

## Proposed Policies

Emergency Water Supply Master Plan policies have been developed based on 7 Guiding Principles: Public Safety, Social Equity, Economic Vitality, Regional Preparedness, Value, Resilience, Resource Conservation

Policies are listed below in **bold**, followed by explanations to provide context. References to the City of Bellevue Comprehensive Plan (BCP) show consistency with City-wide policies.

### Health Care Providers

**Invest in resiliency with the goal to provide uninterrupted water service at emergency rooms, and prioritize service restoration to other health care providers.**

*Guiding Principles: Public Safety, Regional Preparedness, Resilience*

Emergency room hospitals depend on water to stay in operation, and play an immediate and crucial role in saving lives at all times, and particularly after a disaster such as a severe earthquake. Regional<sup>1,2</sup>, and national<sup>3</sup> industry guidance recognizes that the highest level of service is justified for these facilities.

Other health care providers such as dialysis centers and urgent care clinics are important and necessary for supporting public health and safety, and should be prioritized. These facilities do not typically provide immediate care for life-threatening situations, and are distributed broadly throughout the City, making it impractical to ensure uninterrupted service to them all. Long-term resiliency improvement plans should prioritize improving resiliency to all medical facilities.

### Alternative Fire Fighting Methods

**Coordinate, facilitate and develop alternative fire-fighting strategies identified by the Fire Department for use during disaster recovery, prior to full system restoration.**

*Guiding Principles: Public Safety*

This policy acknowledges that the water system's normal capacity to support firefighting will be compromised following a water supply emergency. Fires can occur anywhere in the water service area, making it impractical to prioritize service restoration based on fire response.

The Utilities Department should communicate and review water supply risks with the Fire Department, understand post-disaster firefighting tactics, and develop ways to support firefighters with access to water when appropriate during periods of limited service. The Fire Department employs numerous strategies in response to fire events, many (but not all) of which require water. Examples of water-based tactics may include hydrants directly connected to reservoirs or resilient pipelines, groundwater fill sites, and siting of such facilities where surface water drafting (e.g. boat ramps, pools) are unavailable.

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<sup>1</sup> *Regional Water Supply Resiliency Project, Phase 2 Summary Report*. Water Supply Forum, July 2018.

<sup>2</sup> *Resilient Washington State*. Washington State Seismic Safety Committee, Emergency Management Council, 2012.

<sup>3</sup> *Community Resilience Planning Guide for Buildings and Infrastructure Systems (NIST Special Publication 1190)*. National Institute of Standards and Technology, US Dept of Commerce, May 2016.

## Personal Preparedness

**Encourage residents to store 14 days of water.**

*Guiding Principles: Public Safety, Resilience*

This policy is consistent with current guidance from the Washington State Emergency Management Division<sup>4</sup>, and with City of Bellevue Comprehensive Plan policy N-3<sup>5</sup>.

## Shelters and Points of Distribution

**Prioritize mitigation and response efforts to support the readiness of pre-identified shelters and points of distribution.**

*Guiding Principles: Social Equity, Resilience*

Pre-identified Community Points of Distribution (CPODs) and/or shelters are locations where basic supplies of water can be provided to residents who lack the means or ability to store or obtain water following a disaster. Currently such locations include some City-operated facilities such as specific parks or community centers<sup>6</sup>, some schools<sup>7</sup>, and other locations as identified by the City's Office of Emergency Management. By supporting the readiness of CPODs and shelters, the City supports community stability.

Depending on the extent of infrastructure damage, water might be supplied to a CPOD or shelter via the normal water distribution system, trucks carrying bulk water from other locations, an on-site groundwater supply or reservoir, or some other method, and then distributed in suitable individual containers. Pre-bottled water might also be supplied following a disaster, but would typically be procured through the Emergency Operations Center from outside the City, while the City works to restore normal supplies. This policy supports investment in a more resilient water distribution system and faster restoration of normal service to CPODs.

## Business Continuity

**Establish water service restoration goals to support business continuity.**

*Guiding Principles: Economic Vitality, Resilience*

Non-essential businesses should be a lower priority than critical customers such as hospitals, or community recovery facilities such as schools. However, consistent with BCP policies<sup>8,9,10</sup>, businesses based in Bellevue should be confident that water service will be restored in a timely manner. Historical disaster events in the United States and worldwide have shown that if service recovery does not occur steadily or sufficiently, businesses may permanently relocate out of the impacted area, with long-term negative consequences to the local economy.

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<sup>4</sup> <https://mil.wa.gov/preparedness>

<sup>5</sup> BCP N-3: "Equip residents, businesses, and community service providers through education and training to be active participants in public safety (including, but not limited to, emergency preparedness...)"

<sup>6</sup> *Community Points of Distribution Annex (Draft)*. City of Bellevue, 2011.

<sup>7</sup> *Emergency Assistance Mutual Aid Agreement*. The City of Bellevue and Bellevue School District, 2017.

<sup>8</sup> BCP ED-1: "Maintain a business climate that supports the retention and expansion of the city's economic base."

<sup>9</sup> BCP ED-32: "Continue to identify, construct and maintain infrastructure systems and facilities required to promote and sustain a positive economic climate. Anticipate needs and coordinate city infrastructure investments with economic development opportunities."

<sup>10</sup> BCP ED-33: "Maintain and improve communications, electric utility, and other infrastructure needed to support the city's economic needs and growth."

## Inter-Dependent Sector Coordination

**Coordinate and optimize emergency preparation with inter-dependent infrastructure sectors (power, transportation, communications, etc).**

*Guiding Principles: Public Safety, Economic Vitality, Regional Preparedness*

The regional nature of risks posed to Bellevue's water distribution system necessitate a coordinated approach to disaster mitigation and response. Efforts to restore water service following a regional disaster such as a severe earthquake will be complicated by impacts to other sectors such as transportation, power, communications, etc. Conversely, efforts to restore health care services, schools, wastewater service, local construction and other economic activity will be impeded by lack of water service.

## Emergency Mitigation Investments

**Identify and invest in water system reliability and resiliency improvements where the benefits of reduced risk to the community exceed the costs of the improvement. Prioritize improvements with the highest benefit per cost.**

*Guiding Principles: Value*

Economic, social and environmental risks to the broader community, not merely direct risks to the water system, should all be used to estimate risks, event impacts, and the benefits (reduced risk) of mitigation projects. In situations where one customer or a group of customers benefit disproportionately, the City may partner with those customers for joint-funded improvements.

The City should also identify and pursue grant funding opportunities to mitigate water supply emergencies and improve the benefit/cost for rate payers.

This policy conforms to industry best practices, including AWWA Standard J100<sup>11</sup>.

## Post-Event Level of Service Goals

**The City will establish medium-term (2040) and long-term (2070) post-event level of service (PE-LOS) goals, and invest as needed in resiliency to meet those goals.**

*Guiding Principles: Regional Preparedness, Resilience*

This policy acknowledges that with existing infrastructure, widespread water service disruption is likely in the event of a severe earthquake. Significant investments are required to improve anticipated performance of the water system during and after such an event.

Washington Administrative Code (WAC) does not establish minimum levels of service for emergency conditions. WAC stipulates that the level of reliability during emergency conditions shall be "in accordance with consumer expectations" (WAC 246-290-420.5). Therefore it is required that PE-LOS goals be understood and agreed upon by the community.

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<sup>11</sup> Standard J100: Risk and Resilience Management of Water and Wastewater Systems. AWWA, 2010. "Calculate the net benefits and benefit-cost ratio (and/or other criteria that are relevant in the utility's resource decision-making) to estimate the total value and risk-reduction efficiency of each option."

This policy conforms to and implements BCP Policies N-4<sup>12</sup>, CF-8<sup>13</sup>, CF-12<sup>14</sup>, UT-2<sup>15</sup> and UT-41<sup>16</sup>. Medium-term (2040) and long-term (2070) PE-LOS goals are shown on the next page.

### 2040 PE-LOS Goals

	Event	1-Day	3-Day	7-Day	14-Day	1-Month	3-Month	6-Month
Emergency Room Hospitals								
Hydrants at Designated Resilient Supply Points								
Community Recovery Facilities <sup>17</sup>								
Essential Businesses <sup>18</sup>								
Basic Domestic Service to All Customers								
Fire Flow Restored to All Hydrants								

● = 20%-30% Operational. ● = 50%-60% operational. ● = 80%-90% operational. ● = Current Performance

### 2070 PE-LOS Goals

	Event	1-Day	3-Day	7-Day	14-Day	1-Month	3-Month	6-Month
Emergency Room Hospitals								
Hydrants at Designated Resilient Supply Points								
Community Recovery Facilities								
Essential Businesses								
Basic Domestic Service to All Customers								
Fire Flow Restored to All Hydrants								

● = 20%-30% Operational. ● = 50%-60% operational. ● = 80%-90% operational. ● = Current Performance

<sup>12</sup> BCP N-4: "Plan and prepare for the response, recovery, and mitigation of potential disasters and hazards."

<sup>13</sup> BCP CF-8: "Use adopted Level of Service, operating criteria or performance standards to evaluate capital facilities' needs."

<sup>14</sup> BCP CF-12: "Maintain the post-disaster Response and Recovery Plan that ensures the city's capability to recover and reconstruct from a disaster."

<sup>15</sup> BCP UT-2: "Build and manage city-owned utility infrastructure assets to reduce the likelihood of risks to public safety, property and environment, and disruption due to asset failure."

<sup>16</sup> BCP UT-41: "Provide reliable water service for domestic use, fire flow protection, and emergencies."

<sup>17</sup> Designated shelters, schools, urgent care and dialysis clinics, other emergency services, vulnerable housing, etc

<sup>18</sup> Grocery stores, pharmacies, etc

## Groundwater Supplies

**The City should invest capital and maintenance to provide reliable and resilient wells.**

*Guiding Principles: Resilience, Resource Conservation*

Groundwater wells provide viable, local and independent water supply redundancy to support the community following a disaster. Wells require investment to maintain capacity and readiness.

## Well Head Protection

**Restrict land use and establish Critical Areas near wells to preserve water quality.**

*Guiding Principles: Public Safety, Resource Conservation*

WAC 246-290-135 requires certain source water protection measures, including a sanitary control area of at least 100-foot radius around the well, and a Well Head Protection Area. Sanitary controls generally include restrictions on land use, and must be recorded by covenant to the property. Well head protection areas are larger (ten-year groundwater travel distance) but less restrictive, and may still require agreements pertaining to use of potential contaminants such as pesticides, fertilizers, or industrial chemicals.

This policy should be considered and communicated when siting new wells, and when improving existing well sites. It augments and supports BCP critical area policies.<sup>19,20,21,22</sup>

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<sup>19</sup> BCP EN-81: "Use the best scientific information available in an adaptive management approach to preserve or enhance the functions and values of critical areas through regulations, programs, and incentives."

<sup>20</sup> BCP EN-83: "Recognize critical area function in preparing programs and land use regulations to protect critical areas and to mitigate the lost function due to unavoidable impacts."

<sup>21</sup> BCP EN-88: "Develop partnerships with land conservation organizations to acquire critical areas and buffers to protect and restore critical areas functions."

<sup>22</sup> BCP EN-89: "Explore opportunities for public acquisition and management of key critical areas of valuable natural and aesthetic resources, and fish and wildlife habitat sensitive to urbanization through a variety of land acquisition tools such as conservation easements and fee-simple purchase."