

**Chittenden County All-Hazards Mitigation Plan (AHMP) Review/Update Committee
Meeting Agenda**

RSVP to Dan Albrecht (846-4490 x29; dalbrecht@ccrpcvt.org) to confirm whether you will or will not attend.

Date: **Wednesday, September 9, 2015**
Time: **3:30 p.m. – 5:00 p.m. WITH PIZZA**
Location: **Main Conference Room, CCRPC Offices, Winooski**

1. **Call to Order, Introductions and Changes to the Agenda** (Information, 3 minutes)

2. **Public comments on items not on the Agenda** (Information, 2 minutes, longer if necessary)

3. **Review and Action on minutes of May 13, 2015 minutes** (Action, 5 minutes)

4. **Review Hazard Identification List** (attachment) (Action, 15 minutes)

Please review the attached list of hazards which includes hazards in the 2013 State AHMP, hazards in the 2011 County AHMP and proposed hazards identified by this Committee in May.

The Committee will be asked to decide on the final 2016 list of hazards to be risk-assessed.

5. **Review Key Hazards Risk Estimation scoring matrices** (attachment) (Action, 30 minutes)

Please review the attached 3-page, color coded, Hazards scoring matrices. Staff is suggesting consolidation of some hazards and the addition or deletion of hazards from analysis. The 2011 matrices are included for reference.

The Committee will be asked to decide on the proposed changes should to the risk estimation criteria and/or scoring methodology.

6. **Review Mitigation Strategies** (attachment) (Action, 30 minutes)

We have included an updated analysis of the strategies from the 2011 Plan that includes FEMA comments and staff reporting on progress since 2011.

Given the proposed Key Hazards and their relative scores, the Committee should be prepared to discuss:

- a. *Which strategies from 2011 should be continued for the region?*
- b. *Should any new strategies should be included as priorities for the region?*

7. **Next Steps** (Information, 10 minutes)

Staff will outline the next steps for the 2016 Plan update, including:

- a. Agency review of draft 2016 Plan (Holly Dominie, FEMA Region One)
- b. Do we maintain college appendices (UVM, Champlain College and St. Michaels College)
- c. Update on Municipal AHMP update process by Emily, Lee and Dan
- d. Next AHMP Committee meeting: set date
- e. Incorporation into ECOS Plan Update

Adjourn

<u>Hazards in 2013 State Plan</u>	<u>Risk estimated in 2011 Plan</u>	<u>Estimate risk for 2016 Plan</u>
Flooding and Fluvial Erosion	yes	Yes (split)
Terrorism	yes	Yes
Earthquakes	No	No
Infectious Disease Outbreak	yes	Yes
Hurricanes/Tropical Storms	No	No
Tornadoes	No	No
Nuclear Power Plant Failure	No	No
Landslides/Rockslides	yes	Remove for 2016
Severe Thunderstorm	no	Yes, NEW
Wildfires	yes	Remove for 2016
Dam Failure	No	No
Severe Winter Storm	yes	Yes
Hail	yes	No but with T-storm
Ice Jams	No	No
Drought	yes	Remove for 2016
Rock Cuts	no	No
Invasive Species	no	Yes, NEW
Extreme Temperature	no	Yes (drought & heat)
<u>Other hazards with risk estimated in 2011 Plan</u>		
High Winds	Yes	consolidate with Severe T-storm
Lightning	Yes	consolidate with Severe T-storm
Radiological (natural)	Yes	Remove for 2016
Urban Fire	Yes	Yes
Telecommunications Failure	Yes	Yes
Loss of Electrical Service	Yes	Yes
Loss of Sewer Service	Yes	Yes
Loss of Water Service	Yes	Yes
Loss of Gas Service	Yes	Yes
		plus, NEW, Loss of Other Fuels plus, NEW, pollution
Haz Mat Incident	Yes	Yes
Major Transportation Incident	Yes	Yes
Military Ordinance Incident	Yes	consolidate with Haz Mat
Crime	Yes	or just Opiate issue???
Civil Disturbance	Yes	Yes
Epidemics	Yes	Yes
Economic Recession	Yes	Yes
Key Employer Loss	Yes	Yes

Each town has had a declared disaster; however, analysis of this table reveals some interesting differences between different areas of the County. The four non-lakeshore floods from 1990 through 1996 primarily affected the more upland municipalities, the gravel and dirt roads of which were vulnerable to washout. The unique flooding in July of 1998, caused by a rare combination of heavy summer rains falling on ground still saturated from the January ice storm and subsequent snowfall, affected both metropolitan and rural communities. Excluding the two somewhat anomalous events of the lakeshore flooding of 1993 (caused by a confluence of extremely high lake levels and strong onshore winds) and the July 1998 flooding (aggravated by saturated soil from the January Ice Storm), the urban and suburban communities of the county with their paved roads, lack of significant hills or small mountains and more developed stormwater systems, suffer flood damages less often and less severely. The lowland distribution of the 1998 Ice Storm is evident. Municipalities in the hills and mountains of the county had temperatures below the freezing point during that event.

3.4 Future Events

Although estimating the risk of future events is far from an exact science, CCRPC staff used best available data and best professional judgment to conduct an updated Hazards Risk Estimation analysis, which was subsequently reviewed and revised by the Plan Review/Update Committee in 2009. This analysis assigns numerical values to a hazard's affected area, expected consequences, and probability. This quantification allows direct comparison of very different kinds of hazards and their effect on the county, and serves as a rough method of identifying which hazards hold the greatest risk. CCRPC staff applied the following scoring system:

Area Impacted, scored from 0-4, rates how much of the municipality's developed area would be impacted.

Consequences consist of the sum of estimated damages or severity for four items, each of which are scored on a scale of 0-3:

- Health and Safety Consequences
- Property Damage
- Environmental Damage
- Economic Disruption

Probability of Occurrence (scored 1-5) estimates an anticipated frequency of occurrence.

To arrive at the overall risk value, the sum of the Area and Consequence ratings was multiplied by the Probability rating.

3.4.1 Future Natural Hazard Events

According to the updated Hazard Risk Estimation analysis (*Table 3-2*) the following natural hazards received the highest risk ratings out of a possible high score of 80 and are considered significant and worth mitigating against.

- Severe Winter Storm (45)
- Flooding (32)
- Fluvial Erosion (24)
- Multi-Structure Urban Fire (16)

Previous FEMA disaster relief funds were used both to address Severe Winter Storm and Flooding Events, which occurred at least once in every municipality. The *2005 All Hazard Mitigation Plan* combined Fluvial Erosion with Landslides. Based on increased awareness of fluvial erosion and the consequences of erosion damage to roads or bridges, fluvial erosion is now being addressed separately. The potential damage from a major urban or multi-structure fire is relatively high in certain municipalities given the aging housing stock in the area and the lack of adequate building inspection.

Table 3-2 Natural hazard risk estimation matrix

	Drought	Flooding	High Winds	Landslide	Fluvial Erosion	Lightning	Multi-Structure Urban Fire	Wildfire	Winter Storm	Radiological (Nuclear)
Area Impacted Key: 0 = No developed area impacted 1 = Less than 25% of developed area impacted 2 = Less than 50% of developed area impacted 3 = Less than 75% of developed area impacted 4 = Over 75% of developed area impacted	0	1	1	0	1	1	1	0	4	1
Consequences										
Health & Safety Consequences Key: 0 = No health and safety impact 1 = Few injuries or illnesses 2 = Few fatalities or illnesses 3 = Numerous Fatalities	0	1	0	0	1	1	1	0	1	1
Property Damage Key: 0 = No property damage 1 = Few properties destroyed or damaged 2 = Few destroyed but many damaged 2 = Few damaged and many destroyed 3 = Many properties destroyed and damaged	1	2	1	1	2	1	1	1	1	0
Environmental Damage Key: 0 = Little or no environmental damage 1 = Resources damaged with short-term recovery 2 = Resources damaged with long-term recovery 3 = Resources destroyed beyond recovery	0	2	0	1	1	0	0	1	1	0
Economic Disruption Key: 0 = No economic impact 1 = Low direct and/or indirect costs 2 = High direct and low indirect costs 2 = Low direct and high indirect costs 3 = High direct and high indirect costs	1	2	1	1	1	0	1	0	2	1
Sum of Area & Consequences Scores	2	8	3	3	6	3	4	2	9	3
Probability of Occurrence Key: 1 = Unknown but rare occurrence 2 = Unknown but anticipate an occurrence 3 = 100 years or less occurrence 4 = 25 years or less occurrence 5 = Once a year or more occurrence	4	4	5	4	4	4	4	3	5	4
TOTAL RISK RATING Total Risk Rating = Sum of Area & Consequences Scores x Probability of Occurrence	8	32	15	12	24	12	16	6	45	12

3.4.2 Future Technological Hazard Events

According to the updated Hazard Risk Estimation analysis (Table 3-3), the following technological hazards received the highest risk ratings out of a possible high score of 80 and are considered significant and worth mitigating against.

- Telecommunications Failure (30)
- Power Loss (28)
- Major Transportation Incident (28)

As discussed in Section 1, large portions of Chittenden County are urban or suburban in nature, and much of its population is dependent upon municipal services such as water, sewer, electricity and gas. Losses of these services could therefore deprive many individuals, including vulnerable populations such as the elderly, of basic human needs.

CCRPC has had limited success in identifying “trouble spots” that have repeated occurrences of service outages or downed lines. VT Department of Public Service requires electric companies to report outage data (day, time, duration, general street location and determined cause. However, an exact location (i.e., near which exact utility pole) is not provided. Therefore, at this time, CCRPC cannot detail the geographic area with repeated service losses nor provide any detailed information on the likely frequency of future events.

Small scale transportation incidents—accidents involving a small number of vehicles—occur with relative frequency in Chittenden County, and can result in fatalities. However, the transportation incident rating in the risk estimation matrix concerns rarer, large-scale events. These could include an airline crash, an incident with a passenger ferry or large boat, a rail incident, a roadway accident involving a large number of vehicles, or major road infrastructure failure. Although the potential impacts are high, the rarity of such transportation events makes it difficult to identify specific geographic areas where such large transportation accidents are likely to occur.

Table 3-3 Technological hazard risk estimation matrix

	Gas Service Loss	Hazardous Materials Incident	Power Loss	Radiological Incident	Sewer Service Loss	Telecommunications Failure	Water Service Loss	Major Transportation Incident	Military Ordnance Incident
Area Impacted Key: 0 = No developed area impacted 1 = Less than 25% of developed area impacted 2 = Less than 50% of developed area impacted 3 = Less than 75% of developed area impacted 4 = Over 75% of developed area impacted	1	1	4	2	2	4	3	1	1
Consequences									
Health & Safety Consequences Key: 0 = No health and safety impact 1 = Few injuries or illnesses 2 = Few fatalities or illnesses 3 = Numerous Fatalities	1	1	1	2	1	1	1	2	1
Property Damage Key: 0 = No property damage 1 = Few properties destroyed or damaged 2 = Few destroyed but many damaged 3 = Few damaged and many destroyed 4 = Many properties destroyed and damaged	1	1	1	2	0	0	0	1	1
Environmental Damage Key: 0 = Little or no environmental damage 1 = Resources damaged with short-term recovery 2 = Resources damaged with long-term recovery 3 = Resources destroyed beyond recovery	0	2	0	3	0	0	0	1	1
Economic Disruption Key: 0 = No economic impact 1 = Low direct and/or indirect costs 2 = High direct and low indirect costs 2 = Low direct and high indirect costs 3 = High direct and high indirect costs	1	1	1	3	1	1	1	2	2
Sum of Area & Consequences Scores	4	6	7	12	4	6	5	7	6
Probability of Occurrence Key: 1 = Unknown but rare occurrence 2 = Unknown but anticipate an occurrence 3 = 100 years or less occurrence 4 = 25 years or less occurrence 5 = Once a year or more occurrence	3	1	4	1	2	5	3	4	2
TOTAL RISK RATING Total Risk Rating = Sum of Area & Consequences Scores x Probability of Occurrence	12	6	28	12	8	30	15	28	12

3.4.3 Future Societal Hazard Events

According to the Hazard Risk Estimation analysis (Table 3-4), the following societal hazards received the highest risk ratings out of a possible high score of 80 and are considered significant and worth mitigating against:

- Epidemic (21)

- Crime (16)
- Civil Disturbance (16)

For the most part, the risk of Societal Hazards is less than that of Natural and Technological Hazards. The exception to this is the risk of an epidemic. While epidemics are rare, they do have the potential of mass casualties and significant economic disruption over a wide area. Appropriately, efforts have been made in recent years on the county and municipal levels to mitigate the hazards associated with an epidemic, though most pandemic mitigation still takes place at the state or federal level. The recent swine flu pandemic raised public awareness of epidemics, even though few cases were reported in Vermont.

Table 3-4 Societal hazard risk estimation matrix

	Crime	Civil Disturbance	Terrorism	Epidemic	Economic Recession	Key Employer Loss
Area Impacted Key: 0 = No developed area impacted 1 = Less than 25% of developed area impacted 2 = Less than 50% of developed area impacted 3 = Less than 75% of developed area impacted 4 = Over 75% of developed area impacted	1	1	1	2	1	1
Consequences						
Health & Safety Consequences Key: 0 = No health and safety impact 1 = Few injuries or illnesses 2 = Few fatalities or illnesses 3 = Numerous Fatalities	1	1	1	2	0	0
Property Damage Key: 0 = No property damage 1 = Few properties destroyed or damaged 2 = Few destroyed but many damaged 3 = Few damaged and many destroyed 4 = Many properties destroyed and damaged	1	1	1	0	0	0
Environmental Damage Key: 0 = Little or no environmental damage 1 = Resources damaged with short-term recovery 2 = Resources damaged with long-term recovery 3 = Resources destroyed beyond recovery	0	0	0	0	0	0
Economic Disruption Key: 0 = No economic impact 1 = Low direct and/or indirect costs 2 = High direct and low indirect costs 2 = Low direct and high indirect costs 3 = High direct and high indirect costs	1	1	2	3	2	2
Sum of Area & Consequences Scores	4	4	5	7	3	3
Probability of Occurrence Key: 1 = Unknown but rare occurrence 2 = Unknown but anticipate an occurrence 3 = 100 years or less occurrence 4 = 25 years or less occurrence 5 = Once a year or more occurrence	4	4	3	3	4	4
TOTAL RISK RATING Total Risk Rating = Sum of Area & Consequences Scores x Probability of Occurrence	16	16	15	21	12	12

3.4.4 Summary of Future Hazard Events

Based on this risk estimation analysis, the highest rated hazards for Chittenden County are:

- Severe Winter Storm (45)
- Flooding (32)

- Telecommunications Failure (30)
- Power Loss (28)
- Major Transportation Incident (28)
- Fluvial Erosion (24)
- Epidemic (21)

It should be noted that the top natural hazard on the list—severe winter storm—could be the cause of two of the highest-rated technological hazards, telecommunications failure and power loss. The current swine flu pandemic has not significantly affected Chittenden County but has raised local awareness of the potential risks of an epidemic. This partially accounts for epidemic being the highest ranking social hazard.

Table 3-5 shows the distribution of significant hazards for each municipality. This table represents the subjective opinion of officials from each municipality, either based on direct municipal input or on the highest-rated hazards from the municipal annex. As a result, this assessment of relative risk and/or significance is not consistent from community to community. However, the table does illustrate which issues are of most importance to each municipality.

	Drought (move to Extreme)	Flooding	High Winds (to Severe Storm)	Landslide (not sig. as a discrete hazard)	Fluvial Erosion	Lightning (to Severe Storm)	Multi-Structure Urban Fire (move to Technological)	Wildfire (maybe remove??)	Winter Storm	Radiological (Natural) radon???	Severe
Area Impacted Key: 0 = No developed area impacted 1 = Less than 25% of developed area impacted 2 = Less than 50% of developed area impacted 3 = Less than 75% of developed area impacted 4 = Over 75% of developed area impacted	0	1	1	0	1	1	1	0	4	1	4
Consequences											
Health & Safety Consequences Key: 0 = No health and safety impact 1 = Few injuries or illnesses 2 = Few fatalities or illnesses 3 = Numerous Fatalities	0	1	0	0	0	1	2	2	2	1	1
Property Damage Key: 0 = No property damage 1 = Few properties destroyed or damaged 2 = Few destroyed but many damaged 2 = Few damaged and many destroyed 3 = Many properties destroyed and damaged	1	2	1	1	2	1	2	1	1	1	1
Environmental Damage Key: 0 = Little or no environmental damage 1 = Resources damaged with short-term recovery 2 = Resources damaged with long-term recovery 3 = Resources destroyed beyond recovery	0	2	0	1	1	0	0	1	1	0	0
Economic Disruption Key: 0 = No economic impact 1 = Low direct and/or indirect costs 2 = High direct and low indirect costs 2 = Low direct and high indirect costs 3 = High direct and high indirect costs	1	2	1	1	2	0	1	0	1	1	2
Sum of Area & Consequences Scores	2	8	3	3	6	3	6	2	9	4	8
Probability of Occurrence Key: 1 = Unknown but rare occurrence 2 = Unknown but anticipate an occurrence 3 = 100 years or less occurrence 4 = 25 years or less occurrence 5 = Once a year or more occurrence	4	4	5	4	4	4	4	3	5	4	5
TOTAL RISK RATING Total Risk Rating = Sum of Area & Consequences Scores x Probability of Occurrence	8	32	15	12	24	12	24	6	45	16	40

	Gas Service Loss	Other Fuel Service Loss	Pollution (algal bloom, etc.)	Hazardous Materials Incident	Power Loss	Radiological Incident (Involvement to HazMat Incident)	Sewer Service Loss	Telecommunications Failure	Water Service Loss	Major Transportation Incident	Military Ordnance Incident (Involvement)
Area Impacted Key: 0 = No developed area impacted 1 = Less than 25% of developed area impacted 2 = Less than 50% of developed area impacted 3 = Less than 75% of developed area impacted 4 = Over 75% of developed area impacted	1	1	1	1	2	2	1	3	1	1	1
Consequences											
Health & Safety Consequences Key: 0 = No health and safety impact 1 = Few injuries or illnesses 2 = Few fatalities or illnesses 3 = Numerous Fatalities	1	1	1	2	1	2	1	1	1	2	2
Property Damage Key: 0 = No property damage 1 = Few properties destroyed or damaged 2 = Few destroyed but many damaged 3 = Few damaged and many destroyed 4 = Many properties destroyed and damaged	1	1	0	1	1	0	1	0	0	1	1
Environmental Damage Key: 0 = Little or no environmental damage 1 = Resources damaged with short-term recovery 2 = Resources damaged with long-term recovery 3 = Resources destroyed beyond recovery	0	0	2	2	0	0	1	0	0	1	1
Economic Disruption Key: 0 = No economic impact 1 = Low direct and/or indirect costs 2 = High direct and low indirect costs 2 = Low direct and high indirect costs 3 = High direct and high indirect costs	2	1	2	1	3	1	1	1	2	1	2
Sum of Area & Consequences Scores	5	4	6	7	7	5	5	5	4	6	6
Probability of Occurrence Key: 1 = Unknown but rare occurrence 2 = Unknown but anticipate an occurrence 3 = 100 years or less occurrence 4 = 25 years or less occurrence 5 = Once a year or more occurrence	3	1	4	4	1	2	5	3	4	2	2
TOTAL RISK RATING Total Risk Rating = Sum of Area & Consequences Scores x Probability of Occurrence	15	4	24	28	7	10	25	15	16	12	12

	Crime (or maybe focus on Opiate problem??)	Civil Disturbance	Terrorism	Epidemic	Economic Recession	Key Employer Loss
Area Impacted Key: 0 = No developed area impacted 1 = Less than 25% of developed area impacted 2 = Less than 50% of developed area impacted 3 = Less than 75% of developed area impacted 4 = Over 75% of developed area impacted	1	1	1	3	4	1
Consequences						
<i>Health & Safety Consequences</i> Key: 0 = No health and safety impact 1 = Few injuries or illnesses 2 = Few fatalities or illnesses 3 = Numerous Fatalities	2	1	1	2	0	0
<i>Property Damage</i> Key: 0 = No property damage 1 = Few properties destroyed or damaged 2 = Few destroyed but many damaged 3 = Few damaged and many destroyed 4 = Many properties destroyed and damaged	0	1	1	0	0	0
<i>Environmental Damage</i> Key: 0 = Little or no environmental damage 1 = Resources damaged with short-term recovery 2 = Resources damaged with long-term recovery 3 = Resources destroyed beyond recovery	0	0	0	0	0	0
<i>Economic Disruption</i> Key: 0 = No economic impact 1 = Low direct and/or indirect costs 2 = High direct and low indirect costs 2 = Low direct and high indirect costs 3 = High direct and high indirect costs	2	1	2	3	2	2
Sum of Area & Consequences Scores	5	4	5	8	6	3
Probability of Occurrence Key: 1 = Unknown but rare occurrence 2 = Unknown but anticipate an occurrence 3 = 100 years or less occurrence 4 = 25 years or less occurrence 5 = Once a year or more occurrence	4	4	3	3	4	4
TOTAL RISK RATING Total Risk Rating = Sum of Area & Consequences Scores x Probability of Occurrence	20	16	15	24	24	12

Recommended changes in Strategies for 2016 version of Chittenden County AHMP:

6.5 Implementation and Monitoring of Mitigation Strategies

The following table will aid responsible entities in implementing the mitigation actions for Chittenden County, and facilitate annual monitoring of the plan. **Green highlight are considered Mitigation Actions by FEMA Region One staff**

Table 6-1 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan Implementation Matrix

Mitigation Strategy	AHMP Page #	Primary Responsible Entity	Task	Brief Description	Progress since 2011 and Recommendation for 2016 Plan
#1 Develop mechanisms and plans for coordination and cooperation between municipal, non-profit and private emergency service providers.	79	LEPC #1, CCRPC	Basic EOP Preparation/Update Workshops	Sponsor workshops to help municipalities prepare and update their Basic Emergency Operation Plan.	Staffing inadequate to organize workshops. CCRPC staff work on annual basis to remind municipalities to complete Local Emergency Operations Plan (LEOP) document which have supplanted BEOP. ALSO NOT A MITIGATION ACTION. REMOVE FROM 2016 PLAN.
	79	LEPC #1	LEPC #1 Resource Preparedness Guide	Update the resource guide for emergency responders dealing with hazardous materials.	In discussions at spring 2015 Chittenden County Fire Mutual Aid meeting, it was recommended this be removed for 2016 plan. THIS IS PRIMARILY A RESPONSE ACTION, NOT A MITIGATION ACTION. REMOVE FROM 2016 PLAN.
	79	CCRPC, VLCT, municipalities	Regional Police and Dispatch Services Study	Study feasibility of regional policing and dispatching for Chittenden County.	CCRPC staff have had informal discussions with municipalities regarding regional policing and individual municipalities may explore cost sharing mechanisms. ALSO NOT A MITIGATION ACTION. REMOVE FROM 2016 PLAN.
	80	LEPC #1, CCRPC	Continued Efforts and New Strategies	Continue to develop and enhance domestic preparedness and emergency planning in Chittenden County.	Since Tropical Storm Irene in 2011, CCRPC has a formal MOU with VT DEMHS to assist in staffing of State EOC and now regularly collects data on damages in towns during hazards events to forward to VTDEMHS. This is a Response and Recovery effort. ALSO NOT A MITIGATION ACTION. REMOVE FROM 2016 PLAN.
#2 Complete fluvial geomorphology assessments and develop strategies in response to identified risk.	81	VT ANR, CCRPC	Fluvial Geomorphic Assessments	Continue Phase I and Phase II fluvial geomorphic assessments on streams and waterways in Chittenden County.	Completed. REMOVE FROM 2016 PLAN
	82	VT ANR, CCRPC	Fluvial Erosion Hazard Mapping	Rate the fluvial erosion hazard for each assessed reach and develop a fluvial erosion hazard map for the	Completed. REMOVE FROM 2016 PLAN.

			waterway using SGAT. Create map of all assessed reaches. Submit to VT ANR for QA/QC.	
82	TBD, determined by funding.	River Corridor Management Plans	Where Phase I and II assessments are complete, develop a river corridor management plan.	COMPLETED. River Corridor Plans and/or reach-by-reach project ideas have been developed for numerous streams throughout the County. Consider adding a measure of progress such as X out of Y number or miles of reaches completed; or list towns completed if applicable. REMOVE FROM 2016 PLAN.
82	Municipalities (see annex for specific responsible entity)	Fluvial Erosion Hazard Mitigation Implementation	Develop strategies to mitigate losses from identified fluvial erosion hazards.	Municipalities are incorporating discussions of FEH and Flood Resiliency in their comprehensive plans and working to formally address FEH and River Corridor Protections in their bylaws and updated hazard mitigation plan annexes. MAYBE SPLIT THIS UP INTO SEPARATE TASKS: A) improved town plan language on Hazards and Flood Resiliency and b) improved zoning bylaws with FEH/RC protections.

Mitigation Strategy	AHMP Page #	Primary Responsible Entity	Task	Brief Description	Progress since 2011 and Recommendation for 2016 Plan
#2, continued.	82	CCRPC, VT ANR	Flood Insurance Map Updates	Assist ANR in conducting outreach to municipalities on the Draft FIRM data, solicit input to the final revisions, and provide assistance to municipalities in updating floodplain regulations and zoning bylaws.	Completed. REMOVE FROM 2016 PLAN.
#3 Evaluate capabilities of existing road and stormwater infrastructure	83	VT ANR, VTrans, CCRPC, CCMPO	Infrastructure Assessment for Stormwater Vulnerability	Assess the vulnerability and operational capability of municipal-owned roads, culverts and other stormwater infrastructure in areas with recurring stormwater and snowmelt problems. (BUT SEE COMMENT TO THE RIGHT IN RED)	CCRPC is working on an analytical tool to collate information from various data sources to facilitate prioritization of repair and/or replacement (FEMA SAYS: NOT MITIGATION UNLESS THERE IS AN IMPROVEMENT/LONG TERM RISK REDUCTION TO THE VULNERABILITIES) of infrastructure.
	84	VT ANR, VTrans, CCRPC, CCMPO	Infrastructure Assessment for Fluvial Erosion/Landslide Vulnerability	Assess the vulnerability and operational capability of municipal-owned roads, culverts, bridges and other infrastructure to fluvial erosion and landslide events.	CCRPC is working on an analytical tool to collate information from various data sources to facilitate prioritization of repair and/or replacement (FEMA SAYS, SAME AS ABOVE) of

					infrastructure.
#4 Develop a regional climate action guide with goals and strategies to help reduce energy consumption, reduce greenhouse gas emissions and mitigate climate change	84	CCMPO; CCRPC	Energy and Climate Action Guide	Research and develop an Energy and Climate Action Guide for Chittenden County and its municipalities.	Completed. REMOVE FROM 2016 PLAN or add logical follow-on action
#5 Complete landslide hazard assessments and develop strategies in response to identified risks.	85	VGS, CCRPC	Landslide Hazard Assessment Protocol	Develop a landslide hazard protocol to evaluate county slopes and waterways.	Completed by Vermont Geological Survey with CCRPC as partner. Protocol development testing included the towns of Essex, South Burlington, Colchester, Bolton and Shelburne. This list is good way to measure convey progress REMOVE FROM 2016 PLAN.
	85	CCRPC, VGS	Landslide Hazard Assessment and Mapping	Assess landslide hazards and prepare landslide hazard maps.	Other than the mapping described in the previous row, no funding has been secured to prepare additional maps. POSSIBLY REMOVE THIS ACTION AS NO FUNDING IDENTIFIED AND NOT A SIGNIFICANT HAZARD??

Mitigation Strategy	AHMP Page #	Primary Responsible Entity	Task	Brief Description	Progress since 2011 and Recommendation for 2016 Plan
#6 Identify data gaps that affect all-hazards mitigation planning and develop multi-0partner research projects to address identified data needs. SEE COMMENTS BELOW IN GREY	87	LEPC #1	Hazardous Materials Transportation	Identify recent studies and current state databases to help identify hazardous materials transport and transportation-related hazardous materials incidents.	A state wide hazardous commodities flow study may be conducted in 2016.
	87	CCRPC, LEPC #1	Hazard Mitigation Planning by Other Entities	Identify hazard mitigation planning being done by other entities in Chittenden County.	No formal action to date.
	87	CCRPC, LEPC #1	Identify Unmet Mitigation Data Needs	Determine emergency organizations' and municipalities' data needs for hazard mitigation planning.	No formal action to date.
	87	CCRPC, LEPC #1	Determine Data Development Feasibility	Determine which data gaps are feasible to fill given time and financial constraints.	No formal action to date.
	87	CCRPC, LEPC #1	Data Development	Identify partners for data development process. Plan projects to address data needs. Seek funding for research projects.	No formal action to date.

I don't know why Nan did not make each task under this strategy green, "brief description" unless... While the tasks are not physical or holistic planning projects that would be eligible for a PDM grant, for instance, they are elements that can lead to such a project. Nan? **I CONCUR. I DIDN'T CONSIDER THE HAZARDOUS MATERIALS TASK SINCE IT IS A MAN-MADE HAZARD. THIS COULD BE ADDRESSED AS A MITIGATION ACTION IF SAY SNOWSTORMS OR ERODED ROADS FROM FLOODING MAKES THE HAZARDOUS MATERIALS TRANSPORTATION A VULNERABILITY BUT THE DESCRIPTION DOESN'T STATE THIS. THIS MAY HAVE LED ME TO THINK THOSE DESCRIPTIONS WERE FOR THAT HAZARD WHICH OUR PLANS WE DON'T ADDRESS. BUT I ALSO REMEMBER THAT THE DESCRIPTIONS DID NOT LEAD TO OR MAKE THE CONNECTION TO "WHAT END?" AS YOU NOTED IN YOUR HIGHLIGHTED COMMENT. IT SHOULD HAVE SOME CONNECTION TO WHAT IS BEING MITIGATED (RISK REDUCTION) LIKE THE OTHER ACTIONS THAT THEY SUCCESSFULLY MADE THAT CONNECTION. I DID HIGHLIGHT THE OVERALL STRATEGY AS MITIGATION. I WOULD CONCUR THAT WE CAN ACCEPT THESE BUT FOR TECHNICAL ASSISTANCE I WOULD RECOMMEND THEY ADDRESS AS YOU NOTED – To what end?**

#7 Develop multi-partner public communications, outreach and education projects to improve the capacity of the general public and private sector to mitigate the effects of and endure hazards.	88	LEPC #1, CCRPC	Shelter-in-Place Workshops	Develop and conduct Shelter-in-Place information workshops for schools, businesses, early childhood education centers and nursing homes. (See comments below	Some initial workshops were conducted in 2009. No staff support of funding is anticipated to be readily available to feel certain enough to include this as a discrete task.
	89	LEPC #1, VT 2-1-1	Coordination with Vermont 2-1-1	Strengthen coordination and partnerships with Vermont 2-1-1, in order to better communicate information to the public in an emergency. (preparedness)	<i>Vermont 2-1-1 is a regular participant at LEPC#1 meetings. HOWEVER, THIS IS NOT A MITIGATION ACTION. REMOVE FROM 2016 PLAN.</i>
	89	LEPC #1, CCRPC	Communications, Outreach & Education	Identify and implement projects to coordinate communications, outreach and education for emergency management and hazard mitigation.	

The descriptions need to be further defined in long term risk reduction or avoidance to set apart from preparedness education.

This might be more on educating about retrofits, elevations, relocations and acquisitions; educating about past impacts and future vulnerabilities along with actions that the Town, businesses, individual property owners can do (moving historic town records out of flood prone areas, relocating or protecting electrical and septic systems in a home or property or wind tie downs).

Educating how to construct a shelter in home or building.)

Educating for garnering support for new flood or hazard resiliency standards, policies, etc.,

Educating residents or the Town about NFIP and flood insurance and CRS benefits.

Hold workshops with local hardware store on building techniques to protect structures from hazards (high winds, hail, heavy snowloads, basement flooding, etc.).

Educate with FIREWISE program to help owners/residents in wildfire prone areas to develop defensible space around their homes/structures, build safer, etc.