/ DEC/
Technical advisory panel to define different levels of planning goals and outcomes (e.g., overview, whole farm scale; detailed management area scale; to inform directionally correct change; to inform change leading to quantifiable or even marketable outcomes; what information are farmer’s most interested in).	NYSAGM/NYSSWCC/ Cornell/SWCDs/ Farmers/NRCS/CCE/ DEC/NGOs	Next 6 months (concurrent with work, below)	Other entities with mitigation/adaptation tools and methods
Technical advisory panel to develop planning protocols (including methods, preferred models, and recommended planner skills) for the levels defined, above. Iterative process, as some planning levels may not be supported by existing methods and models. Process will identify gaps for future development. Strive for compatibility among State and federal programs. Design methods for collection and aggregation of outcomes from planned and implemented practice systems (e.g., estimates for GHGs, sequestration, metrics for adaptation).	NYSAGM/NYSSWCC/ Cornell/SWCDs/ Farmers/NRCS/CCE/ DEC/ NGOs	Next 6 months (concurrent with work, above)	Other entities with mitigation/adaptation tools and methods

# Enabling initiative – Initiative #[AEM Planning for Climate Mitigation/Adaptation]: Components of the strategy

*Draft Material*

<b>Components required for delivery</b> <i>(Brief description of action required)</i>	<b>Implementation lead</b> <i>(Entity responsible for completing)</i>	<b>Time to implement</b> <i>(Time required to implement)</i>	<b>Other key stakeholders</b> <i>(Entities that need to be engaged)</i>
On-farm piloting of those planning protocols deemed currently feasible by the panel (supported through AEM Base Program among Districts and farmers).	NYSAGM/NYSSWCC/SWCDs/Farmers	Remainder of Year 1 and Year 2	Cornell/NRCS/CCE/ DEC/ Farmers
Technical advisory panel reviews pilots and refines planning protocols.	NYSAGM/NYSSWCC/ Cornell/SWCDs/ Farmers/NRCS/CCE/ DEC/ NGOs	First 3 months of Year 3	Other entities with mitigation/adaptation tools and methods
Training of feasible planning protocols to public- and private-sector Ag service providers.	NYSAGM/NYSSWCC/ Cornell/SWCDs/NRCS	Next 6 months of Year 3	
Communication of AEM Planning for Climate Mitigation/Adaptation with farmers (case studies, learning from pilot farmers, training on farmer developed planning protocols/tools, etc.).	NYSAGM/NYSSWCC/ Cornell/SWCDs/ Farmers/NRCS/CCE/ NGOs	Final 3 months of Year 3	
Inclusion of planning protocols in AEM Base Program and perhaps federal programs for full use with farmers. Priority practice systems from plans lead to implementation via direct investment by farmers, other private investors, and/or lenders, as well as State and federal cost-share programs.	NYSAGM/NYSSWCC/SWCDs/NRCS/Farmers/ DEC	Continuous	Cornell/CCE/NGOs
Technical advisory panel uses new science and feedback from on-farm use to adapt, advance, train, and implement new planning protocols over time.	NYSAGM/NYSSWCC/ Cornell/SWCDs/Farmers/ NRCS/CCE/DEC/ NGOs	Continuous	Other entities with mitigation/adaptation tools and methods

# Enabling initiative – Initiative #[AEM Planning for Climate Mitigation/Adaptation]: Benefits and impacts

## Anticipated Benefits and Impacts

### Disadvantaged communities

Increasing planning, technical services and financial assistance improves access to programs and effective practices for all farmers. Emphasis on access to conservation technical assistance and funding programs to historically underserved and disadvantaged community members, including farmers identifying as BIPOC, women owned, low income, veteran, or beginning. Improvements in food production capacity, resiliency and diversity have a positive effect on disadvantaged communities.

### Health and other co-benefits

AEM Planning for Climate Mitigation/Adaptation has the potential to elevate local food production and resiliency, water quality, air quality, storm/flood mitigation, public infrastructure protection, drought resiliency, habitat, scenic vistas/tourism, economic development and jobs.

### Just transition: businesses and industries, workers

Inter-generational family transfer, improved access for historically underserved and beginning farmers, youth engagement, internships and educational opportunities, public and private sector job creation, on-farm job creation, climate conservation corps (e.g. tree corps), and others.

### Other

# Enabling initiative – Initiative #[Benchmarking and Monitoring]: Overview

<b>Description:</b>	<p>A new program for long-term, annual monitoring and benchmarking of GHG mitigation, carbon sequestration, and adaptation performance across applicable areas of management on farms in NYS. Information products provide useful, farm-level data for confidential benchmarking by farmers as well as publicly available data through farm case studies (with farmer agreement) and aggregated datasets to support future policy, research, implementation</p>	
<b>Action type:</b>	<p>Program establishment and development (Executive/Financial/Legislative)</p>	
<b>Cost and funding considerations:</b>	<p>\$\$ (i.e., \$25M-\$100M for next 30 years over status quo). Necessary annual costs likely to include staff and program overhead; incentives for farmer participation; costs of data products (e.g., remotely sensed data); cost for contractors where specialty services in information management, on-farm analyses, or applied research are necessary; and web service and IT expenses.</p>	
<b>Ease of implementation:</b>	<p>Medium; requires development of methods for efficient and meaningful monitoring, benchmarking (including establishing feasible performance goals), aggregated summarization, and delivery (communication at various scales). Expectation that methods will adapt with future knowledge and technology.</p>	
<b>Example case studies:</b>	<p>Whole Farm Nutrient Balance (Cornell Spear Program); Dairy Farm Business Summary (Cornell PRO-DAIRY and Farm Credit East); Precision Feed Management Benchmarking (Cornell and CCE); Ag Census and Annual Surveys (NASS); Soil Health Case Studies (American Farmland Trust); NYS and EPA GHG inventories.</p>	
<b>Risks / Barriers to success</b> <ul style="list-style-type: none"> <li>• New program development (ramp-up expenses: time, funding, best initial direction/methods, sample sizes, and scales for various areas of farm management).</li> <li>• Trust and participation among Ag-sector participants.</li> <li>• Potential sampling bias stemming from subpopulation of participating farms.</li> </ul>	<b>Possible mitigants</b> <ul style="list-style-type: none"> <li>• Experienced advisory committee to shape the program based on comprehensive knowledge of existing approaches, NYS agriculture, and CLCPA.</li> <li>• Incentives for farm participation (useful for farm performance; pathway to other markets or programs; funding for participation; marketing benefit for farm; others).</li> <li>• Private sector partnership (e.g., dairy processors or co-ops) where goals align among programs.</li> </ul>	

# Enabling initiative – Initiative #[Benchmarking and Monitoring]: Components of the strategy Draft Material

Components required for delivery <i>(Brief description of action required)</i>	Implementation lead <i>(Entity responsible for completing)</i>	Time to implement <i>(Time required to implement)</i>	Other key stakeholders <i>(Entities that need to be engaged)</i>
Establish funding line for CLCPA Agricultural Benchmarking and Monitoring Program (Ag BMP....that's not confusing ;).	NYSAGM/DEC	Year 1	Cornell/NYSSWCC/ Farmers/CCE/Farm Credit East/ SWCDs/CCAs/ NASS/food processors and co-ops/
Co-develop methods for program (program staff and advisory committee).	NYSAGM/NYSSWCC/Cornell/DEC	Year 2	ESF/Farmers/SWCDs CCE/Farm Credit East/CCAs/NASS/ TNC/American Farmland Trust/food processors and co-ops/
Introduce program with farmers and farm advisors (field).	NYSAGM/NYSSWCC/Cornell/	Year 3 (1 <sup>st</sup> half)	ESF/Farmers/SWCDs CCE/Farm Credit East/CCAs/NASS/ TNC/American Farmland Trust/food processors and co-ops/
Initiate program with farmers.	NYSAGM/NYSSWCC/Cornell/	Year 3 (2 <sup>nd</sup> half)	ESF/Farmers/SWCDs CCE/Farm Credit East/CCAs/NASS/ TNC/American Farmland Trust/food processors and co-ops/
Deliver data summaries at for confidential farm-scale use and for public use in aggregated summaries.	NYSAGM/NYSSWCC/Cornell/	Year 4 (1st half)	ESF/Farmers/SWCDs CCE/Farm Credit East/CCAs/NASS/ TNC/American Farmland Trust/food processors and co-ops/
Repeat method annually.	NYSAGM/NYSSWCC/Cornell/	Continuous	ESF/Farmers/SWCDs CCE/Farm Credit East/CCAs/NASS/ TNC/American Farmland Trust/food processors and co-ops/

# Enabling initiative – Initiative #[Benchmarking and Monitoring]: Benefits and impacts

## Anticipated Benefits and Impacts

### Disadvantaged communities

Increasing access to methods/programs that help farmers generate their own farm-scale information for decision making to historically disadvantaged farmers, including those identifying as BIPOC, women owned, low income, veteran, or beginning. Improvements in food production capacity, resiliency and diversity have a positive effect on disadvantaged communities.

### Health and other co-benefits

Improved farm-level data and broader-scaled, aggregated information about farm management have the potential to elevate local food production and resiliency, water quality, air quality, storm/flood mitigation, public infrastructure protection, drought resiliency, habitat, scenic vistas/tourism, economic development and jobs.

### Just transition: businesses and industries, workers

Inter-generational family transfer, improved access for historically underserved and beginning farmers, youth engagement, internships and educational opportunities, public and private sector job creation, on-farm job creation, climate conservation corps (e.g. tree corps), and others.

### Other

# Adaptation and Resilience strategy summary *Draft Material*

Initiative #	Description	Action type	Climate risk addressed	Ease of implementation	Cost
1	Farm level adaptation and resiliency to extreme weather and other climate driven impacts	Technical Assistance & Implementation	Destruction of farm infrastructure, extreme soil, nutrient loss, pathogen export; herd health and crop loss	Easy	\$\$
2	Beneficial electrification projects to support infrastructure needs relating to adapting to a changing climate	Outreach & Implementation	Risk freeze damage/ Drought /etc.	Medium/Hard	\$\$
3	Research on crop adaptation needs to extreme weather and climate driven impacts	Research	Extreme weather/ Pest, weed, disease pressure	Medium	\$
4	Watershed Scale Flood mitigation and protective measures (Land use and Local Gov't crossover)	Assessment, planning, implementation, edu./outreach, monitoring	Extreme Precipitation and runoff events; threat to property and safety and food systems	Medium	\$\$\$

# Subgroup Status and Next Steps

# **Next Panel Meeting Date**

**March 16<sup>th</sup>, 2021  
(1 pm start)**

**Thank you**