

Section 5

Mitigation Strategy Requirements

Mitigation Strategy---Requirement §201.6(c)(3):

The plan **shall** include a strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

Local Hazard Mitigation Goals---Requirement §201.6(c)(3)(i):

[The hazard mitigation strategy **shall** include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

- Does the new or updated plan include a description of mitigation **goals** to reduce or avoid long-term vulnerabilities to the identified hazards?

Identification and Analysis of Mitigation Actions---Requirement §201.6(c)(3) (ii):

[The mitigation strategy **shall** include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance--Requirement §201.6(c)(3)(ii):

[The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.

- Does the new or updated plan identify and analyze a **comprehensive range** of specific mitigation actions and projects for each hazard?
- Do the identified actions and projects address reducing the effects of hazards on **new** buildings and infrastructure?
- Do the identified actions and projects address reducing the effects of hazards on **existing** buildings and infrastructure?
- Does the new or updated plan describe the jurisdiction(s) participation in the NFIP?
- Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?

Implementation of Mitigation Actions---Requirement: §201.6(c)(3) (iii):

[The mitigation strategy section **shall** include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization **shall** include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

- Does the new or updated mitigation strategy include how the actions are **prioritized**? (For example, is there a discussion of the process and criteria used?)
- Does the new or updated mitigation strategy address how the actions will be **implemented and administered**, including the responsible department, existing and potential resources and the timeframe to complete each action?
- Does the new or updated prioritization process include an emphasis on the use of **cost-benefit review** to maximize benefits?
- Does the updated plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?

SECTION 5

**REGION 5 HAZARD MITIGATION PLAN
PIERCE COUNTY ADDENDUM
MITIGATION STRATEGY SECTION**

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Table 5-1 Pierce County Mitigation Strategy Matrix¹

Implementation Mechanism ²	Mitigation Measure (Hazard(s))	Lead Jurisdiction(s) / Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Operations	Preparedness	Partnerships	Natural Resources	Sustainable Economy
HMF	1. Pierce County Natural Hazard Mitigation Forum-All	PC DEM; Local Jurisdictions	Ongoing	✓	✓	✓	✓	✓	✓
	2. Underground Utilities-All	PC DEM; Local Utility Providers	5	✓	✓		✓		✓
	3. Retrofit of Lower Puyallup Levee System-All	Local Jurisdictions	5	✓	✓	✓	✓	✓	✓
	4. Fire District Annexations-E,SW,WUI	Local fire districts; WA DNR	5	✓	✓		✓	✓	
	5. Develop Firewise Communities-WUI	Fire Prevention Bureau (PC DEM); Local fire districts; WA DNR	5	✓		✓	✓	✓	✓
	6. Dam Draw Down Agreements-F,V	PC DEM Division; Facility Owners	5	✓			✓	✓	
<u>Emergency Management Department</u>	1. Hazard Mitigation Committee-All	PC DEM: EM Division	Ongoing	N/A					
	2. All-Hazard Mitigation Plan-All	PC DEM: EM Division	5	N/A					
	3. Continuity of Government Plan-All	PC DEM: EM Division, County COOP Coordinators	5		✓	✓	✓		✓
	4. Recovery Plan-All	PC DEM: EM Division	5		✓		✓		✓
	5. Landslide-Warning System-L	PC DEM: Division; USGS	5	✓		✓			
	6. Lahar Flow Control-V	PC DEM: Division	5	✓				✓	✓
	1. Repeater Site East: Vulnerability Assessment-All	PC DEM: Communications	5	N/A					
	2. Repeater Site East: Capability Assessment-All	PC DEM: Communications	5	N/A					
	3. Repeater Site East: Upgrade power supply to permanent power-All	PC DEM: Communications	1-2	✓	✓	✓			✓
	4. Repeater Site East: Upgrade tower to withstand 150 mph winds with ½” of ice load-All	PC DEM: Communications	1-2	✓	✓	✓			✓
	5. Annex/LESA Comm Tower Replacement-All	PC DEM: Communications	5	✓	✓	✓	✓		✓
	6. Preventive Maintenance Plan-All	PC DEM: Communications	1-2	✓	✓				
	7. Preventive Maintenance of Acoustic Flow Monitors-All	PC DEM: Communications	5	✓	✓	✓			
	Public Education	1. PC NET-All	PC DEM: EM Division	Ongoing	✓	✓	✓	✓	✓
2. Public Education Campaigns: All Hazards-All		PC DEM: EM Division	Ongoing	✓		✓			✓
3. Public Education Campaigns: Post-Disaster, All Hazards-All		PC DEM: EM Division	Ongoing	✓			✓		✓
4. NOAA All Hazards Radio Program-All		PC Dem: EM Division	5	✓	✓	✓			
5. PC Kids Corps-E		PC DEM Division; American Red Cross	Ongoing	✓		✓	✓		

Implementation Mechanism ²	Mitigation Measure (Hazard(s))	Lead Jurisdiction(s) / Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Operations	Preparedness	Partnerships	Natural Resources	Sustainable Economy
	6. Public Education: Hazard Insurance Information-All	PC DEM: EM Division; Insurance Industry	1-2	✓		✓	✓		✓
	7. Public Education: Severe Weather-SW	PC DEM: EM Division	Ongoing	✓		✓			
	8. Public Education: Lahar-V	PC DEM: EM Division	Ongoing	✓		✓			
	9. Public Education: Volcanic Ashfall-V	PC DEM: EM Division	5	✓		✓			
	10. Public Education: Evacuation Routes-V	PC DEM: EM Division	1-2	✓		✓			
<u>Facilities Management</u>	1. Critical Infrastructure: Auxiliary Power-All	PC Facilities Management	5		✓				
	2. Critical Infrastructure: Access Limitation Evaluation-All	PC Facilities Management; PC DEM	1-2	N/A					
	3. Peninsula Detachment: Water and Sewer Back-up System-All	PC Facilities Management; PC Sheriff	5	✓	✓				
	4. Peninsula Detachment: Nonstructural Retrofit-E	PC Facilities Management; PC Sheriff	5	✓	✓				
	5. South Hill Precinct: Nonstructural Retrofit-E	PC Facilities Management; PC Sheriff	5	✓	✓				
	6. Pierce County Human Services South Building: Nonstructural Retrofit-E	PC Facilities Management	5	✓	✓				
	7. Volcanic Hazard Response and Recovery SOP for Multiple Infrastructure-V	PC Facilities Management	5	✓	✓				
<u>Public Works and Utilities</u>	1. FEMA Flood Insurance Rate Maps-F	PC PWU: Surface Water Management; PC IS; FEMA	On-going	✓			✓	✓	✓
	2. Levee System: Facility Assessment Plan Development-All	PC PWU: Surface Water Management	5	✓	✓				
	3. Setback Levees-F	PC PWU: Surface Water Management	5	✓				✓	✓
	4. Preventive Maintenance: Flood Control Infrastructure-F	PC PWU: Surface Water Management	Ongoing	✓	✓			✓	
	5. Repetitive Flood Loss Program-F	PC PWU: Surface Water Management	Ongoing	✓				✓	✓
	6. New Construction: Flood Control Infrastructure-F	PC PWU: Surface Water Management	5	✓	✓	✓		✓	✓
	7. Response: Surface Water Management Emergency Resource Maintenance-F	PC PWU: Surface Water Management	Ongoing	✓	✓		✓		
	1. Purdy Shop Underground Utilities-All	PC PWU: Transportation Division	5		✓	✓			
	2. Bridge Retrofit Program-All	PC PWU: Transportation Division	Ongoing	✓		✓			✓
	3. Bridge for Kids-V	PC PWU: Transportation Division; B4Ks; PC DEM; WA EMD; Orting School District; City of Orting	5	✓		✓			

Implementation Mechanism ²	Mitigation Measure (Hazard(s))	Lead Jurisdiction(s) / Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Preparedness Continuity of Operations	Partnerships	Natural Resources	Sustainable Economy	
	4. Evacuation Planning: New Roads and Development-V	PC PWU: Transportation Division; PC DEM	1-2	✓	✓				
	5. Elevation of 192 nd St East Above Flood Elevation-F,V,E,SW	PC PWU: Transportation Division	5	✓	✓				✓
Public Education	1. Public Education: Flood-F	PC PWU: Surface Water Management	Ongoing	✓		✓		✓	✓
Community Services	1. Tree Maintenance Program-SW	PC DEM; PC Community Services (Cooperative Extension)	5	✓			✓	✓	
Economic Development	1. Pre-Disaster Business Mitigation Loan Program-All	SBA; Economic Development, PC DEM; PC Chambers of Commerce; PC Historically Underutilized Businesses Program (HUB)	5	✓			✓		✓
Information Technology	1. Essential Records Protection-All	PC Information Technology; PC DEM; COOP Coordinator Group	5		✓		✓		✓
	2. Information Technology Fiber Ring-All	PC IT; All County	5		✓				
Parks and Recreation	1. Property Acquisition Program: Selection Process-All	PC Parks and Recreation; PC Surface Water Management; PC DEM	1-2		✓		✓	✓	
Planning and Land Services	1. Tsunami Critical Area Regulation-T	PC PALs; PC DEM: EM Division; PC PWU: Surface Water Management	5	N/A					
Sheriff's	1. Critical Facilities: Response Considerations-All	PCSD; Fire Districts	1-2	N/A					

Hazard Mitigation Forum – Mitigation Measures

Priority: ALL-HMF-1³

Pierce County Natural Hazard Mitigation Forum

The County will continue to maintain the Pierce County Hazard Mitigation Forum (HMF). The Forum functions as a means of coordinating mitigation planning efforts among all jurisdictions within the County that have completed a mitigation plan. This will ensure efficient use of resources and a more cooperative approach to making a disaster resilient county. The HMF meets annually. This is addressed in the Plan Maintenance Section of this Plan.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Increase Public Preparedness; Protect the Environment; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = Cost of meeting room, refreshments and documentation
3. **Funding source and situation** = funding could be obtained through local budget.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Short-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMF-2

Underground Utilities

The County will continue to encourage the placement of all utilities (i.e., power lines) underground. This will limit the potential damage to infrastructure as well as the damage that infrastructure could cause to life and property. Events like the windstorm of February 2006 and December 2006 where power lines were down all over the County show the viability of this measure. Where this is not economically feasible for the utility provider, homeowners could have the option to have their utilities placed underground through an individualized rate structure.⁴

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = Varies
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Department(s)** = PC DEM; Local utility providers
5. **Timeline** = Long-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Varies
8. **Community Reaction** = The proposal would be somewhat controversial.

Retrofit of Lower Puyallup Levee System

The County will coordinate with other jurisdictions on the flood retrofit of the Lower Puyallup Levee System through the Puyallup River Executive Task Force. The levee system on the lower Puyallup River has been deemed inadequate by the Federal Emergency Management Agency (FEMA) resulting in their decertification and subsequent changes to FEMA's flood plain maps. This results in new flood plain designations and restrictions along the Puyallup River. Pierce County believes there is regional consensus on the need to improve the flood protection system to bring it back to its previous level of protectiveness. Pierce County has historically been responsible for maintaining the levee system along the Puyallup River. Recent event flood events in November 2006, November 2008, and January 2009, provide a further impetus to move this long-term project on for the greater sustainability of Pierce County.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Increase Public Preparedness; Protect the Environment; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = Estimated \$150 Million
3. **Funding source and situation** = funding could be obtained through local budget.
4. **Lead Department(s)** = Puyallup River Executive Task Force; Federal Jurisdictions; State Jurisdictions; Tribal Jurisdictions; Local Jurisdictions
5. **Timeline** = Long-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Fire District Annexations

The County will continue to encourage rural residents to annex to local fire districts. This will transfer fire response capabilities to local control and increase funds available for firefighting services at the local level. In some areas residents have not annexed to their local fire districts and instead are served by the Department of Natural Resources. Washington State law provides that annexations may occur by petition when the owners of 60% of the assessed valuation of the annexation area submit a petition that is subsequently approved by the Board of Fire Commissioners. One example of this is the annexation of Pierce County Fire Districts 12 and 20 with East Pierce County Fire District 22.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Protect the Environment; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = Local fire districts; WA Department of Natural Resources; Fire Prevention Bureau (PC DEM)
5. **Timeline** = Long-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal would be somewhat controversial.

Develop Firewise Communities

The County will continue to expand upon Firewise training by planning and carrying out Firewise workshops in high hazard areas of Pierce County in collaboration with local fire districts, homeowners, developers, and others. Each workshop will result in a local action plan for homeowners, fire safety professionals, land use planners, and others. The National WUI Fire Program created this innovative mitigation program so that communities and individuals can learn how to recognize, evaluate and mitigate the wildland/urban interface fire dangers in their communities. The workshops gather private and public sector citizens including architects, bankers, fire marshals, insurance representatives, realtors and property owners for a two-day mitigation exercise in which participants review a case study community, identify hazards, resolve conflicting interests and develop a mitigation plan.⁵ This program is already being tried in Pierce County by South Pierce Fire District 17.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Increase Public Preparedness; Protect the Environment; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Firewise Grants – The only potential funding source is a federal or state mitigation grant.
4. **Lead Department(s)** = Fire Prevention Bureau (PC DEM); Local fire districts; WA Department of Natural Resources
5. **Timeline** = Long-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Life of community participation
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Dam Drawdown Agreements

The County will continue to develop an agreement with the various facility owners to lower the reservoir levels in the Nisqually if there is a threat of volcanic activity on Mt. Rainier. Drawing down the dams (possibilities include the Alder, La Grande, Mud Mountain Dams) could impede the progress of a major flow or perhaps totally contain the flow if it is of sufficiently small size. A spontaneous lahar would not allow time for a significant lowering of the water levels so its primary utility would be when the threat was due to an increase in volcanic activity.

1. **Goal(s) Addressed** = Protect Life and Property; Protect the Environment; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = Minor
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM; Facility Owners
5. **Timeline** = Long-term
6. **Benefit** = County-Wide (Especially Nisqually, Lower White River Valleys)
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal would be somewhat controversial.

Emergency Management – Mitigation Measures

Priority: ALL-HMC-DEM-1

Hazard Mitigation Committee

The County will continue the coordination of the Pierce County Hazard Mitigation Committee (HMC). The HMC functions as a means of coordinating, evaluating, and updating mitigation planning efforts among County departments with mitigation capabilities. This ensures efficient use of resources and a more cooperative approach to making a disaster resilient county. The HMC will meet annually to coincide with the normal County budgetary processes. This is addressed in the Plan Maintenance Section of this Plan.

1. **Goal(s) Addressed** = N/A. Goals addressed are contingent upon the mitigation measures resulting from this priority
2. **Cost of Measure** = Cost of meeting room, refreshments and documentation
3. **Funding source and situation** = funding could be obtained through local budget.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Short-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-DEM-2

All-Hazard Mitigation Plan

The County will continue to develop an All-Hazards Mitigation Plan as an expansion of this Plan. Based on recent guidance and best practices from the Emergency Management Accreditation Program and the Department of Homeland Security the County will build the 2009 Addendum. Combining human-caused hazards and terrorism threat assessments with this Plan will result in a more complete analysis of the County's vulnerabilities and mitigation strategies. In doing so, duplications of mitigation measures can be reduced and a more comprehensive prioritization of projects be achieved. Consolidating this information into one document will allow decision makers and those involved in the four phases of emergency management to better coordinate resources and eliminate duplication in efforts to reduce vulnerabilities and respond to and recover from disasters.

1. **Goal(s) Addressed** = N/A. Goals addressed are contingent upon the mitigation measures resulting from this priority
2. **Cost of Measure** = Staff time and materials for plan development
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM.
5. **Timeline** = Long-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-DEM-3

Continuity of Government Plan

The County will to continue it is current effort of Continuity of Operations Planning with all County Departments and Agencies by assembling their efforts into a Continuity of Government (COG) Plan. COG is the capability to ensure survivability of constitutional and democratic government and the continuity of essential government functions. This is vital to all phases of emergency management including hazard mitigation. By establishing baselines of what services have to be provided, with what personnel, at what locations, and with proper resources, the County can refine what is essential and provide more guidance in hazard mitigation measures.

1. **Goal(s) Addressed** = Promote A Sustainable Economy; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = Budget, cost of software and services
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Department(s)** = PCD DEM; County COOP Coordinators.
5. **Timeline** = Long-term
6. **Benefit** = County-Wide Services
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-DEM-4

Recovery Plan

The County will develop a comprehensive Disaster Recovery Plan. This will be a pre-event plan for post-disaster recovery and reconstruction, composed of policies, plans, actions and responsibilities. It will include an element of business resumption and long-term economic sustainability. There will be an emphasis on the transition of recovery to mitigation and the synergy of these two phases of emergency management.

1. **Goal(s) Addressed** = Promote A Sustainable Economy; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = Budget-Development costs
3. **Funding source and situation** = PDM and economic development administration (us chamber of commerce) grants.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Long-Term
6. **Benefit** = County-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: L-HMC-DEM-5

Landslide Warning System

The County will continue to pursue the development of a Landslide Warning System similar to that which Seattle employs. This system will alert residents when slide conditions are developing. With the current system of flood warnings, storm warnings, smog warnings, and high fire danger warnings it would be relatively easy to incorporate an additional one of landslide hazards through weather radio and television broadcasts. This would require an education program with targeted educational mailings for those at risk.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness.
2. **Cost of Measure** = Research costs, staff time and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM with US Geological Service
5. **Timeline** = Long-term
6. **Benefit** = County-Wide (Especially coastal regions)
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal would benefit those affected, with no adverse reaction from others.

Priority: V-HMF-DEM-6

Lahar Flow Control

The County will continue to coordinate a Lahar Flow Control Research Program that will identify a comprehensive list of Sabô Works projects which could be implemented over time to reduce the volume of Puyallup and Carbon river valley lahars.

These erosion control structures can inhibit the flow as it descends the valleys limiting the damage further down the valley. They may include crib dams, channel works, step dams, slit dams, catchment basins, training dikes, etc. In most instances rather than a single structure they are used in multiples or combinations of many different structures.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Protect or Restore Natural Resources
2. **Cost of Measure** = Engineering studies, contractors, time and materials, labor
3. **Funding Source and Situation** = HMGP, PDM grants or other grants. Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Long-term
6. **Benefit** = County-Wide (Especially Carbon, Nisqually, Puyallup, and White River Valleys)
7. **Life of Measure** = Life of Structure
8. **Community Reaction** = This proposal would be somewhat controversial.

Priority: ALL-HMC-COMM-1

Repeater Site East: Conduct a Detailed Vulnerability Assessment

Complete a detailed vulnerability assessment for natural and manmade hazards to further refine the vulnerabilities of the East Repeater Site to the hazards identified.

1. **Goal(s) Addressed** = N/A. Goals addressed are contingent upon the mitigation measures resulting from this priority.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = Communications Division (PC DEM)
5. **Timeline** = Long-term
6. **Benefit** = Direct/indirect services provided to County residents
7. **Life of Measure** = TBD
8. **Community Reaction** = The proposal would benefit those affected, with no adverse reaction from others.

Priority: ALL-HMC-COMM-2

Repeater Site East: Conduct a Capability Assessment

Complete a capability assessment to identify and evaluate potential resources for mitigating natural and manmade hazards that affect the East Repeater Site.

1. **Goal(s) Addressed** = N/A. Goals addressed are contingent upon the mitigation measures resulting from this priority.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = Communications Division (PC DEM)
5. **Timeline** = Long-term
6. **Benefit** = Direct/indirect services provided to County residents
7. **Life of Measure** = TBD
8. **Community Reaction** = The proposal would benefit those affected, with no adverse reaction from others.

Priority: ALL-HMC-COMM-3

Repeater Site East: Upgrade power supply from generator power to permanent power

This site is currently run exclusively on generator power requiring fuel and maintenance on a regular basis. The county would prefer to upgrade it to hard-wire power supply maintaining the generator for backup in times of power outage.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Increase Public Preparedness
2. **Cost of Measure** = Costs for contractor, materials and other
3. **Funding Source and Situation** = Funding could be obtained through a federal or state mitigation grant.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Short-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Life of tower
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-COMM-4

Repeater Site East: Upgrade tower to withstand 150 mph wind with ½" of ice load

The County will structurally upgrade the Repeater Site on the East side to withstand the high winds often experienced in that part of the county. The lahar warning system is on this site as well as cell and other communications.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Increase Public Preparedness
2. **Cost of Measure** = Costs for contractor, materials and permits
3. **Funding Source and Situation** = Funding could be obtained through a federal or state mitigation grant.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Short-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Life of tower
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-COMM-5

Annex/LESA Comm Tower Replacement

The County will work with LESA to place a foundation under and replace the communications tower located adjacent to LESA and the Pierce County Annex. This structure is extremely critical to communications in emergencies and in disasters for communication capabilities county-wide.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations, Increase Public Preparedness, Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = \$600,000 approximately
3. **Funding Source and Situation** = Funding could be obtained through grants.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Long-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Life of tower
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-6

Preventative Maintenance Plan: PC DEM Communications Division

The County will develop a plan to ensure the proper functioning of disaster response equipment used, owned, loaned, or stored by Emergency Management. This will ensure that the necessary resources used in response activities are properly functioning in the event that they are needed.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations
2. **Cost of Measure** = Budget Items
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM, Comm Division
5. **Timeline** = Short-term
6. **Benefit** = Citizens County-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-COMM-7

Pierce County DEM: Preventative Maintenance: Acoustic Flow Monitors

The County will continue maintenance of all elements of the Lahar Warning System, including acoustic flow monitors (AFMs). Lahars will be detected by networks of five acoustic flow monitor (AFM) stations that have been placed in the upper reaches of both the Puyallup and Carbon River valleys. Each AFM station consists of a microprocessor-based data logger that measures the amplitude, frequency, and duration of ground vibrations detected by an exploration-class geophone.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Bonds and/or grants – The only potential funding source is a federal or state mitigation grant.
4. **Lead Department(s)** = PC DEM; USGS
5. **Timeline** = Ongoing
6. **Benefit** = County-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

DEM Public Education – Measures

Priority: ALL-HMC-DEM-PE-1

Pierce County Neighborhood Emergency Teams

The County will continue to work with neighborhoods to create Pierce County Neighborhood Teams (PC NETs). The County will work to secure funding for the continued operation of the PC NET program.

PC NET is a neighborhood-oriented approach to emergency preparedness and homeland security. It is based on the belief that a cooperative effort between a county and its citizens is the only sure way to protect a neighborhood and to prepare for a major disaster. The program helps individuals and their neighborhoods prepare to mutually assist each other so that lives can be saved, property can be spared, and emergency services can be freed to respond to the most devastated areas. This is accomplished by organizing block groups into a variety of disaster response teams, each of which has a simple one-page list that clearly outlines necessary tasks. No special skills or equipment are required to participate – and only a minimal time commitment is needed. Such programs are critical to reminding the public of the natural hazards in Pierce County, and of the necessity of having on hand the supplies and materials to survive independently for a minimum of one week. There are currently almost 500 PC Net communities in Pierce County. These programs will be continued and will be expanded upon.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Increase Public Preparedness; Protect the Environment; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = Costs for supplies, materials and staff time
3. **Funding Source and Situation** = Funding could be obtained through a federal or state mitigation grant.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Ongoing
6. **Benefit** = County-Wide
7. **Life of Measure** = Varies
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-DEM-PE-2

Public Education Campaigns: All Hazards

The County will continue to deliver public education campaigns many times throughout the year to audiences ranging from preschoolers to senior citizens, on topics from appropriate use of 911 to organizing communities for disaster response such as the Pierce County Neighborhood Emergency Team (PC NET) project. In general these programs focus on preparing citizens to prepare for and respond to disasters. Such programs are critical to reminding the public of the natural hazards in Pierce County, and of the necessity of having on hand the supplies and materials to survive independently for a minimum of one week. These programs will be continued and be expanded upon.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Increase Public Preparedness
2. **Cost of Measure** = Varies
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants. Funding could be obtained through a federal or state mitigation grant.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Ongoing
6. **Benefit** = County-Wide
7. **Life of Measure** = Varies
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-DEM-PC-3

Public Education Campaigns: Post-Disaster, All Hazards

The County will expand on its current post-disaster public education campaigns. These campaigns will speak specifically to the previously occurring disaster, and will focus on at-risk and affected areas. This campaign will work in conjunction with the FEMA post-disaster public education efforts to ensure that local needs and issues are addressed. This will be an element of the recovery plan.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Increase Public Preparedness
2. **Cost of Measure** = Varies
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Ongoing
6. **Benefit** = County-Wide
7. **Life of Measure** = Varies
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-PE-4

NOAA All Hazards Radio Program

The County will expand on its current program in order that all residents of the valleys, and eventually all residents in the County, will have access to ownership of All Hazards Radios. The County will also install NOAA All Hazards Radios in all County government facilities and train County employees in the radio's use. NOAA Weather Radio, in conjunction with the Federal Communication Commission's (FCC) Emergency Alert System, is an "all hazards" radio network, making it the single source for the most comprehensive weather and emergency information available to the public. NOAA All Hazards Radio also broadcasts warning and post-event information for all types of hazards—both natural (such as earthquake and volcano activity) and environmental (such as chemical releases or oil spills).

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness; Ensure Continuity of Operations
2. **Cost of Measure** = Government Facilities: \$50,000. County-Wide: TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Long-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Life of unit
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: E-PE-5

PC Kids Corps

The County will continue the Pierce County Kids Corps (PC Kids Corps) non-structural retrofit program. This childcare non-structural retrofit program is successful because private and public sector partners provide labor and hardware, and because the retrofits not only provide real mitigation, they are a great teaching opportunity for parents, staff and other occupants of the building(s). To date, there are over 25 facilities that have taken advantage of this program. The childcare center program is highly cost effective, when coupled with public education and media opportunities.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = \$8,000
3. **Funding Source and Situation** = Currently funded through DHS Citizen Corps Innovative Grant and various local private and non-profit partnerships. Funding could be obtained through local budgets or grants.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Ongoing
6. **Benefit** = County-Wide (childcare centers)
7. **Life of Measure** = Life of non-structural action
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-PE-6

Public Education: Hazard Insurance Information

The County will partner with the WA Office of Insurance Commissioner to help increase public awareness of natural hazard insurance options and the benefits of carrying various hazard insurance. This will entail dissemination of a FAQ list regarding hazard insurance topics.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness; Establish and Strengthen Partnerships for Implementation; Promote A Sustainable Economy
2. **Cost of Measure** = Minor – Staff time for meetings and cost of literature
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM and the Insurance Industry
5. **Timeline** = Short-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Pilot (perpetual)
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: SW-PE-7

Public Education: Severe Weather

Pierce County will continue education programs relating to winter preparedness as part of their preparedness education program. These programs will be expanded to include information on such topics as protecting a home from damage from falling branches, generator use, and in some cases will target those areas identified as having the greatest potential wind loading. This will be incorporated into the Pierce County Neighborhood Emergency Team (PC NET) program.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Ongoing
6. **Benefit** = County-Wide
7. **Life of Measure** = Continuous
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: V-PE-8

Public Education: Lahar

The County will continue public education programs for all valleys of the County directly threatened by lahars. The following education and awareness options for the inundation areas will be pursued to varying degrees in each of the valleys.

- Vulnerability information
- Evacuation planning
- Siren information
- Radio warning information
- NOAA All-Hazards Radio training
- Teacher training on hazards

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness
2. **Cost of Measure** = Varies depending on program
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM.
5. **Timeline** = Ongoing
6. **Benefit** = County-Wide (Especially Carbon, Nisqually, Puyallup, and White River Valleys)
7. **Life of Measure** = Continuous
8. **Community Reaction** = The proposal would benefit those affected, with no adverse reaction from others.

Priority: V-PE-9

Public Education: Volcanic Ashfall

The County will continue to expand on its ashfall preparedness and education module stressing individual preparedness for tephra events. The result is to limit structural damage to buildings, limit damage to vehicles, engines and buildings air intake systems, and decrease respiratory problems in the general population from ash inhalation (i.e., distribute masks).

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness
2. **Cost of Measure** = Varies
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM.
5. **Timeline** = Long-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Continuous
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: V-PE-10

Public Education: Evacuation Routes

The County will continue to pursue the placement of lahar evacuation route maps in all phone books as a means of public education and a standard response aid.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness
2. **Cost of Measure** = Minor
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM
5. **Timeline** = Short-term
6. **Benefit** = County-Wide (Especially Carbon, Nisqually, Puyallup, and White River Valleys)
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Facilities Management – Mitigation Measures

Priority: ALL-HMC-1

Critical Infrastructure: Auxiliary Power

The County will continue to install generators for all identified infrastructure without adequate generators. Installation priority will be determined by the infrastructure rating.

1. **Goal(s) Addressed** = Ensure Continuity of Operations
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC Facilities Management
5. **Timeline** = Long-term
6. **Benefit** = Facility Specific, County-Wide Services
7. **Life of Measure** = Life of unit
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-2

Critical Infrastructure: Access Limitation Evaluation

The County will continue to evaluate critical facilities to determine what infrastructure requires access limitations for security purposes. The County will take the necessary steps to provide access limitation security to those facilities. This will occur in accordance with the FEMA 426 planning recommendations.

1. **Goal(s) Addressed** = N/A
2. **Cost of Measure** = Cost of study and equipment
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM; PC Facilities Management
5. **Timeline** = Short-term
6. **Benefit** = Facility Specific, County-Wide Services
7. **Life of Measure** = Life of equipment or policy
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-3

Pierce County Sheriff-Peninsula Detachment: Back-up System for Loss of Water and Sewer

The Sheriff's Peninsula Detachment will conduct an analysis of the available water supply, delivery system and sewer system to determine their adequacy and the need for additional water sources and sewage removal options.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC Facilities Management
5. **Timeline** = Long-term
6. **Benefit** = Sheriff's Peninsula Detachment Building employs about 20, their varying amount of clients 1-5, and the indirect services provided to County residents
7. **Life of Measure** = 30 Years
8. **Community Reaction** = The proposal will benefit those affected, with no adverse reaction from others.

Priority: E-HMC-4

Pierce County Sheriff: Peninsula Detachment Nonstructural Retrofit

The Sheriff's Peninsula Detachment would undergo a nonstructural seismic retrofit including: securing and bracing HVAC, lighting, ductwork, and ceiling system to prevent their falling. This measure would take place over many years due to the amount of work needed to be done and the project costs related to available funding sources.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Future Remodeling Budgets. Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC Facilities Management
5. **Timeline** = Long-term
6. **Benefit** = Sheriff's Peninsula Detachment Building employs about 20, their varying amount of clients 1-5, and the indirect services provided to County residents
7. **Life of Measure** = 30 Years
8. **Community Reaction** = The proposal would benefit those affected, with no adverse reaction from others

Priority: E-HMC-5

Pierce County Sheriff South Hill Precinct: Nonstructural Retrofit

The Sheriff's South Hill Precinct will undergo a nonstructural seismic retrofit including: securing and bracing HVAC, lighting, ductwork, and ceiling systems. This is a multiple year project due to the amount of work and the project costs related to available funding sources.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Future Remodeling Budgets. Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC Facilities Management
5. **Timeline** = Long-term
6. **Benefit** = Sheriff's South Hill Precinct employs about 95, their varying amount of clients 1-10, and the indirect services provided to County residents
7. **Life of Measure** = 30 Years
8. **Community Reaction** = The proposal would benefit those affected, with no adverse reaction from others.

Priority: E-HMC-6

Pierce County Human Services South Bldg: Nonstructural Retrofit

The Pierce County Human Services Bldg will undergo a nonstructural seismic retrofit including: securing and bracing HVAC, lighting, ductwork, and ceiling systems. This is a multiple year project due to the amount of work and the project costs related to available funding sources.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations
2. **Cost of Measure** = \$2,000,000
3. **Funding Source and Situation** = Future Remodeling Budgets. Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC Facilities Management
5. **Timeline** = Long-term
6. **Benefit** = Pierce County Human Services Employees, and de facto the citizens of Pierce County
7. **Life of Measure** = 30 Years
8. **Community Reaction** = The proposal would benefit those affected, with no adverse reaction from others.

Volcanic Hazard Response and Recovery Standard Operating Procedures

If a volcanic eruption blanketed the area with ash, multiple infrastructures in the County would immediately institute cleanup procedures to prevent infrastructure damage to the roof and HVAC system. This measure would develop those measures for cleanup and identify needed resources. The infrastructure identified include: Pierce County Jail (old), Pierce County Jail (new), Remann Hall, Pierce County Human Services South Building, Law Enforcement Support Agency, County/City Building, Medical Examiners Building, Pierce County Sheriff South Hill Precinct, Pierce County Sheriff Peninsula Detachment, and 2501 Building.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations
2. **Cost of Measure** = Varies
3. **Funding Source and Situation** = Annual Operating Budget. Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC Facilities Management
5. **Timeline** = Long-term
6. **Benefit** = Infrastructure Specific; County-Wide
7. **Life of Measure** = Life of Infrastructure
8. **Community Reaction** = The proposal would benefit those affected, with no adverse reaction from others.

Public Works and Utilities – Mitigation Measures

Priority: F-HMC-1

FEMA Flood Insurance Rate Maps

The County will continue its work in updating the FEMA Flood Insurance Rate Maps. This leads to more accurate floodplain regulations and an opportunity to increase public awareness. The LIDAR mapping effort may assist in this effort.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness; Protect the Environment; Promote A Sustainable Economy
 2. **Cost of Measure** = Cost for information and maps, staff time
 3. **Funding Source and Situation** = FEMA Map Modernization Program
 4. **Lead Department(s)** = Surface Water Management Programs (PC PWU) with FEMA
 5. **Timeline** = Ongoing
 6. **Benefit** = County-Wide
 7. **Life of Measure** = Life of Flood Insurance Program
 8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.
-

Priority: ALL-HMC-2

Levee system: Facility Assessment Plan Development

The entire river levee system needs to be systematically assessed following an earthquake, lahar, or the effected portions after a landslide. Surface Water Management will develop an assessment plan to efficiently use available staff. Assessment should be done as soon as possible after the event, preferably within 24 hours. Measures shall include: training personnel in assessment protocol, collection of facility status information, notification of EOC of any structure deficiencies & prioritization of needed repairs.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations
2. **Cost of Measure** = Minor
3. **Funding Source and Situation** = REET Fund
4. **Lead Departments(s)** = Surface Water Management Division (PC PWU)
5. **Timeline** = Short-term (One year)
6. **Benefit** = Entire area served by the levee system
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: F-HMC-2

Setback Levees

Continue to place setback levees to increase flood storage within the active channel area and to enhance in-channel sediment transport. A great success from the last 5 years includes the Soldier's Home Setback Levee project. The setback has restored about 67-acres of Puyallup River floodplain area to historic pre-levee conditions for fish and wildlife. Furthermore, this project has helped protect life and property in the Orting Area in several large recent floods. Further work should be done to align sites in the Levee Set-Back Feasibility Study to sites that are being considered for flood hazard reduction and fish habitat sustainability.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Protect the Environment
2. **Cost of Measure** = Engineering studies, permits, equipment, materials, etc.
3. **Funding Source and Situation** = REET Fund, and Private Funding where applicable. Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = Surface Water Management Programs (PC PWU)
5. **Timeline** = Long-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Life of levee
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: F-HMF-4

Preventative Maintenance: Flood Control Infrastructure

The County will continue to maintain existing county-owned flood control infrastructure (i.e. ponds, levees and revetments) to reduce the chance of failure during flood events and to optimize their storage capacity. This will ensure that they are able to function optimally during flood events.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Protect the Environment
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = County's Surface Water Management Utility Fee, REET funds. Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = Surface Water Management Programs (PC PWU)
5. **Timeline** = Ongoing
6. **Benefit** = County-Wide (Especially Clear Creek and Clover Creek Repetitive Flood Loss Areas)
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Repetitive Flood Loss Properties

The County will continue to offer relocation incentives to current flood hazard area residents and businesses to reduce repeated property damage, contamination hazards, and personal safety risks associated with their current activities.

The County will continue to develop, advertise, and generate a contact list for a repetitive flood loss property acquisition program including a comprehensive property management plan outlining use options of acquired properties to prevent development or redevelopment.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Protect the Environment
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = REET Fund, and Private Funding where applicable. Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = Surface Water Management (PC PWU)
5. **Timeline** = Long-term
6. **Benefit** = County-Wide (Esp. Clear Creek, Clover Creek, and Nisqually River Repetitive Loss Areas)
7. **Life of Measure** = TBD
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

New Construction: Flood Control Infrastructure

The County will continue to design and construct new facilities to enhance flood storage during storm events such as ponds and setback levees. The Pierce County Repetitive Flood Loss Plan recommends the following measures specific to repetitive flood loss areas:

- **Retention/Detention Ponds:** Clear Creek, Clover Creek, Nisqually River Repetitive Flood Loss Areas
 - **Permanent Pump Station:** Clear Creek Repetitive Flood Loss Area
 - **Setback Levees:** Clear Creek Repetitive Flood Loss Area
 - **Culvert Replacements:** Clover Creek Repetitive Flood Loss Area
1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Increase Public Preparedness; Protect the Environment
 2. **Cost of Measure** = Engineering studies, equipment, materials, labor and more
 3. **Funding Source and Situation** = County Surface Water Management Utility Fee, REET funds. Funding could be obtained through local budget or grants.
 4. **Lead Department(s)** = Surface Water Management (PC PWU)
 5. **Timeline** = Long-term
 6. **Benefit** = County-Wide
 7. **Life of Measure** = Life of structure
 8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: F-HMC-7

Response: Surface Water Management Programs Emergency Resource Maintenance

The County will continue to maintain the resources needed to respond to emergency flood situations. This includes the following:

- Continue implementation of the Surface Water Management Programs emergency response plan so that the staff, equipment, communication tools, technology, materials, and contractors needed to respond to emergency events effectively are prepared.
 - Continue to update emergency evaluation/hot spot areas.
 - Continue to coordinate with other local, state, and federal agencies to review and update flood response efforts.
1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation
 2. **Cost of Measure** = Staff time and materials as well as special resources
 3. **Funding Source and Situation** = REET Fund, and Private Funding where applicable. Funding could be obtained through local budget or grants.
 4. **Lead Department(s)** = Surface Water Management Programs (PC PWU)
 5. **Timeline** = Ongoing
 6. **Benefit** = County-Wide (Esp. Clear Creek, Clover Creek, and Nisqually River Repetitive Loss Areas)
 7. **Life of Measure** = Extent of the life of the program
 8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-1

Purdy Road Shop: Develop Program to Place Utilities Underground

This measure will continue to pursue implementation of a program to place utilities underground at the Purdy Road Shop facilities.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations
2. **Cost of Measure** = \$100,000
3. **Funding Source and Situation** = Road Fund. Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = Road Operations Division (PC PWU)
5. **Timeline** = Long-term
6. **Benefit** = Facility specific
7. **Life of Measure** = Life of the facility
8. **Community Reaction** = This proposal would benefit those affected, with no adverse reaction from others.

Priority: ALL-HMC-2

Bridge Retrofit Program

The County will continue its Bridge Retrofit Program that includes 160 bridges in Pierce County. The Retrofit Program provides for either systemic retrofitting to current seismic and other hazard standards or for eventual replacement of the subject bridges.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Promote A Sustainable Economy
2. **Cost of Measure** = Cost of engineering study and then the cost of actual retrofit
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = Transportation Division (PC PWU)
5. **Timeline** = Ongoing
6. **Benefit** = Facility Specific, County-Wide
7. **Life of Measure** = Life of project
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: V-HMF-3

Bridge for Kids

The County will continue to support the construction of a pedestrian bridge in downtown Orting across the Carbon River connecting with recreation trails coming down the hill from the development in Cascadia. This will allow students and others in the City of Orting a quick and easy evacuation route from the town. A second bridge will be constructed over SR 162 near the entrance to Ptarmigan Ridge School. This bridge, by the school, will allow children from Ptarmigan Ridge to safely cross the highway giving them access to the bridge over the Carbon. In the last 5 years, PC DEM has played a support role and lead role in this project. In the last year, PC PWU has taken on a project lead role in assisting in the development of this measure.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness
2. **Cost of Measure** = Engineering, contractor, equipment and materials and labor
3. **Funding Source and Situation** = The only potential funding source is a federal or state mitigation grant.
4. **Lead Department(s)** = PC Public Works; B4K's (Bridge For Kids) with Orting School District, City of Orting and PC DEM
5. **Timeline** = Long-term
6. **Benefit** = County-Wide (Especially Puyallup River Valley in Orting area)
7. **Life of Measure** = Life of bridge when built
8. **Community Reaction** = The proposal would benefit those affected, with no adverse reaction from others.

Priority: V-HMF-4

Evacuation Planning: New Roads and Development

The County will continue to review evacuation routes to incorporate into the evacuation plan new roads and developments as they are created. For example, Lake Tapps Parkway, the East Valley Overpass, the Rhodes Lake Road Corridor, and other roads identified in the Transportation Improvement Program will be considered in this review.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC DEM; Transportation Division (PC PWU)
5. **Timeline** = Long-term
6. **Benefit** = County-Wide (Especially Carbon, Nisqually, Puyallup, and White River Valleys)
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Priority: F,V,E,SW-HMF-5

Elevation of 192nd ST East above Flood Elevation

192nd Street East (between 38th Ave W and Canyon Road) is vulnerable to flooding conditions which disrupts traffic flow for businesses and for residents. PC Public Works & Utilities: Transportation Programs will reconstruct the roadway above the flood elevation and provide culverts for drainage as needed.

1. **Goals Addressed:** Protect Life and Property; Promote a Sustainable Economy, Continuity of Operations
2. **Cost of Measure:** \$2,260,000
3. **Funding Source and Situation:** FY2010 Mitigation Program
4. **Lead Department(s):** PC PW's & U: Transportation; Port of Tacoma
5. **Timeline:** Long-term
6. **Benefit:** County-wide
7. **Life of Measure:** 30 years
8. **Community Reaction:** The proposal is likely to be endorsed by the entire community.

PWU Public Education – Mitigation Measure

Priority: F-PE-1

Public Education: Flood

The County will continue and expand its public education relating to floods. The purpose is to increase the ability of residents to react appropriately during a flood event and reduce the potential for injuries and/or loss of life and property damage impacts of a flood event through education and outreach. This program employs a variety of means including:

- Direct mail to flood hazard area residents with information on how to respond to floods and the availability of insurance.
- Offer and advertise technical assistance to farmers and business owners on how to reduce property and livestock losses during floods and on how to prevent hazardous substance spills.
- Develop and implement a general advertising campaign addressing the potential dangers of flood events and their avoidance, as well as explaining how floodplains and floodways function.
- Canvas areas of high potential for flooding with comprehensive information on flood hazards, flood insurance and other specific information. Communities often canvassed are Orting, Sumner, Riverside, Puyallup and South Prairie.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Increase Public Preparedness; Protect the Environment
2. **Cost of Measure** = Varies depending on staff time, materials and postage
3. **Funding Source and Situation** = County's Surface Water Management Utility Fee, REET funds. Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = Surface Water Management Programs (PC PWU), PC DEM
5. **Timeline** = Ongoing
6. **Benefit** = County-Wide (Especially Clear Creek, Clover Creek, and Nisqually River Repetitive Loss Areas)
7. **Life of Measure** = Varies depending on project
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Community Services – Mitigation Measure

Priority: SW-PE-1

Tree Maintenance Program

The County will continue programs to trim tree branches and cut down trees which might threaten the safety of either the citizens or the public infrastructure. The County will expand the program to work with gardening centers, Master Gardeners, and the Pierce County Cooperative Extension to develop a continuing program to assist the public with preventing storm damage through the proper use of vegetation and trimming of dangerous limbs. This program will be developed in unison with similar information on fire mitigation through creation of “defensible space”.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness; Protect the Environment; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = Staff time and materials, equipment
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Department(s)** = PC DEM; Cooperative Extension (PC Community Services)
5. **Timeline** = Short-Term
6. **Benefit** = County-Wide (Especially Eastern PC and Peninsula Region)
7. **Life of Measure** = Continuous
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Economic Development – Mitigation Measure

Priority: ALL-PE-1

Pre-Disaster Business Mitigation Loan Program

The County will pursue implementation of the Small Business Administration (SBA) Pre-Disaster Mitigation Loan Program. The purpose is to make low-interest, fixed-rate loans eligible to small businesses for the purpose of implementing mitigation measures.

1. **Goal(s) Addressed** = Protect Life and Property; Establish and Strengthen Partnerships for Implementation; Promote A Sustainable Economy
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = SBA loan program and possible other grants.
4. **Lead Department(s)** = SBA with PC DEM; PC Chambers of Commerce; PC Economic Development; PC Historically Underutilized Businesses Program (HUB)
5. **Timeline** = Long-term
6. **Benefit** = County-Wide (business)
7. **Life of Measure** = Pilot (TBD)
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Information Technology – Mitigation Measures

Priority: ALL-HMC-1

Information Technology-Essential Records Protection

The County will continue to ensure that all essential records are protected and/or provided with safe backup. All County Departments will continue to implement their essential records protection schedules. This will be implemented through their disaster record plans. This effort will be tied to the County COOP Coordinator Group.

1. **Goal(s) Addressed** = Ensure Continuity of Operations
2. **Cost of Measure** = Staff time, contract for security oversight
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC Information Technology; PC DEM; COOP Coordinator Group
5. **Timeline** = Ongoing
6. **Benefit** = all Pierce County Departments
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Priority: ALL-HMC-2

Pierce County Information Technology Department Fiber Ring

Protection of Pierce County Information Technology fiber ring which connects all departments to the County information system.

1. **Goal(s) Addressed** = Ensure Continuity of Operations
2. **Cost of Measure** = Staff time, contract for security oversight
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC Information Technology
5. **Timeline** = Ongoing
6. **Benefit** = all Pierce County Departments
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Parks and Recreation – Mitigation Measures

Priority: ALL-HMC-1

Property Acquisition Program: Selection Process

The County will consider location of all hazard areas as additional criteria in selecting properties for acquisition as open space, repetitive loss, critical habitat areas, etc.

1. **Goal(s) Addressed** = Protect Life and Property; Protect the Environment; Establish and Strengthen Partnerships for Implementation
2. **Cost of Measure** = Minor
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC Parks and Recreation; Surface Water Management (PC PWU); PC DEM
5. **Timeline** = Short-term
6. **Benefit** = County-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Planning and Land Services – Mitigation Measure

Priority: T-HMC-PALS-1

Tsunami Critical Area Regulation

The County will explore how land use regulations related to new tsunami inundation hazard maps could be implemented. These maps and related hazard information provide new best available science for the tsunami threat facing the County. The strongest mitigation capability the County has resides in land use codes and building codes. There may be a potential link to existing flood hazard regulations and opportunity to provide guidance on how to build in these potential inundation areas. Research from Washington State Coastal Communities best practices and from Countries in the Indian Ocean may provide guidance in exploring these regulations.

1. **Goal(s) Addressed** = N/A. Goals addressed are contingent upon the area-specific mitigation measures resulting from this priority
2. **Cost of Measure** = Research costs, staff time, materials
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = PC PALs; PC DEM; Surface Water Management Programs (PC PWU)
5. **Timeline** = Long-term
6. **Benefit** = County-Wide (Especially coastal regions)
7. **Life of Measure** = Perpetual
8. **Community Reaction**= The proposal is likely to be endorsed by the entire community.

Pierce County Sheriff – Mitigation Measure

Priority: ALL-HMC-1

Infrastructure: Response Considerations

The County will continue to re-evaluate infrastructure to take into considerations the tactical needs of response agencies following natural disasters. This may result in identifying areas where new infrastructure is needed for staging personnel and equipment to support natural and human caused hazard response.

1. **Goal(s) Addressed** = N/A
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Department(s)** = Pierce County Sheriff Department; Fire Districts
5. **Timeline** = Short-term
6. **Benefit** = Facility Specific, County-Wide Services
7. **Life of Measure** = TBD
8. **Community Reaction** = The proposal is likely to be endorsed by the entire community.

Endnotes

¹ HMF = Hazard Mitigation Forum; HMC = Hazard Mitigation Committee; PE = Public Education. These groups are described further in related mitigation measures below as well as in the Implementation Section. They represent the levels and mechanisms of implementation.

² The mitigation implementation strategy is a three-tiered method that emphasizes localized needs and vulnerabilities while addressing the County’s as well as multi-jurisdictional policies and programs. The first tier is implemented through individual citizen level—existing Public Education Programs in the County (for example, at the neighborhood level through the Pierce County Neighborhood Emergency Team or PC NET program). The second tier is the Hazard Mitigation Committee (HMC), a county-wide committee comprised of governmental representatives. The third tier is a more external and multi-jurisdictional mechanism, the Hazard Mitigation Forum (HMF).

³ Hazard Codes:

Where necessary, the specific hazards addressed are noted as follows:

A:	Avalanche
E:	Earthquake
F:	Flood
D:	Drought
T:	Tsunami
V(l or t):	Volcanic (lahar or tephra-specific)
SW:	Severe Storm (wind-specific)
L:	Landslide
WUI:	Wildland/Urban Interface Fire
MM:	Manmade to include terrorism
All:	All hazards, including some man made. Where only natural hazards are addressed, it is noted.

⁴ Pierce County Code, Title 19.80.020.

<http://www.co.pierce.wa.us/xml/Abtus/ourorg/council/code/title%2019a%20pcc.pdf>

⁵ For more information on Firewise Communities, see <http://www.firewise.org>.