



Kitsap County Healthcare Hazard Vulnerability Assessment

Prepared by:

The Northwest Healthcare Response Network

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PROJECT BACKGROUND

Background

The Northwest Healthcare Response Network (the Network), a healthcare emergency preparedness coalition, coordinates regional preparedness, response and recovery activities with its healthcare, public health, emergency management and other partners. Hazards, be they natural or human-caused, can strike communities with little to no warning and cause an array of impacts ranging from minimal to catastrophic. Consequently, it is important to evaluate hazards that can potentially disrupt the healthcare delivery system. These evaluations often take the form of hazard vulnerability assessments, which can form the basis of healthcare emergency management programs and assist in prioritizing organizational activities and resources.

In 2016-2017 the Network drafted its first Regional Healthcare Hazard Vulnerability Assessment (HVA) to assess hazards in King and Pierce counties. The HVA involved collaborating with healthcare, public health, and emergency management partners. Through this process, hazards were identified and prioritized based on expert input from healthcare emergency preparedness leaders.

Purpose

The 2017 King-Pierce County HVA was created to help assure preparedness and response activities align with identified healthcare and regional vulnerabilities. With the incorporation of Kitsap County into the coalition in 2017, the Network identified a need to conduct a similar assessment to update the regional HVA with input from partners in Kitsap. As the Network continues its work, this and other HV's will be updated/created to maintain up-to-date information for emergency management activities.

Goals

- Determine if Kitsap County regional healthcare hazards match identified hazards of 2017 HVA using existing healthcare facility and regional HVAs.
- Seek participation from Kitsap County regional healthcare, public health and emergency management experts to validate identified hazards and assess regional healthcare impacts.
- Produce a Kitsap County-specific report on HVA Assessment results.
- Develop a broader Regional Healthcare Hazard Vulnerability Assessment.
- Share finding with local, regional and state partners.

PROJECT METHODS OVERVIEW

This HVA report and its project components are based on the same methodology as the 2017 King and Pierce County HVA using a modified Delphi technique. The Delphi method is a consensus building survey technique that is traditionally done in three rounds of surveys. For this project, the Network chose to perform one round of surveys in contrast to the two rounds of surveys done in the previous HVA report. This decision was made to streamline the data collection process as the first round was to identify and rank the likelihood of the type of hazards faced by the region which would be the same for Kitsap County as King and Pierce.

Consensus

Hazards were deemed to have reached consensus on their regional healthcare impact if they were rated consistently by 75% of HVA participants. Participants rated the regional healthcare impact for each hazard using a three-point Likert-type scale (Low, Moderate, or High).

The following hazard matrix illustrates the scheme used to map hazards which reached consensus on a Likelihood-Impact scale.

Figure 1: Hazard Risk Matrix

| | | | | |
|------------|----------|---------------|----------|---------|
| LIKELIHOOD | HIGH | Medium | High | Extreme |
| | MODERATE | Low | Medium | High |
| | LOW | Insignificant | Low | Medium |
| | | LOW | MODERATE | HIGH |
| | | IMPACT | | |

PRE-ASSESSMENT DATA COLLECTION AND IMPACT RATING

Please refer to the 2017 King-Pierce HVA and its attachments on the Network's website (www.nwhrn.org) for a detailed description of the data collection and hazard identification process. This HVA utilized the same set of jurisdictional and state HVAs with the addition of the Kitsap County Department of Emergency Management Hazard Vulnerability Analysis. The impact rating for hazards identified in the assessment were also based upon the 2017 King-Pierce HVA Report.

ASSESSMENT

Overview

On February 5, 2018, the Network disseminated a Regional Healthcare HVA Survey to colleagues in Kitsap County, seeking their input on regional hazards. Participants were provided an overview of each hazard, the ranking determined in the previous HVA, any comments from previous HVA participants, and additional documents. Participants were asked to assess the hazards and determine: “Based on the hazard definition, regional likelihood, and comments from the first HVA round discussion, how would you rank the regional healthcare impact of...” each hazard (see Appendix 1). Participants were asked to consider the ranking from the 2017 HVA round before ranking each hazard on a 3-point Likert Scale (Low, Moderate, or High) using the same definitions for impact as outlined in the 2017 HVA.

The survey was disseminated via SurveyMonkey and was open for responses from February 5 – March 12, 2018.

Results

A total of 12 respondents participated in the survey. Of the 28 hazards, a total of 10 reached consensus. Of the remaining hazards, most had a clear majority with 50% or more votes except for Power Outage (Isolated) which had only a 42% consensus. Power Outage (Isolated) was also the only hazard that did not align with the impact level of the 2017 King/Pierce County HVA (Moderate vs. Low Impact).

The following hazards did not reach defined consensus (75%), but at least half of participants agreed upon a specific hazard level. The hazards that did reach at least 50% agreement (along with the majority Impact rating) are in alphabetical order:

- Active Threat – 66% Moderate
- Dam Failure – 66% Low
- Fire (Structure) – 72% Low
- Fire (Wildfire) – 58% Low
- Fires (Wildland Urban Interface) – 72% Low
- Flooding (Major) – 72% Moderate
- Geomagnetic Storm – 50% High
- Hazardous Materials Incident (Small) – 72% Low
- Hazardous Materials Incident (Large) – 58% Moderate
- Health (Epidemic, pandemic, and bioterrorism) – 66% High
- Power Outage (Regional) – 64% High
- Technology Threats – 66% High
- Terrorism (Small) – 64% Moderate
- Terrorism (Large) – 66% High
- Transportation – 66% Moderate

Figure 2 below provides an in-depth breakdown of the rated impact and percent consensus:

Figure 2: Hazard Likelihood and Impact Rating for Kitsap County

| Hazard | Likelihood | Impact | Consensus (%) |
|---|-------------------|---------------|----------------------|
| Active Threat | Low | Moderate | No (66%) |
| Avalanche | High | Low | Yes (75%) |
| Dam Failure | Low | Low | No (66%) |
| Earthquake | | High | Yes (91%) |
| Fires | | | |
| Structure Fire | High | Low | No (72%) |
| Wildfire | High | Low | No (58%) |
| Wildland/Urban Interface | Low | Low | No (72%) |
| Flooding | | | |
| Minor Flooding | High | Low | Yes (75%) |
| Major Flooding | Low | Moderate | No (72%) |
| Geomagnetic Storm | Low | High | No (50%) |
| Hazardous Materials Incident | | | |
| Small | High | Low | No (72%) |
| Large | Low | Moderate | No (58%) |
| Health (epidemic, pandemic, and bioterrorism) | High | High | No (66%) |
| Infrastructure Failure | Low | Moderate | Yes (75%) |
| Landslide | High | Low | Yes (75%) |
| Pipeline incident | Low | Low | Yes (91%) |
| Power Outage (Isolated) | Low | Moderate | No (42%) |
| Power Outage (Regional) | Low | High | No (64%) |
| Severe Weather/Storm | | | |
| Storm | High | Moderate | Yes (84%) |
| Excessive Heat | High | Low | Yes (84%) |
| Social Unrest | Low | Low | Yes (75%) |
| Technology Threats | High | High | No (66%) |
| Terrorism | | | |
| Small | Moderate | Moderate | No (64%) |
| Large | Low | High | No (66%) |
| Transportation | Low | Moderate | No (66%) |
| Tsunami and Seiches | Low | Moderate | Yes (75%) |
| Water Shortage/Drought | Low | Low | Yes (83%) |
| Volcano | Low | High | No (50%) |

Participant Demographics

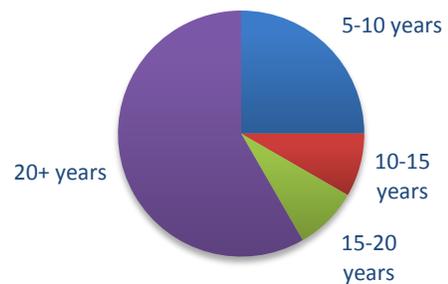
Participants represented a variety of healthcare organizations, local health jurisdiction, local fire departments, and EMS agencies.

Participants represented the following sectors:

- Behavioral Health (1)
- Dialysis (1)
- EMS (2)
- Hospital (2)
- Long-term Care (2)
- Outpatient (1)
- Public Health (1)
- Local Fire Departments (2)

Participants noted significant professional experience in their respective fields. All of them have been in their field for at least 1 year, just under half ranging between 5-20 years, most participants reported having over 20 years of professional experience (see chart). All the participants are from organizations within Kitsap County. A few participants also noted that their organizations additionally serve in surrounding counties.

Participant Years of Experience



FINAL ANALYSIS

The results of the 2018 Kitsap Regional HVA indicate a high level of agreement between the Kitsap survey results and the previous King-Pierce survey in terms of the priority level of impact for each hazard. The only hazard that did not align with the 2017 HVA was Power Outage (Isolated), as this hazard did not reach a consensus threshold in the Kitsap survey. The lack of consensus for Power Outage (Isolated) and the handful of other hazards that did not reach a high level of consensus may be due to the smaller number of respondents for the Kitsap HVA.

Figure 3 presents a visual placement of the hazards onto a matrix from insignificant to extreme based on the combination of their likelihood and impact. The only hazard that could not be placed is Power Outage (Isolated) due to not reaching the consensus threshold by the respondent group. Based upon the similarity of Kitsap County's results to King and Pierce counties in its rankings of the other hazards, we can assume with a moderate degree of confidence that the impact rating for this hazard would be also be low or moderate.

The high level of agreement in impact ratings and priority for the Kitsap County HVA compared to the King-Pierce County HVA provide support for a combined regional HVA describing the hazards and level of impact for the three-county region of King, Kitsap, and Pierce counties.

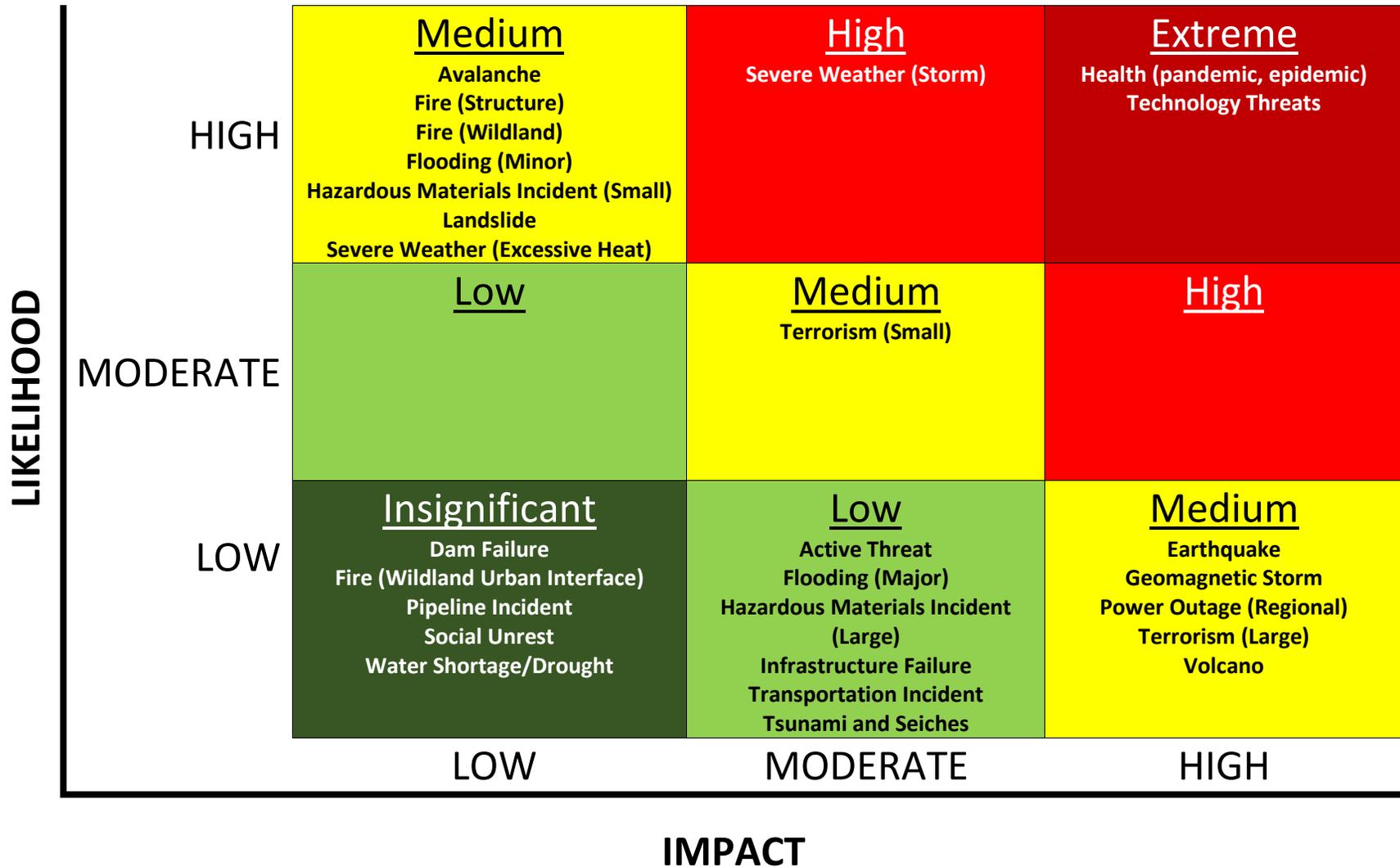
CONCLUSION AND FUTURE WORK

This Kitsap Regional Healthcare Hazard Vulnerability Assessment continues the Northwest Healthcare Response Network's work in analyzing and reporting of potential hazards impacting our region. The aim of this individual report is to provide specific information for emergency managers in Kitsap County regarding Kitsap County healthcare hazards. The Network plans on performing regular reviews of the regionwide HVA to determine when updates are needed to individual counties, or the larger region.

Figure 3: Hazard Matrix Results

| MATRIX DESIGNATION | HAZARD | MATRIX DEFINITION |
|---------------------------|---|--|
| Extreme | <ul style="list-style-type: none"> • Health (epidemic, pandemic) • Technology Threats | 'High' likelihood and 'High' impact |
| High | None | 'Moderate' likelihood and 'High' impact |
| | <ul style="list-style-type: none"> • Severe Weather (Storm) | 'High' likelihood and 'Moderate' impact |
| Medium | <ul style="list-style-type: none"> • Earthquake • Geomagnetic Storm • Power Outage (Regional) • Terror Attack (Large) • Volcano | 'Low' likelihood and 'High' impact |
| | <ul style="list-style-type: none"> • Terror Attack (Small) | 'Moderate' likelihood and 'Moderate' impact |
| | <ul style="list-style-type: none"> • Avalanche • Fire (Structure) • Fires (Wildland) • Flooding (Minor) • Hazardous Materials Incident (Small) • Landslide • Severe Weather (Excessive Heat) | 'High' likelihood and 'Low' impact |
| Low | <ul style="list-style-type: none"> • Active Threat • Flooding (Major) • Hazardous Materials Incident (Large) • Infrastructure Failures • Transportation Incident • Tsunami and Seiches | 'Low' likelihood and 'Moderate' impact |
| | None | 'Moderate' likelihood and 'Low' impact |
| Insignificant | <ul style="list-style-type: none"> • Dam Failure • Fire (Wildland Urban Interface) • Pipeline Incident • Social Unrest • Water Shortage/Drought | 'Low' likelihood and 'Low' impact |
| Uncategorized | <ul style="list-style-type: none"> • Power Outage (Isolated) | Not categorized in Matrix due to lack of consensus |

Figure 4: Final Hazard Risk Matrix*



*Power Outage (Isolated) not categorized in Hazard Risk Matrix due to lack of consensus

1. Overview

The Northwest Healthcare Response Network embarked on a regional healthcare Hazard Vulnerability Assessment (HVA) for our King and Pierce County region in 2016-17. Having an accurate and actionable HVA will provide a roadmap for regional healthcare and coalition planning. With the incorporation of Kitsap County into our Coalition, we seek your input on this HVA project to provide feedback on the impact identified hazards could have on our regional healthcare system.

The 2017 Regional HVA project employed a modified Delphi method, which consisted of several rounds of consensus building to identify the impact of particular hazards. The details of the previous HVA project can be found in the 2017 report.

The hazards and their likelihood outlined below were gathered based on the following regional jurisdictional HVAs:

- Washington State Emergency Management Division
- King County Office of Emergency Management
- Kitsap County Hazard Identification & Vulnerability Assessment
- Pierce County Office of Emergency Management
- City of Seattle Office of Emergency Management
- Public Health – Seattle & King County Preparedness Department

For each hazard identified in our region we have presented the following information:

1. Definition of the hazard
2. Likelihood of the hazard – which is defined as:

Low

Chance: Could occur at some time.

Frequency: Has occurred 3 times or less in the past 10 years.

Probability: <35%

Moderate

Chance: Might occur at some time.

Frequency: Has occurred more than 4-6 times in the past 10 years.

Probability: 35-65%

High

Chance: Will likely occur in most circumstances.

Frequency: Has occurred at least 7 times in the past 10 years.

Probability: >65%

3. Possible Impacts and examples – based on literature review, other HVAs, and scientific resources.

Your Role: we are asking you to review the hazards carefully and provide your opinion of the potential impact of each hazard according to the definition of impact below.

When considering impact it is important to review several categories, including: people, information, property, economic, reputation, and capability. Each hazard can result in impacts to one or more of these categories, and the severity of the impact may differ between each category. **When considering the impact ranking, think beyond an individual facility and how the hazard may impact the regional healthcare system as a whole in King, Kitsap and Pierce counties.**

Impact definitions:

Low – Causes minimal disruption and can be managed at the daily operational/facility level.

Moderate – Cannot be managed through normal operational means (e.g. activation of incident command structure and/or emergency operations plan), but does not threaten the ability of the regional healthcare system to continue providing essential services.

High – Cause significant disruption and threatens the ability of the regional healthcare system to continue to provide essential services.

Hazards that are consistently ranked by at least 75% of participants will be considered to have reached consensus. There is no right or wrong answers to the questions. This project is seeking your expert opinion. The amount of time necessary for completion of the survey will vary with each participant but should take approximately 30 minutes.

Your participation in this project is entirely voluntary. Any information that you provide will be confidential. When the results of the project are reported, you will not be identifiable in the findings. You will remain anonymous to the other participants throughout the Delphi process; only the project managers will be able to identify your specific answers.

If you have any questions, please contact Eyla Baltazar at Eyla.baltazar@nwhrn.org or Aaron Resnick at Aaron.resnick@nwhrn.org or 425-988-2898. **Please complete and return the survey by 1700hrs on Tuesday, February 20, 2018.**

Thank you very much for your participation,

The Northwest Healthcare Response Network

2. Demographics

* 1. Please provide your demographic information

Full Name

Job Title

Department

Organization

Email Address

2. Please indicate how many years of experience you have in your area of work

- 0-5 years
- 5-10 years
- 10-15 years
- 15-20 years
- 20+ years

Other (please specify)

3. Have you previously participated in an organizational or regional HVA process?

- Yes
- No

4. In which sector do you work? (Check all that apply)

- Behavioral Health
- Blood
- City/County Emergency Management
- Dialysis
- EMS
- Hospital
- Long-term Care
- Outpatient
- Public health

Other (please specify)

5. In which healthcare field(s) do you work? (Check all that apply)

- Administration
- Behavioral Health
- Clinical
- Dialysis/Blood
- Emergency Management
- EMS
- Engineering/Facilities
- Public Health
- Safety
- Supply Chain
- NA

Other (please specify)

3. Hazard: Active Threat

Hazard: Active Threat

Definition: An active threat encompasses shootings as well as any other active incident involving a weapon in which an individual actively engages in killing or attempting to kill people in a confined or populated area.

Likelihood – Low

- Regionally: At least 3 active shooter events have occurred in King, Kitsap, and Pierce counties in the last 10 years
- 2.5% of active shooter incidents nationally have occurred at healthcare facilities (2000-2013, via FBI)
- Shooting incidents at large at healthcare facilities have increased from 9.0 per year (2000-2005) to 16.7 per year (2006-2011) nation-wide (Annals of Emergency Medicine, 2013)

Potential Regional Impacts

- Public Health & Safety – injury or death of victims and responders, ongoing security threats, behavioral health needs
- Property, Facilities, Infrastructure – impacts to property and infrastructure depending on mode and location
- Economy – impacts to facility or immediate community
- Other – erosion of public confidence

2017 Focus Group Ranking: Group reached consensus and rated the hazard as **Moderate** impact.

2017 Focus Group comments:

- (2) Suggest “Low” rank because impacts can be absorbed by other organizations in the system
- (2) Suggest “Moderate” because it will require regional ICS activation
- Suggest “Moderate” score because continuing on as ‘normal’ is different, even if not impacted
- King and Pierce counties have different healthcare trauma capabilities
- Behavioral health aspect of regional active threat incidents is very large/geographically broad (e.g. 2014 Seattle Pacific University shooting)
- Think of these incidents as mass casualty incidents
- Tracking /reunification adds to a greater number of potential victims

6. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Active Threat?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

4. Hazard: Avalanche

Hazard: Avalanche

An avalanche is a mass of loosened snow or ice that suddenly, and usually swiftly, slides down a mountain, growing by collecting additional material as it descends.

Likelihood – High

- Regionally: occurs frequently and annually, often without impact to people, transportation routes, or other infrastructure
- Avalanche control is important along I-90 (Snoqualmie pass) and SR-2 (Stevens pass) and the BNSF railway
- There are no major populations exposed to avalanches in the three counties

Potential Regional Impacts

- Public Health & Safety – injury or death of victims and responders
- Property, Facilities, Infrastructure – impacts to ski and similar facilities, as well as major thoroughfares.
- Economy – impacts to logging and recreational sectors, as well as transportation corridors.
- Other – damage to hillsides and increased erosion

2017 Focus Group Ranking: Group reached consensus and rated the hazard as Low impact.

7. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Avalanche?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

5. Hazard: Dam Failure

Hazard: Dam Failure

A dam is an artificial barrier built across a watercourse to impound or divert water. Dam failure is the sudden, rapid, and uncontrolled release of impounded water resulting in downstream flooding.

Likelihood – Low

- In Kitsap, King, and Pierce Counties there are nearly 200 dams that impound 10 acre feet of water or more
- Dam failure events are infrequent and usually coincide with events that cause them, such as earthquakes, landslides, extreme storms, massive snowmelt, equipment malfunction, structural damage, foundation failures, and sabotage

Potential Regional Impacts

- Public Health & Safety – injuries and death to victims and responders, vulnerable populations
- Property, Facilities, Infrastructure – destruction of property and critical infrastructure, disruption of business
- Economy – vary based on size and proximity
- Other – environmental impacts, public confidence

2017 Focus Group Ranking: Group did not reach consensus: 66% voted for **Low** impact; 33% voted for **Moderate**.

2017 Focus Group comments:

- Living in close proximity to a dam elevates the impact
- (2) Most dams are in outlying areas, thus lower impact
- Moderate – Snoqualmie Valley area really impacted; Kent and Renton area are also susceptible and have multiple medical suppliers
- Dam failure is usually not a sudden event, thus people have time to react and prepare

8. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Dam Failure?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

6. Hazard: Earthquake

Hazard: Earthquake

Earthquakes of all types (Deep, Shallow, Megathrust) pose a threat throughout the Puget Sound region. Earthquakes can result in variety of primary and secondary hazards.

Likelihood – Low

- Deep earthquakes with a magnitude of 6.0 or greater occur about every 30 to 50 years
- Shallow Quakes with a magnitude of 6.0 or greater occur about every 500 years
- Megathrust earthquakes occur every 200 to 1,100 years, or average every 500 years

Potential Regional Impacts

- Public Health & Safety – injuries and death, surge in patients, behavioral health, water contamination
- Property, Facilities, Infrastructure – destruction of property and critical infrastructure, structure damage and collapse
- Economy – loss of property, disruption of business and tourism

2017 Focus Group Ranking: Group reached consensus and rated the hazard as **High** impact.

9. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Earthquake?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

7. Hazard: Fires

Hazard: Fires

Our region experiences three types of fire threats: structure fires, wildfires, and wildland urban interface (WUI) fires where urban development is adjacent to densely vegetated areas.

Likelihood – **High** for structure fires; **High** for wildfires; **Low** for wildland urban interface fires

- Structure fires occur on a regular basis throughout the region
- Since 1980, King County has seen an average of 10 wildfires per year
- Kitsap has old growth trees and forests which may be vulnerable to fires
- The probability of recurrence for the WUI fire hazard in Pierce County is a five year or less occurrence

Potential Regional Impacts

- Public Health & Safety – life safety of victims and responders, smoke and air pollution
- Property, Facilities, Infrastructure – destruction of property
- Economy – destruction of natural resources, business disruption
- Other – vegetation and habitat, increase landslide risk

2017 Focus Group Ranking: Group reached consensus and rated the hazard for Structure Fires and Wildfire as both **Low**. Group did not reach consensus on Wildland Urban Interface Fires: 66% voted for **Low** healthcare impact; 33% voted for **Moderate**.

2017 Focus Group comments:

- Low – not a huge impact on healthcare system
- Moderate – recent large fires like those in Alberta, Canada, greater population development in outlying areas, and climate change make WUI a higher impact hazard

10. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Structure Fires?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

11. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Wildland Fires?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

12. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Wildland Urban Interface Fires?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

8. Hazard: Flooding

Hazard: Flooding

Western Washington is very prone to flooding (river, coastal and urban) due to severe weather events. Flooding can also occur due to melting snow packs that have accumulated during the winter months.

Likelihood – High for minor flooding; Low for major flooding

- On average, the region has one episode of minor river flooding each winter
- Large, damaging floods typically occur every two to five years
- To date, major river flooding has infrequently contributed to injury or loss of life; more typically, it results in property damage

Potential Regional Impacts

- Public Health & Safety – contamination to living environment, injuries, loss of utilities
- Property, Facilities, Infrastructure – property damage, loss of utilities, equipment/records damage
- Economy – business and industry damage, food service disruption
- Other – environmental impacts, public confidence

2017 Focus Group Ranking: Group reached consensus and rated the hazard for Minor Flooding as **Low**. Group did not reach consensus on Major Flooding: 66% voted for **Moderate**; 33% voted for **Low**.

2017 Focus Group comments:

- Low – some warnings/prediction; not huge healthcare impact.

13. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Minor Flooding?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

14. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Major Flooding?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

9. Hazard: Geomagnetic Storm

Hazard: Geomagnetic Storm

Geomagnetic storms are a temporary disturbance of the Earth’s magnetosphere, and are associated with solar storms, filament eruptions and solar flares from the Sun. Geomagnetic storms induce currents in long conductors on the Earth’s surface, such as power lines, pipelines, and telecommunication cables. These additional currents can overload the electric grid system to trigger voltage collapse, or worse, damage a significant number of expensive extra-high voltage transformers.

Likelihood (Derived from Lloyd’s of London, 2013) –**Low**

- Solar activity follows an 11-year cycle
- Reasonable range for an extreme geomagnetic storm is 100-250 years

Potential Regional Impacts

- Public Health & Safety – secondary effects from extended power loss
- Property, Facilities, Infrastructure – Widespread-long term damage to electrical systems
- Economy – cost of damaged equipment, loss of revenue

2017 Focus Group Ranking: Group reached consensus and rated the hazard as**High** impact.

2017 Focus Group comments:

- Discussion between geomagnetic storm likelihood and earthquakes
- Low – Only so many hazards an organization can prepare for; don’t know enough info on this hazard
- High – huge impact, such as knocking out all IT infrastructure. Low chance, massive impact. The U.S. government is preparing for it

15. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Geomagnetic Storm?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

10. Hazard: Hazardous Materials Incident

Hazard: Hazardous Materials Incident

Hazardous materials incidents include the unwanted, unplanned, or deliberate release or escape of substances that may cause or create a potential risk to public health, safety, or the environment.

Likelihood – **High** for small hazardous material incidents; **Low** for large incidents

- Small hazardous material incidents occur annually
- Large incidents that could impact a significant portion of the public and create major economic or environmental problems are extremely rare, a five year or less occurrence
- 80% - 90% of accidents occur at fixed sites such as factories and storage facilities; 10% - 20% occur during transportation

Potential Regional Impacts

- Public Health & Safety – significant impacts to those exposed, long-term health impacts, behavioral health
- Property, Facilities, Infrastructure – property damage or contamination
- Economy – service disruption, financial impacts
- Other – environmental impacts, public confidence

2017 Focus Group Ranking: Group reached consensus and rated the hazard for small hazardous material incidents as **Low** impact; Group reached consensus and rated the hazard for large hazardous material incidents as **Moderate**.

2017 Focus Group comments:

- Comment: Are specific sites in our region at higher likelihood? Are their data points, such as the number of chlorine plants in our region?
- Discussion: we have super fund sites, ports, oil refinery, etc.—plenty of potential hazardous material spill sites throughout our region.

16. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Small Hazardous Materials Incidents?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

17. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Large Hazardous Materials Incidents?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

11. Hazard: Health (epidemic, pandemic)

Hazard: Health (epidemic, pandemic)

Acute disease outbreak has the potential to paralyze critical operations. An outbreak can be characterized by the extent of spread of the disease.

Likelihood – High

- Periodic outbreaks including influenza are likely in Washington
- Washington has 30-50 foodborne outbreaks reported each year
- Outbreaks of pertussis or hepatitis A may occur every few years
- There have been at least four influenza pandemics in the past 100 years

Potential Regional Impacts

- Public Health & Safety – acute illness and death, surge in patients, behavioral health, civil unrest
- Property, Facilities, Infrastructure – indirect impacts
- Economy – worker absenteeism, decrease in tourism, foodborne illness impact industry
- Other – school absenteeism, canceling events, public confidence

2017 Focus Group Ranking: Group reached consensus and rated the hazard as **High** impact.

18. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Health hazards?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

12. Hazard: Infrastructure Failures

Hazard: Infrastructure Failures

The network of critical infrastructure that supplies our basic needs for mobility, power, water, sewer and communications. This section covers infrastructure failures that are not caused by other hazards; rather, they are caused by events associated with the infrastructure itself. Examples include the collapse of the Tacoma Narrows Bridge (1940), and the I-35W Mississippi River bridge collapse in Minneapolis, MN (2007).

Likelihood – Low

- Major infrastructure failures happen roughly once a decade
- The chance of a catastrophic infrastructure failure is much smaller
- The most vulnerable periods in the life of a structure are during construction, right after it is built, and as it nears or exceeds its expected operational life

Potential Regional Impacts

- Public Health & Safety – injury or death to victims and responders due to failure
- Property, Facilities, Infrastructure – infrastructure failure, utility outage, cascading failures
- Economy – infrastructure loss or repair

2017 Focus Group Ranking: Group reached consensus and rated the hazard as **Moderate** impact.

19. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Infrastructure Failures?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

13. Hazard: Landslide

Hazard: Landslide

Landslides occur when gravity overcomes the strength of the soil and rock in a slope, often with the help of contributing factors such as heavy rainfall, erosion of the top of a slope, ground shaking, or human action.

Likelihood – High

- Landslides happen in Washington on an annual basis. The majority of significant slide events in King County have occurred during or shortly after storm events
- Over the past decade, >200 landslides occurred along the Seattle - Everett coastline, and >800 trains have been canceled since 2009 as a result of landslide events
- Kitsap county is subject to landslide or soil erosion and due to wind, water, and flooding at all times of the year.

Potential Regional Impacts

- Public Health & Safety – injury or death to victims and responders, surge in patients, behavioral health
- Property, Facilities, Infrastructure – infrastructure damage, property damage, transportation interruption
- Economy – business interruptions
- Other – environmental damage

2017 Focus Group Ranking: Group reached consensus and rated the hazard as Low impact.

2017 Focus Group comments:

- Impacts to trains and transport, but tend to be minor impacts
- Larger landslides are more rare

20. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Landslides?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

14. Hazard: Pipeline Incident

Hazard: Pipeline Incident

Washington State has the following types of pipelines: crude oil, petroleum products, and natural gas. Natural gas or hazardous liquid transmission pipelines run through 28 Washington counties and 119 cities.

Likelihood – Low

- Only a few notable pipeline incidents occurred in Washington in the past 15 years
- While minor leaks happen, a major leak from either a natural gas or gasoline pipeline is a rare occurrence; only one major Pierce County incident has occurred in the past ten years

Potential Regional Impacts

- Public Health & Safety – injury or death to victims and responders, long-term health consequences
- Property, Facilities, Infrastructure – damage to pipeline and infrastructure, personal property, transportation
- Economy – business interruptions
- Other – environmental damage

2017 Focus Group Ranking: Group reached consensus and rated the hazard as Low impact.

2017 Focus Group comments:

- There are minor spills but many more pipelines
- Pipelines mirror our highway system

21. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Pipeline Incident?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

15. Hazard: Power Outage (Extended)

Hazard: Power Outage (Extended)

A power outage may be referred to as a “blackout” if power is lost completely; a “brownout” if the voltage level is below the normal minimum level; or a “dropout” when the loss of power is only momentary. Power outages can be both isolated (e.g. neighborhood) or regional (e.g. city or county-wide).

Likelihood – **Low** for isolated extended power outages; **Low** for regional extended power outages

- Most are small, resolved within a few hours, and do no lasting damage. Larger outages occasionally occur
- Seattle has experienced three large unplanned and multi-day outages in the past 30 years
- These outages are usually secondary events caused by other hazards, e.g., winter storms
- Kitsap has experienced power outages during ice and wind storms

Potential Regional Impacts

- Public Health & Safety – injury or death from power failure, impacts to those who rely on power for medical devices
- Property, Facilities, Infrastructure – damage to infrastructure, personal property, transportation
- Economy – business interruptions
- Other – school closures, mass gathering cancellations

2017 Focus Group Ranking: Group reached consensus and rated isolated extended power outages as **Low** impact. Group reached consensus and rated regional extended power outages as **High** impact.

2017 Focus Group comments:

- As a primary hazard, infrastructure failure in power
- Larger outages not as common
- If the neighborhood is Seattle’s First Hill, that could be a larger impact
- If this happens in the system then our generators would be working
- Potential impacts from neighborhood for a shelter location
- High – Power outage often result in activation of ICS
- Moderate (x3) – Depends on where outage is and if healthcare is impacted

22. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Isolated Extended Power Outage?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

23. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Regional Extended Power Outage?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

16. Hazard: Severe Weather/Storm

Hazard: Severe Weather/Storm

Severe weather or storm can be defined as an atmospheric disturbance featuring sustained strong winds (40+ mph) and/or significant precipitation (rain or snow). Excessive heat events are defined as a weather pattern that is substantially hotter and/or more humid than average for a location at that time of year.

Likelihood – High for Severe Storms; High for Excessive Heat

- Severe storms and their associated wind, snow and flooding effects will occur in Washington State regularly
- Of all the natural hazards in the United States, heat is the number one, non-severe weather-related killer
- In Seattle an average of three or four fatalities have occurred each summer
- Kitsap has a history of high wind damage

Potential Regional Impacts

- Public Health & Safety – injury or death from severe weather/heat
- Property, Facilities, Infrastructure – personal property, utility loss
- Economy – business interruptions, financial impacts: business, farms, govt.
- Other – environmental impacts, public confidence, school/community asset closures

2017 Focus Group Ranking: Group reached consensus and rated a Severe Storm as **Moderate** impact. Group reached consensus and rated Excessive Heat as **Low** impact.

24. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Severe Storm?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

25. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Excessive Heat?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

17. Hazard: Social Unrest

Hazard: Social Unrest

Social unrest includes a wide range of activities from peaceful to violent, legal to illegal, principled to criminal, and highly planned to completely spontaneous intended to disrupt a community or organization. Examples include the 1999 World Trade Organization protests in Seattle and 2015 Baltimore protests.

Likelihood – Low

- The region has experienced periodic civil disorder, including large scale, disruptive protest and strikes.
- The most significant events seem to occur when dense urban areas are the primary focus of a conflict rather than a secondary site.

Potential Regional Impacts

- Public Health & Safety – targeting of specific groups, injuries and death in violent events to victims and responders, behavioral health; transportation issues related to healthcare access
- Property, Facilities, Infrastructure – transportation disruption, business/property damage
- Economy – business and industry damage
- Other – public confidence, environmental impacts

2017 Focus Group Ranking: Group did not reach consensus: 58% of group voted for **Low** regional healthcare impact; 42% voted for **Moderate**.

2017 Focus Group comments:

- Consider this as a possible mass casualty incident
- Low – Would have a high impact in an isolated area, not regional impact
- Moderate – Could depend on critical facilities impacted
- Low – Impact is often short term
- Moderate – Can result in activation of incident command system

26. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Social Unrest?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

18. Hazard: Technology Threats

Hazard: Technology Threats

A human caused technological threat; can be caused accidentally (e.g. faults in software programming code), or deliberately (e.g. malicious hackers).

Likelihood – High

- Washington State ranked 10th in reported incidents of cybercrime in 2010 and 8th in 2013. (Washington Emergency Management Division, 2015)
- Approximately 90 percent of healthcare organizations have suffered at least one data breach in the past 2 years. (Ponemon Institute, 2016)
- Healthcare sector was far and above the most frequently breached. (NetDiligence, 2013)

Potential Regional Impacts

- Public Health & Safety – inability to access electronic systems, applications, devices, etc.; damage to medical and other equipment.
- Property, Facilities, Infrastructure – virtual and physical property damage, critical infrastructure/utility damage.
- Economy – loss of data, reputation, business disruption, fines.

2017 Focus Group Ranking: Group reached consensus and rated the hazard as **High** impact.

27. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Technology Threats?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

19. Hazard: Terrorism

Hazard: Terrorism

Terrorism is a man-made hazard that is defined as “the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.” (FBI definition). For the purposes of the HVA, bioterrorism is included in this definition.

Likelihood – **Low** for large-scale terror attacks; **Moderate** for smaller-scale terrorist attacks

- Washington State has not experienced a large-scale terrorist attack in its known history
- However, smaller-scale incidents have occurred in our region over recent years
- Terrorist targets are often located near high traffic/high-visibility routes with convenient transportation access

Potential Regional Impacts

- Public Health & Safety – injury and death from attack to victims and responders, surge in patients, behavioral health
- Property, Facilities, Infrastructure – indirect impacts
- Economy – damage to property, business disruption, financial loss, computer breach
- Other – cancel gatherings, public confidence, environmental damage

2017 Focus Group Ranking: Group reached consensus and rated a small terror attack as **Moderate** impact. Group reached consensus and rated a large terror attack as **High** impact.

28. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of a Small Terror Attack?

- LOW** – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE** – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH** – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

29. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of a Large Terror Attack?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

20. Hazard: Transportation Incidents

Hazard: Transportation Incident

Transportation hazards involve all modes: aviation, surface (road, rail, and pipeline) and marine where a vehicle accident is the primary impact.

Likelihood – Low

- The rate and severity of accidents has been decreasing dramatically; the use of all transportation modes has been increasing
- The region will probably experience another major accident, but this probability seems to be holding steady or decreasing

Potential Regional Impacts

- Public Health & Safety – acute injury or death to victims or responders, surge in patients, behavioral health
- Property, Facilities, Infrastructure – transportation disruption, secondary hazards (fire, hazmat)
- Economy – damage to property, disruption to business
- Other – cancel large gatherings

2017 Focus Group Ranking: Group reached consensus and rated the hazard as **Moderate** impact.

2017 Focus Group comments:

- Low – Could not envision a transportation incident with regional impact
- Moderate – Could result in a Disaster Medical Control/Coordination Center or ICS activation
- Moderate – Depends on the scope if isolated vs. regional
- High – Scope of the incident could result in multi-jurisdictional activation of ICS

30. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Transportation Incidents?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

21. Hazard: Tsunami and Seiches

Hazard: Tsunami and Seiches

A tsunami is a series of waves typically generated during an earthquake by sudden displacement of the sea floor or lake bed. Seiches are water waves generated in enclosed or partly enclosed bodies of water by the passage of seismic waves (ground shaking) caused by earthquakes.

Likelihood – Low

- Washington State has a long history of tsunamis from sources near and far
- Cascadia Subduction Zone most recent great tsunami in 1700 AD
- Puget Sound tsunami from the Seattle Fault between 900 AD and 930 AD
- Tacoma Narrows tsunami from a landslide in 1949
- A fatal wave from a rockfall into the Columbia River in 1965

Potential Regional Impacts

- Public Health & Safety – acute injury or death, surge in patients, behavioral health
- Property, Facilities, Infrastructure – damage to transportation/infrastructure, property damage
- Economy – property loss, business disruption
- Other – cancel/postpone large gatherings

2017 Focus Group Ranking: Group reached consensus and rated the hazard as **Moderate** impact.

2017 Focus Group comments:

- Low (3) – limited coastal communities, thus harder to have regional impact
- Moderate – Lots of reclaimed land that used to be water; thus what would be the impact?
- Moderate – What about Lake WA? Water could go in any direction
- Moderate – Patients from coast would come toward our region following a major quake

31. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of a Tsunami or Seiches?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

22. Hazard: Volcano

Hazard: Volcano

Washington State has five active volcanoes (defined as a vent in the earth's crust through which magma, rock fragments, gases, and ash are ejected from the earth's interior) – Mount Baker, Glacier Peak, Mount Rainier, Mount St. Helens, and Mount Adams.

Likelihood – Low

- Four Washington State volcanoes were ranked as very high threats compared to other U.S. volcanos (USGS)
- Lahars that reached the Puget Sound lowland have occurred about every 500 to 1,000 years
- Mount Rainier has produced several eruptions and numerous lahars in the past 4,000 years

Potential Regional Impacts

- Public Health & Safety – injury or death or victims or responders, long-term threats due to ash, behavioral health
- Property, Facilities, Infrastructure – damage of property and infrastructure
- Economy – decreased tourism
- Other – environmental damage

2017 Focus Group Ranking: Group reached consensus and rated the hazard as **High** impact.

2017 Focus Group comments:

- Impacts are potentially much broader due to ash

32. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Volcano?

- LOW – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

23. Hazard: Water Shortage/Drought

Hazard: Water Shortage/Drought

Drought is a prolonged period of low precipitation severe enough to reduce soil moisture, water and snow levels below the minimum necessary for sustaining plant, animal, and economic systems.

Likelihood – Low

- Droughts occur slowly but may last a long time
- The state as a whole can expect severe or extreme drought at least 5 percent of the time in the future

Potential Regional Impacts

- Public Health & Safety – conflict over water availability
- Property, Facilities, Infrastructure – threat to electrical supply, decrease water availability
- Economy – increase cost, agriculture impacts, recreation impacts
- Other – increase in fire vulnerability

2017 Focus Group Ranking: Group reached consensus and rated the hazard as **Low** impact.

2017 Focus Group comments:

- Our regional impact is lower because it is wetter

33. Based on the hazard definition, regional likelihood, and comments from the 2017 Focus Group discussion, how would you rank the regional healthcare impact of Water Shortage/Drought?

- LOW** – Causes minimal disruption; managed at the daily operational/facility level.
- MODERATE** – Cannot be managed through normal means (e.g. requires activation of ICS and/or emergency plan), but does not threaten regional healthcare service delivery.
- HIGH** – Causes significant disruption and threatens regional healthcare service delivery.

Comments:

24. Thank You

Thank you very much for completing the Regional Healthcare HVA Survey. If you have any questions, please contact Eyla Baltazar at eyla.baltazar@nwhrn.org or Aaron Resnick at aaron.resnick@nwhrn.org or at **425-988-2898**.