Summary of Ag and Eco Subcommittee Priority Strategies and Actions

Pathways for Sequestration and Storing Carbon

PATHWAY A - Maintain and expand Vermont's natural and working lands' role in the mitigation of climate change through human interventions to reduce the sources and enhance the sinks of greenhouse gases.

1. Leverage, expand, and adapt existing State of Vermont programs that support the agricultural sector's mitigation of climate change through:
   - *Prevention—of emissions to the atmosphere by conserving existing carbon pools in soils or vegetation, or by reducing emissions of methane (CH_4) and nitrous oxide (N_2O);*
   - *Sequestration—by increasing the size of existing carbon pools, and thereby extracting carbon dioxide (CO_2) from the atmosphere; and*
   - *Substitution—substituting of biological products for fossil fuels or energy-intensive products, thereby reducing CO_2 emissions.*

   a. Implement agronomic practices that reduce tillage and increase vegetative cover, e.g. no-till, cover crop.
   b. Expand Capital Equipment Assistance Program (CEAP) program to extend beyond water quality and incorporate climate change criteria.
   c. Implement grazing practices that increase vegetative cover and forage quality, e.g. rotational grazing.
   d. Implement agroforestry and silvopasture practices that integrate woody vegetation in agricultural production.
   e. Implement edge-of-field practices that increase herbaceous and woody vegetation, e.g. riparian forest buffer (e.g. CREP).
   f. Implement natural resource restoration practices that support climate mitigation and resilience, including river corridor easements, wetland restoration, and afforestation practices with consideration to agricultural land loss.
   g. Implement Nutrient Management and Amendments (e.g. biochar, compost) on cropland and grazing land.
   h. Implement methane capture and energy generation on farms, e.g. anaerobic digesters and covers.
   i. Research into improved manure management and storage.
   j. Research and develop a climate feed management program, including both feed amendments (e.g. seaweed, biochar) and feed quality (e.g. forage quality) to reduce enteric methane emissions; consider downstream impacts, sustainability and equity.

2. Create a system for tracking and accounting metrics and indicators for natural and working lands.

a. Develop a methodology and protocol for quantifying climate mitigation, resilience, and adaptation impacts of existing state and federal water quality implementation programs as reported through the annual Clean Water Initiative Performance Report.
   The Clean Water Initiative Performance Report "summarizes the State of Vermont's clean water efforts and demonstrates how investments are making a difference through accountability measures."[1] As mentioned, most water quality conservation practices and programs also have climate mitigation, resilience, and adaptation benefits. Recommend using existing tracking systems and quantify the climate benefits from this existing implementation and data tracking. The data spans state and federal funding programs and regulatory programs that drive clean water efforts and coordinates across agencies to track these efforts and monitor progress.
b. The Vermont Climate Council has recommended developing and issuing a Request for Proposals (RFP) that will review and analyze methodological gaps of emission inventory tools currently used by the State of Vermont to quantify greenhouse gas emissions for evaluating changes in the Agriculture, Forestry and Other Land Use (AFOLU) sector and the tools' alignment with the Intergovernmental Panel on Climate Change (IPCC), Environmental Protection Agency (EPA), and peer state methodologies and approaches. The specific recommendations for this RFP can be found in the Carbon Budget Report memo found in Appendix XX.
c. Based on the findings of the technical RFP mentioned in action step (b) of this strategy, the VCC should consider recommending that the State of Vermont GHG emissions inventory protocol established in 10 V.S.A. § 582 be amended to include an inventory of GHG emissions that align with the intent and standards of the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories that will include a net GHG emission accounting for the agriculture, forestry and other land use (AFOLU) sector.

3. Implement a Payment for Ecosystem Services (PES) program for natural and working lands.

a. Develop and implement a PES program for healthy soils and soil carbon sequestration on farms.
   Act 83 of 2019 convened the Payment for Ecosystems Services Working Group whose purpose is to recommend financial incentives designed to encourage farmers in Vermont to implement agricultural practices that improve soil health, enhance crop resilience, increase carbon storage and stormwater storage capacity, and reduce agricultural runoff to waters. Final program recommendations from the PES Working Group are due in January, 2023.[2]
b. Develop and implement a PES program for forestland owners including water filtration/cycling, carbon sequestration, etc.
c. Incentivize management for ecosystem services through a tax credit system that compensates landowners/managers for maintaining or restoring ecosystem services.

4. Address upstream waste and downstream emissions from food waste and synthetic fossil-fuel based inputs.

a. Develop program for tracking and limiting the use of chemicals, substances, or products that contribute to climate change in Vermont and leverage existing legislative activity on this topic. VAAFM currently tracks statewide commercial pesticide use as well as statewide

[1] Vermont Clean Water Initiative 2020 Performance Report. January 15, 2021. https://dec.vermont.gov/sites/dec/files/wsm/erp/docs/2021-01-15_CleanWaterPerformanceReport_SFY2020-FINA-PDF-A.pdf.
[2] https://agriculture.vermont.gov/pes

fertilizer use. This data is currently used to establish trends in the use of these inputs as our agricultural systems evolve. Programs to track these agricultural inputs already exist at VAAFM but have not been assessed through the lens of contributions to climate change. VAAFM or the new newly established Agricultural Innovation Board (AIB) established by Act 49 of 2021 can prioritize an assessment of the impacts and benefits our agronomic management systems have on offsetting climate change. An assessment of Vermont's different agronomic practices and management, such as, conventional, organic, no-till, and cover cropping, should be weighted for impacts on climate change based on agricultural inputs, fuel consumption, carbon sequestration and other measurable factors.

b. The state should identify simple, low- and no-cost mechanisms to increase organics diversion and provide incentives and business and workforce development to private organics haulers and composters (including farms). Act 41 of 2021 created an Agricultural Residuals Management Program to be administered by VAAFM. The purpose of this new chapter of law is to establish a program for the management of residual wastes generated, imported to, or managed on a farm for farming in Vermont.

5. Develop and implement programs which incentivize management practices which maintain or increase forest carbon storage
    a. Create or adopt existing certification standards where management activities account for principles of Improved Forest Management towards increased carbon storage, as well as maintaining and creating resiliency (as described in existing state guidance such as *Maintaining and Creating Resilient Forests in Vermont: Adapting Forests to Climate Change*, VTFPR 2015, or as modeled in existing programs such as the American Forest Foundation's *Family Forest Carbon Program*).
    b. Apply these certification standards to the procurement of forest products utilized in energy or thermal generation facilities subject to PSB oversight (parallel to the existing review for state mapped deer winter yard, etc.) through potential revisions to the renewable energy standard.
    c. Explore additional market opportunities for certified products, expanding the potential revenue base to support Improvement Forest Management (parallel FSC, SFI, etc.)

6. Leverage market-based solutions, such as existing or new regional carbon market opportunities, to incentivize forest management practices which sequester and store greater amounts of carbon in our forests.
    a. Work to develop a new Vermont-Based or regional (modeled on RGGI) Carbon Credit marketplace with necessary research and standards which address concerns around the efficacy of baseline establishment, accounting for additionality, the potential for leakage, and address equity for the diversity of wood lot owners across the state
    b. Incentivize the in-state purchase of carbon credits developed by Vermont-based or regional carbon projects through a system which addresses concerns of accounting (i.e. additionality and leakage)

7. Increase tree coverage.
    a. Expand tree and other planting efforts on private land to promote restoration efforts to reforest riparian areas, wetland buffers, and degraded lands.
    b. Expand funding and support to the Vermont Community Canopy Program.
    c. Provide incentives for restoration and expansion of floodplain forests.

d. Increase funding to tree planting via Renewable Energy Standard (RES).
e. Increase support, funding, and education for increased urban tree planting efforts expansion to increase access to natural spaces and improve carbon sequestration/storage in the urban environment.

PATHWAY C- Energy & Materials: Support and empower Vermont's farmers, foresters, and land workers to capacitate renewable energy and building product transitions

1. Educate, track, and appropriately reward on-farm renewable energy:
    a. Reward and support renewables on farms on rooftops, barns, storage facilities, and minimizes or avoids loss of working and natural lands to renewables development.
    b. Increase outreach and incentives to on-farm solar installation on existing built infrastructure.

2. Promote and incentivize use of local wood and agricultural products to reduce embodied carbon footprint.
    a. Promote and incentivize use of agricultural and sustainably harvested wood -based construction materials (subject to existing certification criteria or procurement standards to be developed) over imported wood and/or non-wood materials with high carbon footprints (such as steel, concrete, etc.) Continue to research life-cycle accounting of these products for greatest impact.
    b. Through state procurement standards, require that publicly funded building projects use chain of custody certified wood products (MASS timber, cellulose insulation, etc.) that have been harvested under sustainable procurement standards over materials with a higher carbon footprint (such as steel, concrete, etc.). Prioritize locally sourced wood products when possible.
    c. Develop a regional certification standard for forestry to validate carbon storage values for forest building products (methodologies supporting supply chain validation for carbon storage are frequently using FSC as a proxy; regional-scale certification standards focused on net carbon benefit are needed for product transparency)
    d. Develop alternative markets for non-timber wood, focusing on cellulose insulation, bioplastic composites, or biofuels

3. Transition fuel sources for the forestry and maple sector.
    a. Provide funding to incentivize sugar makers to switch evaporators from fossil fuels to wood pellets and incentivize elimination of diesel generators for sap vacuum pumps.
    b. Incentivize alternative fuels such as biofuels or offsets for logging equipment.

4. Sustainably source renewable energy products and materials.
    a. Fund competitive research to track and innovate on the sustainability and ethical implications of renewable energy materials and products being consumed to meet the CAP including solar, wind, biomass, energy storage, and recycling of materials.

5. Address biomass for thermal heat regarding climate mitigation, co-benefits, and its impacts

a. Prohibit the expansion of current and any new large-scale, industrial scale electric generation biomass facilities in the State of Vermont.
b. If such facilities operations cannot be sufficiently improved to address their negative footprint on adjacent neighborhoods and communities and ensure that they are producing net GHG emission reductions, then such facilities should be closed and sufficient training for employees to transition to forestry and renewable energy jobs should be provided.
c. Research the carbon accounting of various methods of and practices for harvesting and burning woody biomass for heat to develop recommendations for the most climate beneficial sources, methods and technologies. The intent of the research is to inform appropriately scaled, community-based uses for biomass for thermal heat in institutional applications for thermal or combined heat/power applications that both reduce GHG emissions and protect and sustain Vermont's forests for storage, sequestration, and numerous other co-benefits.
d. Ensure appropriate oversight, regulation and management of biomass facilities and their fuel sources to ensure that the outcomes intended (e.g., local sourcing, GHG reductions, etc.) are achieved.
e. If research in "b" above identifies local, climate-beneficial approaches and oversight in "c" occurs, then support the use of Vermont sustainably harvested woody biomass for heating in efficient modern wood heating devices as a means of providing an income stream to forest landowners and, in this way, creating an incentive to keep forests as forests, as well as providing a low-cost source of non-fossil fuel heating. In addition, develop a program of education and outreach and technical assistance to encourage those methods and practices while ensuring oversight and regulation of those appropriate methods and practice.
f. Regulate, including preventing, if necessary, flow of wood pellets or similar commercial scale wood-derived energy products based on research in "b" above to ensure sustainable harvesting of "net GHG-reducing" pellets (i.e., composition, source wood, etc.).