This appendix provides a comprehensive list of mitigation actions considered by Burlington County and participating jurisdictions that met the goals and objectives of the Plan Update.

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Burlington County Multi-Jurisdictional All Hazards Mitigation Plan

September 2013

Catalog of Risk Reduction Measures

Risk is defined as being the function of the:

- Hazard
- Exposure
- Vulnerability, and
- Capability

Therefore risk can be reduced through mitigation by manipulating the hazard, reducing exposure to the hazard, reducing the vulnerability and/or increasing capability. And, where mitigation is not yet possible, the risk can be reduced through preparation, response or/and recovery. The list is not meant to be exhaustive, but to inspire thought.

Catalog of Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Reduce Vulnerability	Increase Capability
Personal Scale	None	1) Consider stored water/captured water techniques during dry seasons.	1) Drought resistant landscapes 2) Reduce Water system losses 3) Modify plumbing systems, (i.e. water saving kits)	1) Practice active water conservation techniques. 2) Seek ways to operate wells in such a way to enhance their functional longevity and supply capability.
Corporate Scale	None	1) Consider stored water/captured water techniques during dry seasons.	1) Drought resistant landscapes 2) Reduce private water system losses 3) Identify alternate water supply sources.	1) Practice active water conservation 2) Develop a water conservation plan. 3) Develop a COOP
Government Scale	1) Ground Water Recharge through stormwater management 2) Implement cloud seeding techniques during dry seasons.	1) Identify and create ground water back up sources. 2) Create /identify new impounded water supply points.	1) Water use conflict regulations 2) Reduce water system losses 3) Distribute water saving kits 4) Identify sites ideally suited for ground water recharge. 5) Implement stormwater retention in regions ideally suited for groundwater recharges. 6) Utilize drought resistant landscapes on community owned facilities.	1) Public education on drought resistance 2) Identify alternative water supplies for time of drought. Mutual aid agreements with alternative suppliers. 3) Develop a drought contingency plan 4) develop criteria-"triggers" for drought related actions 5) Improve accuracy of water supply forecasts 6) Provide incentives to influence active water conservation techniques such as water user rate reductions. 7) Establish protocol for salt water de-salinization to be implemented during conditions of severe drought. 8) Consider providing incentives to property owners that utilize drought resistant landscapes in the design of their homes. 9) Continue Use of Water buffalo Tankers 10) Promote well usage techniques that strive to enhance functional longevity and supply capability of private water supply wells.

HAZARD CATEGORY - EARTHQUAKE

Catalog of Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Reduce Vulnerability	Increase Capability
Personal scale	None	1) Locate outside of hazard area (off soft soils)	1) Retrofit structure (anchor house structure to foundation) 2) Secure household items that can cause injury or damage such as water heaters, bookcases, and other appliances 3) Build to higher design	1) Practice "drop, cover and hold" 2) Develop household mitigation plan, such as creating a retrofit savings account, communication capability with outside, 72 hr. self-sufficiency during an event 3) Increase capability by having cash reserves for reconstruction 4) Become informed on the hazard and risk reduction alternatives available. 5) Develop a post-disaster action plan for your household.
Corporate scale	None	1) Locate/relocate mission critical functions outside hazard area where possible.	1) Build redundancy for critical functions/facilities 2) Retrofit critical buildings/areas housing mission critical functions.	1) Adopt higher standard for new construction -- Consider "performance based design' when building new structures 2) Increase capability by having cash reserves for reconstruction 3) Inform your employees on the possible impacts of earthquake and how to deal with them at your work facility. 4) Develop a COOP
Government Scale	None	1) Locate critical facilities or functions outside of hazard area where possible.	1) Harden infrastructure 2) Provide redundancy for critical functions 3) Higher regulatory standards for structures	1) Provide better hazard maps 2) Provide technical information and guidance 3) Enact tools to help manage development in hazard areas: tax incentives, information 4) Include retrofitting/replacement of critical system elements in CIP 5) Develop strategy to take advantage of post disaster opportunities 6) Ware house critical infrastructure components such as pipe, power line, and road repair material. 7) Develop and adopt a Continuity of Operations Plan (COOP) 8) Initiate triggers guiding improvements such as: (< 50% substantial damage/improvements) 9) Further enhance seismic risk assessment to target high hazard buildings for mitigation opportunities. 10) Develop a post disaster action plan that includes a grant funding and debris removal components. 11) Educate builders and developers on seismic construction standards 12) Provide rapid visual inspection training to municipal staff.

HAZARD CATEGORY – EXTREME TEMPERATURE

Catalog of Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Reduce Vulnerability	Increase Capability
Personal Scale	None	1) Vacation in Cooler climates during summer months. 2) Insulate house 3) Provide redundant power. 4) Insulate structure 5) Plant appropriate trees near home ("Right tree, right place" National Arbor Day Foundation Program).	1) Air Condition non-conditioned buildings. 2) Put in back-up wood burning stoves	1) Be aware of impending heat waves. 2) Inform yourself on the do's and don'ts during heat waves. 3) Have fans available for use during peak demands in lieu of air conditioning. 4) Install back-up generators
Corporate Scale	None	1) Create redundancy to power supply to deal with power grid vulnerability during high demands	1) Air Condition non-conditioned buildings.	1) Inform employs of the seriousness of heat waves. 2) Monitor weather forecasts. 3) Establish an COOP
Government Scale	None	1) Create redundancy to power supply to deal with power grid vulnerability during high demands	1) Air condition public buildings.	1) Inform the public on the seriousness of heat-waves. 2) Identify populations vulnerable to extreme heat (elderly, poor) for early warning during potential heat waves. 3) Enhance weather forecasting capability 4) Distribute fans to vulnerable populations. 5) Promote selective approaches to cooling your home during peak demands. 6) Ensure that heating and cooling centers have back-up power.

HAZARD CATEGORY – FLOODING

Catalog of Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Reduce Vulnerability	Increase Capability
Personal scale	1) Clear stormwater drains and culverts	1) Locate outside of hazard area 2) Elevate utilities above BFE 3) Institute low impact development techniques on property	1) Retrofit structure (Elevate structure above BFE) 2) Elevate items with house above BFE 3) Build new homes above BFE 4) Floodproof existing structures.	1) Enforce NFIP 2) Buy flood insurance 3) Develop household mitigation plan, such as retrofit savings, communication capability with outside, 72 hr. self-sufficiency during and after an event
Corporate scale	1) Clear stormwater drains and culverts	1) Locate business critical facilities or functions outside hazard area 2) Institute low impact development techniques on property	1) Build redundancy for critical functions/ retrofit critical buildings. 2) Provide flood-proofing measures when new critical infrastructure must be located in floodplains.	1) Increase capability by having cash reserves for reconstruction 2) Support and implement hazard disclosure for the sale/re-sale of property in identified risk zones. 3) Solicit 'cost-sharing" through partnerships with private sector stakeholders on projects with multiple benefits.
Government Scale	1) Clear stormwater drains and culverts 2) Dredging, levee construction, providing retention areas… 3) Structural flood control: levee's, dams, channelization, revetments. 4) Construct regional stormwater control facilities	1) Locate/re-locate critical facilities outside of hazard area 2) Acquire or relocate identified repetitive loss properties. 3) Promote open space uses in identified high hazard areas via techniques such as: PUD's, easements, setbacks, greenways, sensitive area tracks. 4) Adopt land development criteria such as PUD's, Density transfers, clustering 5) Institute low impact development techniques on property 6) Acquire vacant land or promote open space uses in developing watersheds to	1) Harden infrastructure 2) Provide redundancy for critical functions and infrastructure 3) Adopt appropriate regulatory standards such as cumulative substantial improvement/damage, freeboard, lower substantial damage threshold, compensatory storage. 4) Stormwater management regulations and master planning 5) Adopt "no-adverse impact" floodplain management policies that strive to not increase the flood risk on down-stream communities.	1) Produce better hazard maps 2) Capture/survey "high-water" marks during flood events. 3) Provide technical information and guidance 4) Enact tools to help manage development in hazard areas (stronger controls, tax incentives, information) 5) Incorporate retrofitting/replacement of critical system elements in CIP 6) Develop strategy to take advantage of post disaster opportunities 7) Warehouse critical infrastructure components 8) Develop and adopt a COOP 9) Join CRS program 10) Maintain existing data as well as gather new data needed to define risks and vulnerability. 11) Train emergency responders 12) Produce better hazard maps 13) Capture/survey "high-water" marks during flood events. 14) Provide technical information and guidance 15) Enact tools to help manage development in hazard areas (stronger controls, tax incentives, information) 16) Incorporate retrofitting/replacement of critical system elements in CIP 17) Develop strategy to take advantage of post disaster opportunities

Catalog of Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Reduce Vulnerability	Increase Capability
		control increases in runoff		18) Warehouse critical infrastructure components 19) Develop and adopt a COOP 20) Join CRS program 21) Maintain existing data as well as gather new data needed to define risks and vulnerability. 22) Purchase equipment to enable responders to traverse swollen creeks for access to flood bound residents. 23) Perhaps County can develop a flood warning to relate gauge reading to inundation maps and publish online.

HAZARD CATEGORY – SEVERE STORMS (INCLUDING WINTER STORMS)

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Catalog of Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Vulnerability	Capability
Personal scale	None	None	1) Insulate house 2) Provide redundant heat and power. 3) Insulate structure 4) Plant appropriate trees near home and power lines ("Right tree, right place" National Arbor Day Foundation Program.	1) Trim or remove trees that could affect power lines 2) Promote 72 hour self-sufficiency 3) Obtain a NOAA weather radio. 4) Obtain an emergency generator.
Corporate Scale	None	None	1) Relocate critical infrastructure, such as power lines, underground 2) Reinforce or relocate critical infrastructure such as powerlines so that it meets performance expectations. 3) Install tree wire	1) Trim or remove trees that could affect power lines 2) Create redundancy 3) Equip your facilities with a NOAA weather radio 4) Equip vital facilities with emergency power sources. 5) Monitor impending storm events so that you can release employees in such a manner as to not negatively impact emergency response personnel/services.
Government	None	None	1) Harden infrastructure such a locating utilities underground. 2) Trimming trees back from power lines 3) Designate snow routes and strengthen critical road sections and bridges. 4) Adopt ordinances that regulate the type and quantity of trees planted near utility lines 5) Relocate critical infrastructure, such as power lines, underground	1) Support programs such as "Tree Watch" that proactively manage problem areas by use of selective removal of hazardous trees, tree replacement, etc. 2) Establish and enforce building codes that require all roofs to withstand snow loads 3) Increase communication alternatives 4) Modify land use and environmental regulations to support vegetation management activities that improve reliability in utility corridors. 5) Modify landscape and other ordinances to encourage appropriate planting near overhead power, cable, and phone lines 6) Provide NOAA weather radios to the public 7) Create/Enhance "mutual aid" agreements for response to all emergencies 8) Create/Identify evacuation routes to be utilized during Severe Storm events. 9) Join "Storm-Ready" program 10) Provide early warning of impending severe storm events to identified critical or essential facilities. This would include facilities such as large employments centers, schools, hospitals 11) Promote emergency power supplies to private property. 12) Increase capability to respond to power outages and downed power lines. Establish partnerships with utility providers through pro-active planning.

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Catalog of Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Vulnerability	Capability
				13) Improve ordinances to keep cars off the streets 14) Enforce codes for trees on private property 15) Provide consistent enforcement to avoid enforcement problem during disasters.

HAZARD CATEGORY – WILDFIRE

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Catalog of Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Vulnerability	Capability
Personal scale	1) Clear potential fuels on property: dry, overgrown underbrush, diseased trees	1) Create and maintain defensible space around structures 2) Locate outside of hazard area 3) Mow regularly	1) Create and maintain defensible space around structures, provide water on site. 2) Use fire-retardant building materials 3) Create defensible spaces around your home.	1) Employ "Firewise" techniques to safeguard your home. 2) Identify alternative water supplies for fire fighting 3) Install/replace roofing material with non-combustible roofing materials.
Corporate scale	1) Clear potential fuels on property: dry underbrush, diseased trees	1) Create and maintain defensible space around structures and infrastructure 2) Reduce exposure -- Locate outside of hazard area	1) Create and maintain defensible space around structures and infrastructure, provide water on site. 2) Use fire-retardant building materials	1) Support "Firewise" community initiatives. 2) Create /establish stored water supplies to be utilized for firefighting.
Government	1) Clear fuels (dry underbrush, diseased trees) on land that can trigger and maintain wildfires 2) Implement "Best Management Practices" on public lands	1) Create and maintain defensible space around structures and infrastructure 2) Reduce exposure -- Locate outside of hazard area 3) Enhance building code to include use of fire resistant materials in high hazard area.	1) Create and maintain defensible space around structures and infrastructure 2) Use fire-retardant building materials 3) Higher regulatory standards 4) Biomas Reclamation initiatives	1) More public outreach and education efforts including an active “Firewise” program 2) Possible Weapons of Mass Destruction (WMD) funds available to enhance fire capability in High Risk areas. 3) Identify and create emergency vehicle access in high hazard areas. 4) Seek alternative water supplies in urban wildland interface areas. 5) become a "Firewise" community 6) Create/implement wildfire preparedness plan 7) Utilize academia to study impacts/solutions to wildfire risk 8) Establish/maintain mutual aid agreements between Fire Service Agencies. 9) Create/implement fire plans 10) Maintain historical database to enable better planning 11) Property owners on wooded lots should be educated in defensible space, etc. 12) Provide new mutual aid plans for wildfire. 13) Look at ramifications of prescribed burns.