	Working Recommendations				Prioritization Criteria									
Action	Status	Revise Action, Revise Strategy, Remove, Keep as is	Proposed Revised Language	Notes	Initial Priority Ranking	Impact (High/Moderate/Low) (3/2/1)		Cost - Effectiveness (High/Medium/Low) (3/2/1)		Co-Benefits (High/Medium/Low) (3/2/1)		Technical Feasability (yes/no) (1/0)		Overall Prioritization
Pathway 1B: Proactively and strategically invest to enhance resilience in transportation, communications, water/wastewater, and energy infrastructure and prioritize our most vulnerable communities and environmental justice populations.														
Strategy 1Ba: Create a policy, planning and organizational foundation to support effective investments in infrastructure resilience by understanding exposure, identifying vulnerabilities and risks, investigating options for prioritized action.														
Create a framework for identifying and evaluating climate-resilience threats and impacts to energy systems serving rural communities;	Advancing (Action Modified)	Revise Action	The state, through the Public Utility Commission and Public Service Department, should investigate resilience planning, including defining, valuing, prioritizing, and incentivizing it. Electric utilities should integrate resilience planning into their Integrated Resource Plans based on guidance resulting from this proceeding	Action needed an actor and additional specificity. Grid resilience is undefined and therefore meaningless and problematic in the utility regulatory space without having standards to plan and invest to (if different from existing reliability standards), including a way to define "cost-effectiveness" and prioritization, and a process to measure progress or penalize lack of progress. The Department has secured technical assistance from the National Labs to assist with such a proceeding, and the Commission has invited a petition for a resilience proceeding.	High	High	3	High	3	High	3	Yes	1	High	2.5
Increase funding for floodplain mitigation, including buyout programs.	Advancing	Remove		This is very dynamic and captured below. Yaccuzzi removal - under 1.7B										
Seek federal stimulus (ARPA), infrastructure bill, and other non-ratepayer funding to defray costs of utility resilience upgrades that extend benefits to ratepayers, such as: • Ubiquitous communications networks that enable full utilization and participation of distributed energy resources and demand response; • Resilience boxes: batteries installed at or near critical facilities, potentially paired with solar (and/or small-wind) and with a microgrid /islanding where possible, to allow them to continue to operate in the event of extended disruptions to electric power; • Strategic upgrades to substations, distribution, and transmission capacity across the Vermont grid needed to enable the state's renewable and electrification goals, after first exploring feasibility of any lower-cost options, e.g. flexible load management, microgrids, and storage; • Emerging grid technologies that address major challenges system resilience (e.g. base-duration outages).	Advancing	Revise Action	Utilities should conduct benefit-cost analysis on resilience upgrades and seek non-ratepayer (e.g., federal, state, municipal, nonprofit, and private) funding for measures where costs exceed benefits.	Action needed an actor and an update to acknowledge the reality that the federal funds will be winding down, as well as the cost-benefit framework that will result from Action 1.5. Specific examples are unnecessary (though can certainly be part of the explanatory narrative in the CAP).		Moderate	2	Moderate	2	Moderate	2	Yes	1	Medium	1.75
Complete the flood vulnerability assessment of all bridges, culverts and road segments on the state and town highway systems, identify and prioritize needed investments. This action includes completing the statewide expansion of the Transportation Resilience Planning Tool.	Being Implemented	Remove		The TRPT is complete for all state and local roads but will require continuous improvement/update										
Develop a vulnerability index methodology and tool for broad-variety stakeholders to identify and prioritize vulnerabilities and risks to critical assets and services in transportation, energy, communications, and water infrastructure; address its socioeconomic and equity factors that affect community resilience.	Being Implemented	Revise Action	Expand upon the Municipal Vulnerability Indicators tool to create a Municipal Vulnerability Index that can be used by state agencies and others as a resource to assist in prioritizing infrastructure resilience investments and activities based on specific vulnerabilities or combinations of vulnerabilities. Ensure it includes currently missing data such as historic utility outage data, to the extent available, and ANR's Environmental Justice mapping tool, when complete	MVI exists but lacks certain features/capabilities originally envisioned. Having a tool index will help funders quickly identify areas of highest need within a broad geographic area based on relative vulnerabilities.	HIGH Notes from 11/9 Subcommittee—Make this a new action b/c we'd need a new tool. Current MVI is an indicator (and what does M is describing would be an index)	High	3	High	3	High	3	Yes	1	High	2.5
Increase the number of public water systems and publicly owned wastewater treatment works implementing an asset management program. Expanding programs, funding opportunities, and incentives to develop and implement these programs.	Being Implemented	Revise Action	Support the development and implementation of asset management programs for all public water systems and publicly owned wastewater treatment works.	Revised language but good to keep asset mgt in.	HIGH (Not ranked this #1 out of 20 in W/WW actions) Can also de Priority Action #2 without an asset mgt program? Could consider this advised in that.	Moderate	2	High	3	High	3	yes	1	High	2.25
Incorporate GHG reduction goals and CAP strategies, and actions related to resilience in the VTrans transportation planning and project development process.	Being Implemented	Remove		Lack specificity so likely redundant to other more actionable/actionable items.										
Update or adopt as appropriate infrastructure planning and design standards to reflect climate change projections, including more frequent extreme weather as well as an increasing range of high and low temperatures, freeze/thaw cycles, and mixed precipitation (rainfall, incorporate redundancies, incentivize life-span, reduce annual maintenance and operational costs. etc.)	No Action Taken	Remove		So broad - what does this even mean? (Simple) Needs specificity to be actionable - think sectoral										
Understand source-water vulnerabilities and invest in planning efforts to assist communities, especially those that are vulnerable for their long-term water supply needs. Revamp funding programs for source protection programs, increase funding for programs (include metting and new water source) and conservation easements.	No Action Taken	Revise Action	Understand and develop opportunities for creating water and wastewater systems performance efficiencies (i.e. SPAs, inflow, infiltration, pollution reduction) including nature-based solutions.	Revised and combined previous actions retitled to w/new "source" pollution reduction. Needs an actor. Who understands?	Recommendation from Ned to delete this action. Discuss. This is supposed to be the assessment for other action calling for implementation. If this goes should the implementation also go?	Low	1	Medium	2	Low	1	yes	1	Low	1.25
Complete a flood vulnerability assessment of state-owned rail infrastructure to identify and prioritize needed improvements.	Being Implemented	Keep as is		Action is happening - contract recently executed.		High	3	High	3	High	3	Yes	1	High	2.5
Encourage adoption of low impact development regulations for municipal zoning, including low water-usage landscaping practices and increased density outside of flood prone areas.	Being Implemented	Remove		Needs an actor. Who understands?										
Increase investment to municipalities to support reductions in inflow and infiltration into wastewater collection systems.	Action not defined	Revise Action	Increase investment to municipalities for new and expanded facilities to support water and wastewater systems performance efficiencies (reductions in inflow, infiltration, pollution)	Revised and combined previous actions retitled to investments for w/new "source" pollution reduction.		Low	1	Medium	2	Low	1	yes	1	Low	1.25
Examine the climate impacts of sludge and biosolids to determine if regional facilities can reduce utility costs and climate impacts. Support investment in strategically placed facilities for sludge and septage processing (much is currently trucked to Martinsville/Chittenden Co.)	Advancing	Revise Action	Examine pros and cons of regionalizing or sharing resources for all water and wastewater treatment utilities and practices	Revised and combined previous actions retitled w/new efficiencies through regionalization.		Low	1	Medium	2	Low	1	Yes	1	Low	1.25
Increase efforts and funding towards pollution prevention programs at wastewater facilities to ensure that facilities protect available treatment capacity, which can focus development on already-served designated centers.	Being Implemented	Combined Primary	Understand and develop opportunities for creating water and wastewater systems performance efficiencies (i.e. SPAs, inflow, infiltration, pollution reduction) including nature-based solutions	Revised and combined previous actions retitled to w/new "source" pollution reduction.		Low	1	Medium	2	Low	1	yes	1	Low	1.25
Continue investments in traditional and green infrastructure to intercept, sink and treat stormwater.	Being Implemented	Combined Primary	Understand and develop opportunities for creating water and wastewater systems performance efficiencies (i.e. SPAs, inflow, infiltration, pollution reduction) including nature-based solutions	Revised and combined previous actions retitled to w/new "source" pollution reduction.		Low	1	Medium	2	Low	1	yes	1	Low	1.25
Strategy 1Bb: Public policies and organizations should be prepared to respond to and recover from extreme weather and other climate change threats														
Strategically integrate planning and preparedness across disciplines and geographies addressing the interdependencies of transportation, energy, communications, and other systems.	No Action Taken	Strategy deleted. Move actn to 1Ba.	TBD - Should be further modified to create more actionable/doable.	Moved to 1Ba to include one or more actions related to **preparedness** (see Stakeholder input. May not be needed for infrastructure but considered for Community Capacity. CHECK TO SEE **THIS** IS INCORPORATED INTO FINAL RECS.										
Strategy 1Bc: Minimize the resilience of critical infrastructure to severe weather and other climate change threats by reducing vulnerabilities of specific facilities.														
Increase infrastructure investment needed to for walking, biking and transit, support planning for regional bike corridors to improve safety and transportation options between community centers. Identify and eliminate barriers to development, including zoning/tax incentive/farm match, maintenance, and other investments.	Advancing	Revise and move to new 1Bb.	[MOVED TO FAILURE THIS ONE OUT STILL COULD BREAK UP AND MOVE THE FIRST PART UNDER INVESTMENT LINE]											
Strategy 1Bd: Increase the resilience of critical infrastructure to severe weather and other climate change threats by improving system efficiency, reliability and redundancies. Listed as Starting 1Bb. Increase the resilience of critical infrastructure to severe weather and other climate change threats by reducing vulnerabilities and improving system efficiency, reliability and redundancies.														
Deploy foundational informational and operational technology statewide to enable and optimize storage and other distributed energy resources (e.g., GridLogic, Virtual Peaker, other emerging distributed energy resource management systems, in particular those that are open-source to various technologies and vendors)	Advancing		Utilities should deploy technology for management, control, and optimization of distributed energy resources, including energy storage, to improve reliability and resilience while reducing costs for all customers.	Updated to include an actor. Avoid calling out specific technologies in a rapidly changing marketplace. Added reducing costs because most of these technologies can provide a win-win and not increase electric rates (which would make electrification - and therefore mitigation of GHG - unaffordable)	HIGH? Instead add in Row 31 as High	High	3	High	3	High	3	Yes	1	High	2.5
Expand broadband to support remote work and tele-services to reduce the impact of travel disruptions.	Advancing	VEEP ASI/S	Expand broadband to support remote work, tele-services, and reduce the impact of disruptions to travel, health, and safety.	Kept, added nexus to health & safety	HIGH, but happening	High	3	Medium	2	High	3	Yes	1	High	2.25
Update the 1999 Vermont State Highway Design Standards to create context sensitive, multi-modal projects that support smart growth (per the Act 167 (2014) Sec. 26 Report - VT State Standards Work Plan.	Advancing	Remove												
Evaluate the risks and opportunities created by potential climate change in migration to VT's critical infrastructure.	No Action Taken	Combined Primary	[MOVED INPUT - DOESN'T SEEM TO FIT WITH CRITICAL FACILITIES ACTION, AS IT'S APPARENTLY ABOUT ALL FACILITIES.	IF KEEP, SHOULD BE MOVED TO PLANNING (1Aa)		Low	1	Low	1	Low	1	Yes	1	Low	1
Create a transportation flood resilience funding program to meet the requirements and obtain funding that are anticipated to be part of the 2021 reauthorization of the federal transportation act.	Advancing (Action Modified)	Revise	In the absence of and/or in addition to dedicated federal funding, create a transportation flood resilience funding program to address identified transportation risks and vulnerabilities.	Previous action related to planning for funding and the modification speaks to the need for a state funding source for transportation projects especially if federal programs are not in place and especially for municipal infrastructure.	HIGH per TG changes made 11/9.	High	3	High	3	High	3	Yes	1	High	2.5
Improve road drainage around lakes / ponds to reduce stormwater runoff and erosion, especially on municipal roads.	Being Implemented (Action Modified)	Revise	Evaluate the cost benefit of road maintenance stormwater runoff and erosion practices, especially on municipal roads.	Move to 1Ba. This was more of an implementation action, which is occurring through the MRGP, and was revised to relate to planning.		Moderate	2	Moderate	2	High	3	yes	1	Medium	2
Replace aging electric and communication infrastructure with the most appropriate resilient alternative when cost effective. For example, during normal replacement schedules for aging and unreliable lines, evaluate and where cost effective and feasible, plan for resilience by relocating lines underground or through other options.	Advancing	VEEP ASI/S			HIGH	High	3	High	3	High	3	Yes	1	High	2.5
Identify mission critical facilities in collaboration with local and regional planners, utilities and transportation providers to identify actions, procedures, or investments to protect critical services and assets from extreme weather events and climate change. Examples of mission critical facilities include designated emergency shelters, first responder facilities, hospitals and other medical facilities, key infrastructure such as water/wastewater pumping and treatment and sewer, key communications infrastructure such as fiber nodes, government offices, fuel suppliers, transportation hubs, supermarkets and other facilities municipalities identify as critical to serving communities during extreme weather events.	No Action Taken	Revise	Local and regional planners, utilities, transportation providers, and municipal emergency managers to identify mission critical facilities and develop preparedness, survivability, and recovery plans, procedures, and investments that mitigate the impact of extreme weather events to services provided by these facilities.	Moved from Strategy 1Bd because focus is on specific facilities. Combined with Action 1b.b.1, which speaks to interagency collaboration on disaster preparedness and response. [EFFECTIVELY MOVED UNDER PLANNING, VS. INVESTMENT]	HIGH Feedback from 12/9. Make this more actionable Rethink/revise "collaborate"	High	3	High	3	High	3	Yes	1	High	2.5	Could combine with the MVI one - i.e., as MV Indicators tool being revised to a MV Index, RPCs & municip & first responders etc. could be included in the process to make sure all critical facilities are identified
Work with remote villages and properly owners to educate septic systems and public or private drinking water wells that are at risk due to floods.	No Action Taken	Revise	Assess the vulnerability of drinking water, stormwater, and wastewater infrastructure assets; develop and fund programs to ensure continuous power for continuity of operations at water and wastewater facilities, including evaluation of solar /storage microgrids, anaerobic digesters, and other extended solutions.	Move to 1Ba. Revision speaks to the need for planning and prioritizing at risk assets. Funding for implementation is in a separate revised action.	MED-HIGH (Not ranked this #1) Addressed in revised priority action #2.	High	3	High	3	High	3	Yes	1	High	2.5
Develop programs to achieve net zero energy drinking water and wastewater treatment facilities including microhydro, solar energy, heat exchange, building envelope; AND operational and technological efficiencies.	No Action Taken	Revise	Develop and fund programs to ensure continuous power for continuity of operations at water and wastewater facilities, including evaluation of solar /storage microgrids, anaerobic digesters, and other extended solutions.	Revised to relate more to resilience.	LOW (Not ranked this #6) Revised 12/9.	Moderate	2	Low	1	Medium	2	No	0	Low	1.25
Expand public investment, particularly hazard-mitigation funding to flood proof or relocate drinking water and wastewater treatment infrastructure at significant risk of flooding, when flood damaged, or during end-of-life refurbishment.	Being Implemented	Revise	Provide a sustainable funding source for addressing drinking water, stormwater, and wastewater infrastructure vulnerabilities identified and prioritized through asset management plan and vulnerability assessments development.	Revised and combine previous actions related investment for w/new/re-resilience.		High	3	High	3	High	3	Yes	1	High	2.5
Pathway 1Ab: Change Vermont's land-use policies on current and future land development, still be adaptive and resilient to climate change hazards														
Strategy 1Ba: Increase investment in the infrastructure (sewer, water, transportation, broadband, energy supply) needed to support communities that are more resilient to climate disruptions, equitable, resource efficient, and protects the adaptive capacity of natural resources.														
Invest in enhancing water sources in vulnerable communities to enhance resilience to long-term drought.	Advancing	Combined Primary	Provide a sustainable funding source for addressing drinking water, stormwater, and wastewater infrastructure vulnerabilities identified and prioritized through asset management plan and vulnerability assessments development.	Move to 1Ba. Revised and combine previous actions related investment for w/new/re-resilience.	MED-HIGH (Not ranked this #1) Added language to incorporate top 3 w/new actions.	High	3	High	3	High	3	Yes	1	High	2.5
Increase investment to municipalities for new and expanded water and wastewater facilities to support reductions in inflow and infiltration into wastewater collection systems.	Advancing	Combined Primary	Understand and invest in opportunities for creating water and wastewater systems performance efficiencies (i.e. SPAs, inflow, infiltration, pollution reduction) including investment in NBS	Move to 1Ba. Revised and combined previous actions retitled to w/new "source" pollution reduction.		Low	1	Medium	2	Low	1	yes	1	Low	1.25
Monitor and update stormwater permitting process as needed to ensure green infrastructure is preferred in design considerations.	Being Implemented	Remove	DELETE ???	Status is "being implemented". Does it need to remain?										
Complete a Climate Readiness assessments of drinking water, stormwater, and wastewater infrastructure. (This is an EPA tool that looks at all climate impacts including, fires, droughts, flooding, etc.)	No Action Taken	Combined Primary	Assess the vulnerability of drinking water, stormwater, and wastewater infrastructure assets; develop and fund programs to ensure continuous power for continuity of operations at water and wastewater facilities, including evaluation of solar /storage microgrids, anaerobic digesters, and other extended solutions.	Move to 1Ba. Revision speaks to the need for planning and prioritizing at risk assets. Funding for implementation is in a separate revised action.		High	3	High	3	High	3	Yes	1	High	2.5
Examine regionalization efforts and sharing of resources for all water utilities.	No Action Taken	Combined Primary	Examine pros and cons of regionalizing or sharing resources for all water and wastewater treatment utilities and practices	Move to 1Ba. Revised and combined previous actions retitled w/new efficiencies through regionalization.	MED (Not ranked this #5)	Low	1	Medium	2	Low	1	Yes	1	Low	1.25
Increase investment in stormwater and green infrastructure, including separating combined wastewater and storm water systems, to protect public health and water quality.	Being Implemented	Combined Primary	Increase investment to municipalities for new and expanded facilities to support water and wastewater systems performance efficiencies (reductions in inflow, infiltration, pollution).	Move to 1Ba. Revised and combined previous actions retitled to investments for w/new "source" pollution reduction.	MED (Not ranked this #6) Also, do we need a NEW action that is about planning and investment into new W/WW facilities?	Low	1	Medium	2	Low	1	yes	1	Low	1.25