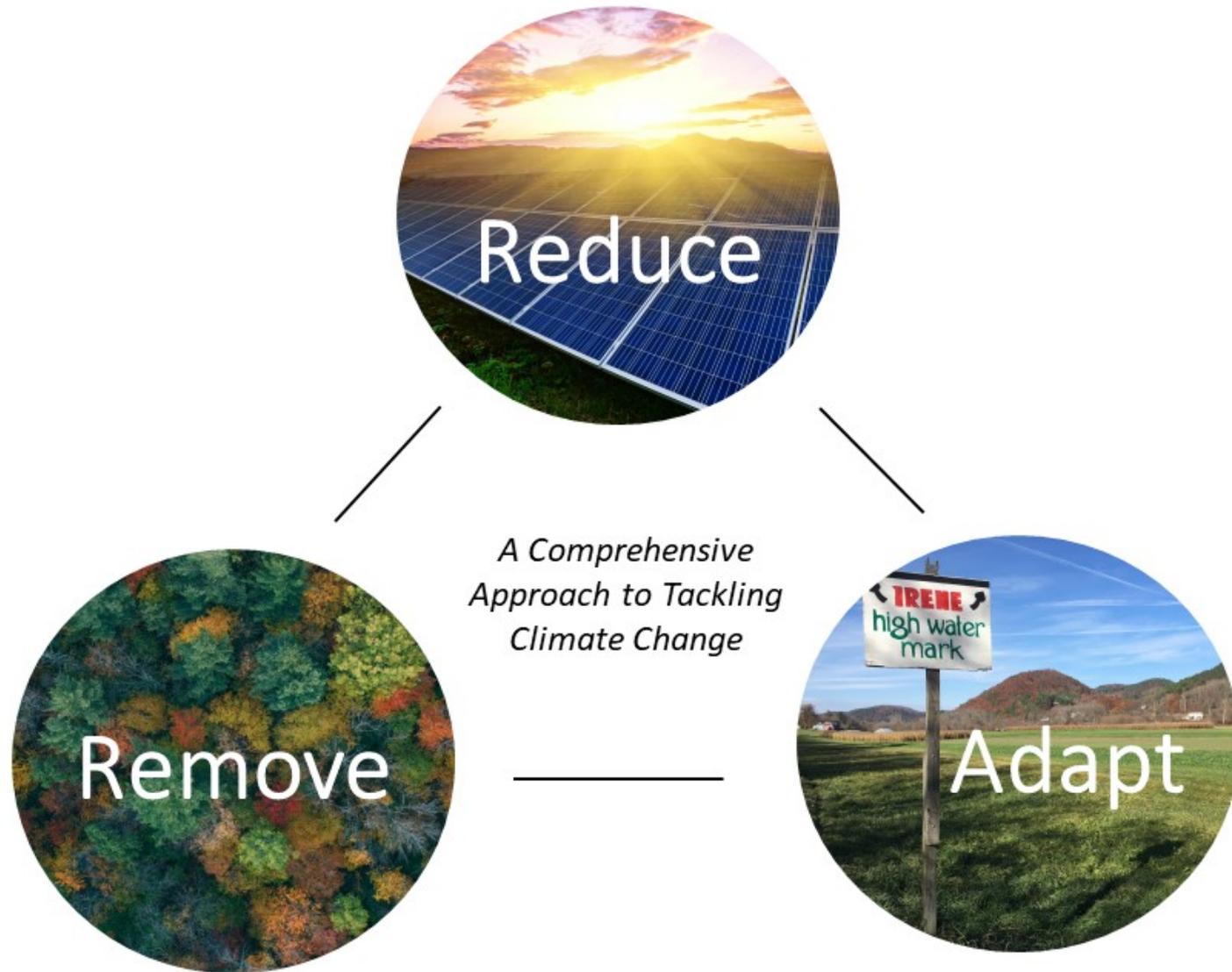


# Task 5D: Nature- Based Solutions (NbS)

*DRAFT pathways and strategies, June  
2021*

Agriculture & Ecosystems  
Subcommittee, VT Climate Council



# Global Warming Solutions Act

## Finding

(7) According to the Vermont Agency of Natural Resources, the conservation and restoration of Vermont forests, floodplains, and wetlands and the promotion of forest management and farming practices that sequester and store carbon are critical to achieving climate mitigation, adaptation, and resilience and support a host of co-benefits, such as improving air and water quality, economic vitality, ecosystem functions, local food systems, and creating more climate resilient communities and landscapes.

## Charge

(4) Agriculture and Ecosystems Subcommittee. This subcommittee shall focus on the role Vermont's natural and working lands play in carbon sequestration and storage, climate adaptation, and ecosystem and community resilience. This subcommittee will seek to understand current initiatives in the agricultural and forestry sectors and the businesses that depend on them and to develop actions and policies that restore wetlands; increase carbon stored on agricultural and forest land and in forest products; and support healthy agricultural soils and local food systems.



# Task 5D Charge

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Identify and develop initiatives, programs and strategies to **improve adaptation of Vermont's natural and working lands. This work should also consider nature-based solutions – and human impediments to those solutions – that build resilience in Vermont's communities.** 'Resilience' means the capacity of individuals, communities, and natural and built systems to withstand and recover from climatic events, trends, and disruptions. Assess overlaps with the programs and strategies identified above.

## Membership & Staff Support

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# Task 5D Process

- Define terms & key values
  - NbS: actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits<sup>1</sup>
  - If we take care of nature, nature will take care of us
  - Support ecosystems and create sustainable relationships
  - NbS/TEK create opportunities to break down silos between systems
  - Climate change adaptation and resilience as equal-and-necessary components of comprehensive climate action/planning
- Inventory existing programs, regulations, TEK, non-state considerations
  - Rivers/Floodplains
  - Forests
  - Agricultural Systems
  - Wetlands
  - Lakes/Ponds/Vernal Pools
  - Built Environment
  - All/Other
- Identify gaps, needs, and human impediments to NbS/TEK
  - NbS/TEK often more cost-effective and sustainable than infrastructure/engineered solutions, yet often underfunded
  - Values need to be baked into land use planning and regulations, workforce development, and funding prioritization
  - Failure to recognize and appropriately value co-benefits of NbS/TEK
- Develop DRAFT pathways and strategies
  - Address climate adaptation and resilience, with mitigation co-benefits
  - Use MCA and equity screen as conversation tool
  - Currently NOT comprehensive

<sup>1</sup><https://www.iucn.org/commissions/commission-ecosystem-management/our-work/nature-based-solutions>

# Draft Pathways

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- I. Equitably expand incentives, technical assistance, funding, and research to empower farmers and land caretakers to implement climate smart agriculture
- II. Equitably expand incentives, technical assistance, funding, and research to empower landowners and managers to implement climate-friendly forestry
- III. Develop and implement land use planning and regulations that incorporate climate change adaptation, resilience, and empowered community engagement
- IV. Promote shared understanding and implement practices that address natural hazard adaptation and resilience for the safety and survival of natural and human communities
- V. Support and promote education and practices that improve and grow biodiversity
- VI. Fund and incentivize climate adaptation and resilience (especially via NbS & TEK) in state regulatory processes, planning, programs & funding



# Equitably expand incentives, technical assistance, funding, and research to empower farmers and land caretakers to implement climate smart agriculture

- Incentivize climate-friendly ag practices
- Expand practices supported through FAP and CREP to include practices that increase soil organic matter (including compost application), pollinator habit creation/enhancement, and hedgerow/windbreak/shelterbelt establishment
- Educate & incentivize climate-friendly composting for on-farm practices
- Vermont NRCS should adopt Vermont-specific practice standards for the three remaining USDA agroforestry practices of silvopasture, alley cropping, and forest farming. This enables technical assistance and NRCS funding to be unlocked for farmers.
- Dedicate funds to support Vermont Natural Resources Conservation Districts and farmer watershed organizations with the specific objective of allowing them to reach other farmers and do farmer-to-farmer education about improved soil and manure management.
- Dedicate \$1 million to measuring and continuously monitoring soil health across the state of Vermont, building a statewide database, benchmarking specific soil types, and correlating changes with specific BMP implementation
- Fully fund the Vermont Agency of Agriculture, Food and Markets Farm Agronomic Practices Program and the Capital Equipment Assistance Program
- Investigate innovative funding mechanisms for assisting with implementation of climate change adaptation practices (such as cover crops and building organic matter in soil), crop insurance for diversified Vermont-scale farms, and emergency recovery following extreme weather events, to better respond when climate change related events occur.
- Agricultural lending incentives (e.g., concessional loans with adjusted interest rates), through ag-specific lenders (VACC, FSA) but also traditional lending institutions (banks, credit unions), for agricultural enterprises adopting climate smart practices

# Equitably expand incentives, technical assistance, funding, and research to empower landowners and managers to implement climate-friendly forestry

- Increase use and of control of local wood products and reduce use of imported wood by prioritizing local wood forest products for public building projects and promote use for private buildings
- Increase use and of control of non-timber forest products, and reduce imports of these products
- Increase tree cover along road corridors through reduced mowing (allows for woody plant growth, reduces fossil fuel use/invasive species spread)
- Expand Municipal Tree Planting efforts to increase urban tree canopy cover
- Expand tree planting efforts on private land to promote restoration efforts to reforest riparian areas, wetland buffers, and degraded lands
- Promote/incentivize climate-adaptation forestry practices to increase the resilience and adaptation capacity of forest ecosystems by providing a pay-for-practice incentive and funding climate-adaptation forestry training and resource development
- Support forestland succession/estate planning efforts to reduce forest parcel subdivision and fragmentation
- Incentivize management for ecosystem services through a tax credit system that compensates landowners/managers for maintaining or restoring ecosystem services
- Bridge gap between Use Value Appraisal (UVA) ecologically significant treatment areas (ESTAs) and regular forest category to help build old forest structure
- Offset ESTA enrollment cost to incentivize desired management practices

# Develop and implement land use planning and regulations that incorporate climate change adaptation, resilience, and empowered community engagement

- Promote statewide landscape connectivity and forest blocks conservation planning through robust support of the Staying Connective Initiative and use of Vermont Conservation Design in state program prioritization frameworks
- Increase proportion of conserved lands and waters (e.g. join the 30x30 initiative)
- Develop and implement statewide zoning through revival of the State's Central Planning Office
- Incentivize/prioritize development in growth areas/town centers
  - Achieve Compact Settlement through appropriate investment in water and wastewater infrastructure planning and siting
- Invest transportation funding in improving flood resilience and aquatic & terrestrial connectivity
- Develop an inventory of priority/critical headwater and floodplain storage areas, prioritize investments for restoration and protection in these areas, and use to inform Compact Settlement planning efforts
- Create statewide groundwater resource maps, water use and water level data for use in water budgets for local areas to prepare for drought conditions
- Establish "climate resilience zones" informed by existing data, bolstered with new research/science, to identify locations that have high resilience potential for both the natural and built environments and to inform land use development
- Upgrade VT Wetlands Maps to more accurately inform planning efforts
- Further development of flood mapping/modeling tools for state and municipal use/planning
- Incentivize or mandate solar capacity on new buildings, as well as in previously-disturbed/developed areas
  - Develop criteria or a flowchart for prioritizing solar siting (e.g. roof tops, parking lots, quarries, brownfields and marginal ag lands)

# Promote shared understanding and implement practices that address natural hazard adaptation and resilience for the safety and survival of natural and human communities

- Expand forest road restoration efforts through expansion of funding to programs to fix old logging/forest roads (e.g. NRCS) by improving drainage or permanently closing them out
- Provide incentives to restore or increase forested buffers in agriculture and other settings (e.g. through revisions to the RAPs to expand beyond water quality)
- Protect and promote natural or restored river corridors through expansion of the river corridor easement program
- Protect and promote natural or restored floodplains through expansion of the floodplain easement program
- Expand the Flood Hazard and River Corridor (FHARC) rule to incorporate statewide jurisdiction and permitting for river corridors, as modeled by the State's Wetlands and Lakes & Ponds programs
- Promote strategic dam removals through increased project funding and bolstering programmatic capacity to manage removal projects statewide for improved ecosystem health and community resilience
  - Develop multi-stakeholder Dam Removal Program
- Consider revisions to and expansion of the Water Infrastructure Sponsorship Program (WISPr) to improve accessibility and use for restoration projects
- Ensure opportunities for floodplain reconnection and NbS are considered a high priority in the Statewide Conservation & Buyout Program through incorporation of multi-stakeholder developed prioritization criteria
- Support and fund research and design to strategically invest in floodplain reforestation efforts
- Invest in reconnecting floodplains (e.g. removal of berms)
- Incentivize water storage in natural areas to promote flood resilience and biodiversity through expansion of wetland easements to better compensate landowners/managers
- Improve natural wetlands and wetland systems across the state through the development and implementation of a Net Gain wetlands policy
- Mitigate legacy forest management practices that lead to fluvial erosion and degraded headwater storage
- Create and implement a unified waters and wetlands buffer policy
- Create and deploy a river corridor and floodplain buffers extension-type program that provides technical assistance for private landowners

# Support and promote education and practices that improve and grow biodiversity

- Expand education and promote understanding to preserve plant communities
  - Enhance environmental education at all grade levels
  - Provide information and technical assistance to landowners and caretakers on practices to enhance biodiversity and resilience
- Promote invasive plant and pest management, especially in ecologically sensitive areas
- Incentivize/fund pollinator planting for existing or new solar fields
- Revise state lands management to prioritize maintaining and enhancing biological diversity and functioning natural communities
  - Promote maintenance of biological diversity and natural communities as a primary objective for state lands
  - Promote maintenance of biological diversity and natural communities as a primary objective for all parcels in UVA
- Reduce roadside mowing for multiple benefits
  - Adjust vegetation management strategies to accommodate pollinator resource needs
  - Enhance/restore native vegetation along roadsides
  - Develop/implement site-appropriate management plans to maintain/promote biodiversity
  - Reduce spread of roadside invasives
  - Promote awareness through education/training for road crews

# Fund and incentivize climate adaptation and resilience (especially via NbS & TEK) in state regulatory processes, planning, programs & funding

- Strategically involve the private sector to leverage capital in support of NbS/TEK projects
- Develop a revolving land fund, green bank, loan guarantees, pension fund investments, etc. to de-risk capital investment in NbS/TEK strategies
- Fund climate resilience training efforts and expand resilience funds for land managers
- Complete a statewide audit of technical assistance, funding and regulatory programs to review support for NbS/TEK solutions and assess the degree to which they support or hinder climate adaptation
  - Using the findings of the audit, create planning and/or prioritization criteria that better align state programs (ideally developed/implemented through revived Central Planning Office)
- Elevate the role TEK plays in understanding climate, climate change, and climate adaptation and incorporate TEK into state-led climate assessments and planning efforts
- Expand wetlands buffer from 50 to 100ft, as recommended by Fish & Wildlife Guidelines
- Incentivize NbS/TEK in state regulatory processes
- Incorporate headwater storage as a Use Value Appraisal (UVA) enrollment opportunity
- Prioritize NbS to manage stormwater in both urban and rural communities
- Support and fund research that assesses efficacy of NbS to manage wastewater systems