NET Neighborhood Assessments

NEIGHBORHOOD EMERGENCY TEAM RISK AND CAPABILITY ASSESSMENT GUIDE

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INTRODUCTION TO NEIGHBORHOOD ASSESSMENTS

Neighborhood assessments to identify local hazards, vulnerabilities, and community capabilities can have many practical uses both prior to and after emergency events. Knowing what can aid or abet resilience before an incident occurs is useful knowledge that can inform local strategies and planning.

Neighborhood Emergency Teams (NETs) are one of Portland, Oregon's greatest assets; NETs will be deployed in their neighborhoods in the event of a major disaster, and neighborhood assessments can aid NET strategies and resource management. NETs can incorporate their neighborhood assessment knowledge and inventories into their Operations Plans. Doing so will help communities mitigate risk and expedite recovery.

When a major emergency occurs, knowing what areas or buildings are likely unsafe, what roads may be inaccessible, what neighbors know first aid, and what childcare facilities may be operable can bolster neighborhood resiliency. This resource will provide NETs with guidelines and recommendations for drafting and conducting their own neighborhood assessments.

We sincerely hope this document helps readers to:
- Educate themselves and their neighbors on the hazards, vulnerabilities, and capabilities in their communities
- Mitigate risks, protect assets, and employ resources during an emergency
- Coordinate with their communities to forge collective resilience strategies

*Utility of Neighborhood Assessments for the ECC **

* This section will be updated when we have more information about the needs from the ECC (Portland's Emergency Communication Center), and how this might apply to NET assessments.*

It is understood that, since NETs will be in communication with the ECC in times of emergency, assessments could be influenced by the possible needs of the ECC. If NETs are the "eyes and ears" on the ground, what might they need to be looking for to report back?

Improving Operations Plans

Documenting hazards and capabilities in Operations Plans will strengthen NET preparedness. By inventorying their neighborhoods, NETs will then have an accessible written record they can exchange to create collaborative planning initiatives across neighborhood lines. This is significant because not all of Portland's neighborhoods have the same resources, and sometimes needs and capabilities intersect. Many neighborhoods have unique risks and capabilities. Additionally, tangential neighborhoods may share critical risks and capabilities. If all NETs complete thorough assessments, it will enable distinct NETs to coordinate their response plans and develop collaborative partnerships with other NETs.

SECTION 1: WHAT TO LOOK FOR

This section provides examples of hazards, vulnerabilities, capabilities, and resources that might be found in Portland neighborhoods. Each neighborhood has different features due to variables including location and economic vitality.

This list is not comprehensive but gives NETs an idea of the kinds of features they can list in their assessments and aim to identify. It is particularly important to identify what communities may be vulnerable after a major incident. NETs can work with their communities to create response procedures and outreach programs that are inclusive of diverse populations.

Examples of Community Resource, Assets, and Capabilities	***Examples of Hazards and Vulnerabilities***
PHYSICAL LOCATIONS • BEECN Sites • Portland fire stations • Airports • Community and religious centers • Hospitals • Parks • Grocery Stores • Childcare facilities **COMMUNITY CAPABILITIES** • Technical and social skills • Childcare professionals • Medical professionals • Construction workers • Multilingual speakers • Electricians • Plumbers • NET members • Neighbors • Counselors, therapists, and psychologists	**UTILITIES** • Electric service areas • Major gas lines • Fuel storage • Power lines • Water lines **BUILDINGS** • URMs (unreinforced masonry) • Condemned buildings • Damaged buildings **LANDSCAPE AND ROADWAYS** • Landslide zones • Liquefaction zones • Bridge failures • Road obstruction and debris • Damage to roadways, highways, and overpasses **VULNERABLE COMMUNITIES** • Houseless population • Elderly and isolated • Disabled • Non-English speakers • Low or no-income

Community Resources and Assets

This section is intended to give examples and sources of community capabilities and resources. Community ToolBox defines assets as "anything that can be used to improve the quality of community life," including people, physical structures or places, and community services (Berkowitz and Wadud, 2020).

Portland's greatest resource is its residents. Each Portland neighborhood, of which there are nearly 100, has unique capabilities based on its population and landscape. Each neighborhood is also equipped with resources provided by the city, social networks among neighbors, and physical assets. As of 2018, the City of Portland had an estimated population of 653,115 people; approximately 2.4 million people live in the greater Portland metropolitan area (US Census, 2018).

There many community-based groups, projects, programs, and initiatives that could be useful resources for NET assessments and preparedness planning, some of which are gathered here.

BEECNS (BASIC EARTHQUAKE EMERGENCY COMMUNICATION NODES)

The Portland Bureau of Emergency Management operates the 48 BEECN sites and caches throughout the city. After a major earthquake, people can go to BEECN sites for emergency assistance if phone service is down or to report severe damage or injury (BEECN, 2019 a).

- BEECN Information – library for BEECN resources
- Locations of BEECN Nodes - map and information

BRIDGES

Bridges in Portland may fail in the event of a major earthquake, causing destruction and interrupting mobility. However, bridges that remain navigable after an earthquake will be extremely vital assets for people moving throughout the city. Seismically-reinforced bridges in Portland include the Sauvie Island Bridge, Tilikum Crossing, and the Sellwood Bridge (PBEM, 2012). The Marquam and Burnside Bridges have both received Phase I seismic retrofits. Phase II upgrades would bring the city's bridges up to present seismic standards and ensure they remain operable following an earthquake (Webber, 2011). Newly replaced and seismically reinforced bridges include NE 33rd over Columbia Slough, NE 33rd over Lombard Street, SE Foster Road over Johnson Creek and N Vancouver Avenue over the Columbia Slough. All new replacement bridges meet current seismic standards (PBEM, 2012).

- Willamette River Bridges – a comprehensive list of bridges
- Bridges, City of Portland – a database of bridges inventory, conditions

COMMUNITY-BASED PROJECTS

Many Portland neighborhoods have community-based projects that may be also useful networks for disaster preparedness and response. One such program is the Hawthorne Boulevard Area Civic Ecology Project (HACE).

COMMUNITY CARING

Various kinds of community support services.

- Community Service and Support Units – services dedicated to supporting seniors
- Area Agencies on Aging and Disabilities Information – Oregon-wide information from the Oregon Department of Human Services on social services and their locations
- Emergency Plan Ideas for People with Disabilities – information from the City of Portland, including emergency plans and considerations
- Planning for Individuals with Disabilities or Special Needs – the State of Oregon's guides and recommendations for planning and emergency preparedness

LANGUAGE

Many languages are spoken in Portland's neighborhoods. Multilingual residents are invaluable community members.

- "Safe Harbor" Languages for the City of Portland – a list of the 10 leading languages spoken in Portland, Oregon, via the City of Portland website
- Multilingual Phone Services - a service for families and guardians to communicate with Portland Public Schools
- Language Spoken at Home Database – data of percentages of non-English speakers by language spoken at home

When it comes to sharing, teaching, and communicating, there are many technologies we can reach for to try to help our neighbors. The most powerful tool of them all is language. A modeling example of incorporating language equity into disaster preparedness: the Seattle Office of Emergency Management has preparedness material translated into 19 languages (Seattle, 2019 d).

Here are a few examples of Seattle's Multi-lingual resources:

Amharic, Burmese, Cambodian, Simplified Chinese, Traditional Chinese, English, Hindi, Japanese, Korean, Laotian, Oromo, Russian, Somali, Spanish, Swahili, Tagalog, Thai, Tigrinya, and Vietnamese

NET DOCUMENTS AND DATABASES

Neighborhood Emergency Teams (NETs) are comprised of volunteer emergency responders trained by the Portland Bureau of Emergency Management and Portland Fire & Rescue to provide emergency disaster assistance within their own neighborhoods.

- Neighborhood Emergency Team Guidelines
- ACTIVE Neighborhood Emergency Teams
- NET Operations Plans Library
- NET Dashboard Reports Library

Critical Facilities

Critical facilities in the Portland metropolitan area include hospitals, fire stations, police stations, emergency shelters, etc. Information on some of these is collected below.

- Portland's Bureau of Emergency Management has mapped many Critical Facilities in the city.

FIRE STATIONS

- Portland Fire and Rescue Station Map – Stations and address locations
- Fire Stations – library of links and station pages created by the City of Portland

HOSPITALS

- Oregon hospital map – printable hospital maps, locations and addresses

HYGIENE ACCESS

There are hygiene stations across the city that may be useful resources.

- Map of Portland Restrooms and Hygiene Stations

SHELTERS

There are year-round shelters in Portland for people experiencing houselessness and those seeking refuge

- Distribution of Shelters – a map of these locations

Other Existing Structures

Other structures may exist in neighborhoods that could be useful to communities after a disaster.

COMMUNITY CENTERS

- Portland Community Centers – list and information of city community centers

EMERGENCY TRANSPORTATION ROUTES

- Transportation Routes – interactive map and data

PORTS

- Portland International Airport
- Port of Portland

SCHOOLS

- Portland's schools have been mapped. You can find all public and private school sites online at Oregon-Metro.gov.

Other Neighborhood Assets

Each NET should use their neighborhood assessments to identify other useful resources in their neighborhood evaluations. This will vary between neighborhoods and can include everything from noting individuals with childcare experience to an inventory of neighborhood bicycles.

BICYCLES

After an earthquake, certain roads may be inaccessible by automobile due to roadway damage and fallen debris. As a result, other transportation options such as motorcycles, mopeds, and bicycles may be the only means of reliable transportation until roadways are cleared and repaired. However, if the earthquake causes fuel shortages, bicycles may become the most dependable form of transport for the able-bodied public (PBEM, 2012, 16).

- The Role of Cargo Bicycles in Disaster Planning and Emergency Management
- Check out Bicycles: Ultimate Natural Disaster Response Tools by Bike Arlington to learn how bikes may be a major lifeline in a post-disaster world

NATURAL ENVIRONMENT

The natural environment includes parks, terrain features, water resources, open spaces, etc. that can aid or abet response and recovery efforts after a disaster. The natural environment also has characteristics that can mitigate or elevate risk. For example, wetlands help absorb flood waters. Conversely, a deforested hillside will likely cause a landslide during an earthquake or storm because there is a lack of vegetation to stop erosion. For this reason, understanding the natural landscape in your neighborhood is imperative when evaluating risks and assets.

When assessing the natural environment, consider the following:

- Identify natural areas that can provide protective assets during a disaster. These areas are particularly valuable because they mitigate hazards. This may include freshwater streams, wetlands, and hillsides blanketed in vegetation.
- Identify habitats and other natural areas that are important. This could be a habitat with a high volume of endangered species, a culturally significant natural area, or a national or state park.

Resources:

- Park Area Maps

PORTLAND RISKS, HAZARDS, AND VULNERABILITIES

This section gives examples of risks, hazards, and vulnerabilities that may be found in Portland neighborhoods.

Built Environment Hazards

These are some examples of man-made hazards that may exist in neighborhoods. The built environment includes existing structures, infrastructure and critical facilities, and future development projects. People often come together to organize relief efforts, distribute resources, and set up communication nodes at these facilities. As such, identifying buildings that can withstand an earthquake is paramount. NET volunteers should identify the structural risks and assets in their neighborhoods that might be useful or hazardous both before and after a disaster.

Important building characteristics include age, construction type, materials, and use. This information can reveal potential risks associated with certain buildings. For instance, a gas station may pose a risk of explosion or leakage during an earthquake, even more so if gas is stored underground. Furthermore, in a more nuanced understanding of risk, there may be an apartment complex with unreinforced masonry that poses structural hazards to inhabitants, neighbors, and businesses within a certain magnitude threshold of the earthquake. Compiling data on existing structures is needed to evaluate community-specific risks.

BRIDGES

Most of PBOT's 159 bridges are not structurally sound and could collapse during an earthquake (PBEM 2012, 4). Only new bridges (since roughly the 1990s) are seismically reinforced. All other bridges are likely to fail in the event of a major earthquake (PBEM, 2012; Webber, 2011).

UNREINFORCED MASONRY BUILDINGS (URM'S)

There are approximately 1,800 URMs in the City of Portland. This includes schools, theaters, restaurants, breweries, dance halls, and other historic landmarks. Most of these buildings were built before 1960. It was common to construct these buildings from brick without steel reinforcements. As a result, URMs are common in Portland – and they are likely to experience partial or total collapse during an earthquake (City of Portland, 2019 b).

Most buildings in the Portland Public School district were constructed prior to 1960. According to the 2017 Unreinforced Masonry (URM) Building Policy Committee Report, 44 schools in Portland are URM buildings. Numerous other facilities have insubstantial reinforcements. As such, experts hypothesize that most of these school buildings will collapse during a strong earthquake. The *2009 Seismic Study of Existing School Facilities* found that only minimal seismic reinforcement work was completed in 63 Portland schools. The URM Building Policy Committee is working to secure more state funding for seismic reinforcement projects in schools. However, until the State complies, funding this work remains a significant challenge (PBEM, 2012, 15). You can find all public and private school sites online at OregonMetro.gov.

Resources:

- Portland's Unreinforced Masonry Buildings – produced by the City of Portland, this is an interactive map to see building statuses in Portland
- Portland's URM Database – list and conditions of buildings believed to be unreinforced masonry

NATURAL GAS

Gas lines can be significant disaster hazards.

- Kinder Morgan: Pipeline Safety Information (Kinder Morgan, 2018)

RAILROADS

Railroads may transport hazardous materials.

- Oregon Railroads and Operators

SEWAGE PIPELINES

Underground pipelines for drinking, sewage, and runoff water will be compromised or unusable after a significant earthquake. Pipelines could be important to note in hazard assessments as they could be safety hazards in the event of a disaster and extreme disruption leading to spillage.

- For more information: Bureau of Environmental Services 10-Year Strategic Plan (Portland BES, 2018).

WATER INFRASTRUCTURE

The Portland Water Bureau estimates that 1500-3000 water mains will break following a major earthquake Extensive shaking will cause water lines to break and may reduce water pressure. Consequently, approximately one-million residents in and around Portland will not have access to potable water. Moreover, a compromised water supply will inhibit firefighting, cutoff water flow to certain households, and threaten public health and safety. The Portland Water Bureau is constantly assessing water mains, pipes, and other facilities to improve citywide water-resiliency plans (PBEM, 2012, 8).

TRANSPORTATION

Portland transportation systems include roads, sidewalks, bridges, trains, bike paths, and docks. Most of these systems will be damaged or blocked after an earthquake. Various forms of debris and hazardous waste will delay emergency response professionals from reaching those in need and distributing supplies. As such, developing neighborhood-based community resilience strategies is imperative during a post-disaster scenario (PBEM, 2012, 7).

Geological Hazards

This section includes information on some hazards that may exist in neighborhoods due to geological features of the landscape, such as proximity to a slope or soil type. Each neighborhood has a unique landscape profile and assessments should consider possible natural hazards and community vulnerabilities.

LANDSLIDE ZONES

Geologists define landslides as the movement of rock, sand, soil, or debris down a slope. Landslides can be characterized based on their material compositions. The proportion of these materials and the angle of the slope will affect the landslides velocity and scope (DOGAMI, 2019 d; 2019 e).

Other useful resources by the Oregon Department of Geology and Mineral Industries (DOGAMI):

- A Homeowner's Guide to Landslides for Washington and Oregon
- Landslide Hazard & Risk, Central & Western Multnomah County, Oregon

LIQUEFACTION ZONES

Liquefaction is a process in which earthen soils take on the characteristics of liquid. This occurs when waterlogged sediments lose strength during severe ground shaking. The liquefaction zone refers to an area where this risk is present. Portland's NW Industrial district, where most of the city's fuel is stored, is a liquefaction zone. Buildings and infrastructure in liquefaction zones are known to experience significant structural damage during earthquakes (PNSN, 2019).

- DOGAMI has produced a series of earthquake hazard maps including liquefaction hazards (DOGAMI, 2019 a).

Community Vulnerabilities

This section includes information on possible neighborhood vulnerabilities.

- The Risks of the Rose City – this paper is a hazard exposure and social vulnerability analysis on factors in the Portland metro area

HOUSELESSNESS

- A Study of the Disadvantages of the Homeless in Toyko in Disaster Situations – literature on houselessness; a case study in Tokyo
- Homelessness, charts and figures – rates of persons experiencing homelessness, visuals and information
- Homelessness Database – database of information gathered by the Northwest Open Data Exchange

Other Useful Materials

These materials may be useful for NET planning, assessments, and general knowledge.

PLANNING FOR THE CITY OF PORTLAND

The 2012 City of Portland Earthquake Response Appendix guides Portland City government, regionals partners, and private entities through coordinated response efforts in the event of a large magnitude earthquake (PBEM, 2012https://www.portlandoregon.gov/pbem/article/382005). This document is a great reference to understand how the City is planning to respond to large-scale emergencies.

PBEM has a Strategic Plan (2017-2020) that outlines the bureau's citywide resiliency projects (PBEM, 2017).

SECTION 2: ASSESSMENTS

In the event of a disaster, residents will be the first to respond to incidents in their neighborhood. Residents should identify risks and assets before disasters occur to drive mitigation efforts and expedite recovery processes. Capability assessments will enable NETs to accurately inform their community, their NETs, and the Emergency Coordination Center (ECC) about their situation status.
FEMA has synthesized their Threat and Hazard Identification and Risk Assessment (THIRA) procedure into a three-step process. When conducting assessments, they encourage people to ask the following:

- What threats and hazards can affect our community?
- If they occurred, what impacts would those threats and hazards have on our community?
- Based on those impacts, what capabilities should our community have? (FEMA 2018)

NETs can use this model to assess local risks and capabilities to gain situational awareness in their neighborhood.

Suggested Steps

Assessments are useful both in the planning and post-disaster stage. NETs can use pre-disaster assessments to identify what and who is present in their locality. If NETs know how their local situation status has changed once a disaster occurs, they will be better prepared to respond, deploy resources, and coordinate with other NETs and the ECC.

The following provides examples for how NETs may choose to create and perform their neighborhood assessments:

PRE Disaster Steps	***PRE Disaster Steps***
Step 1: Identify Neighborhood Hazards and Capabilities NETs should brainstorm and discuss as teams what the features of their neighborhoods are and what features they want to include in their assessment inventories. **Step 2: Data Collection: Inventory Neighborhood Features** Create an inventory of neighborhood resources and hazards. Review and update this list regularly, and create a plan to do so. **Step 3: Data Analysis: Applying the Assessments to NET Tools** The inventories created by neighborhood assessments can inform NET Operations Plans. Neighborhood inventories can be useful for training and resource allocation.	**Step 1: Review Community Inventory of Resources and Hazards** Review the list (or map) compiled by NETs pre-emergency. Review what NET members should be looking out for. **Step 2: Data Collection: Assess the Status of Neighborhood Features** NETs can use their neighborhood assessments to know what important features to check in on after an emergency event. When it is safe to do so, NETs can follow their inventories and check on the statuses of their neighborhood features, and report back to their NET. **Step 3: Data Analysis** NETs can use the data of their assessed neighborhood features and respond accordingly, such as flagging resources that are immediately needed, deploying resources, and communicating with the ECC.

HOW TO IDENTIFY FEATURES

Resources on Identifying Capabilities

- Identifying Community Assets – Beyond the Basics guide to local mitigation planning
- Identifying, Mapping and Mobilizing Our Assets – materials to help recognize assets in communities, multiple useful forms and examples
- Identifying Community Assets and Resources – Community Tool Box unpacks how to look for, identify, map, and mobilize community assets
- UCLA Center for Health Policy Research: Community Asset Mapping – identifying strengths and resources of communities, planning and identifying
- Assets-Oriented Community Assessment, USC School of Public Health reports on assessments

Resources on Identifying Hazards and Vulnerabilities

- Hazard Identification and Vulnerability Assessment – identification, and effects on communities – risk and severity matrices
- FEMA Hazard Identification and Risk Assessment – useful for inventorying assets; federal model
- Social Vulnerability – Beyond the Basics unpacks how individuals and communities can have different levels of vulnerabilities, and how to assess them

Data Collection

During the data collection stage, pre- and post-disaster, NETs will likely be walking through their neighborhoods on foot to assess the status of neighborhood features. NETs should develop an inventory of neighborhood features (structures, bridges, roads, highways, hospitals, parks, etc.) that NET members can assess. NETs should collaborate with NET members and neighborhood residents to determine what features are most important to assess. Inventories may not be comprehensive; NETs should determine their operations priorities.

Data Analysis

In this stage, NETs have finished collecting their data and now must analyze it and respond accordingly. With more information, teams will have a better picture of their neighborhoods and the status of their neighborhood features (including features of their human communities). By analyzing the information and status of neighborhood features, NETs may choose to deploy resources, cordon off flagged hazards, inform residents, and rally volunteers to support coordinated relief efforts.

SECTION 3: SAMPLE ASSESSMENT DOCUMENTS AND FORMS

The following tables are examples of what NET teams can create to identify the features in their neighborhoods. These assessment templates can be used to evaluate risks and capabilities prior to and after a disaster.

Form examples:

NET Form: Hazards and Vulnerabilities Assessment		
Neighborhood Emergency Team:	Date:	Date/time received by TL:
Person Reporting (please print):	Person Receiving (please print):	

	Grocery Stores	Road Access	Hospitals	Fire	Electric	Chemical	Gas	Damaged or Foreclosed	URMs
Location	**Scarcities**			**Hazards**				**Structures**	

*Structures must be seismically reinforced to be classified as a capability/asset.

NET Form: Capabilities Assessment		
Neighborhood Emergency Team:	Date:	Date/time received by TL:
Person Reporting (please print):	Person Receiving (please print):	

	Grocery	Road Access	Hospitals	Medical Professionals	Multi-lingual (specify lang)	Childcare Professionals	First Aid/CPR	Construction workers	Electricians	Counselors, therapists, psychologists	Seismically Reinforced	Resource distribution	Resource storage	Temporary Shelters
Location/Area	**Resources**			**People #**							**Structures***			

SECTION 4: SPATIALLY MAPPING NEIGHBORHOOD FEATURES

Mapping the risks and assets of each neighborhood will provide a location-specific guide for NET volunteers to refer to in the event of a disaster. The Portland Bureau of Emergency Management (PBEM) is currently exploring options to try to assist NETs in creating virtual neighborhood maps that may be populated by the information NETs inventory in their neighborhood assessments.

Here are some map resources that may be useful for NET planning:

Useful Maps

- NETs Community Resiliency Map – PBEM created an online map with layers specifically useful to NETs and PDX community resiliency
- Tokyo Metropolitan Disaster Prevention Map – Interactive map of community resources, etc. that can be used as an example for what NETs may choose to create
- PBOT Transportation Maps – various biking, walking, and highway maps

Databases for Maps

PORTLANDMAPS - OPEN DATA

The City of Portland, Oregon provides open-access maps and datasets.

DATABASE GALLERY - PORTLANDMAPS

A gallery of available maps and layers.

CONCLUSION

NETs are one of Portland's most valuable resources. The intention of this document is to provide NETs more tools, information, and guidelines to help them evaluate their neighborhoods and create inventories of knowledge that can be useful in the event of a major emergency.

The information in this document is intended to provide NETs with current, updated, and relevant information to prepare their teams and neighborhoods. This information will be updated with feedback from NETs. We work for and with you all.

GLOSSARY

Asset – a useful resource that can mitigate risk or expedite recovery

BEECN – Basic Earthquake Emergency Communication Node

BES – Bureau of Environmental Services

DOGAMI – Oregon Department of Geology and Mineral Industries

ECC – Emergency Coordination Center

EOC – Emergency Operation Center

FEMA – Federal Emergency Management Agency

Hazard – something that threatens life safety, economic prosperity, infrastructure, and resilience

NET – Neighborhood Emergency Team

PBEM – Portland Bureau of Emergency Management

PF&R – Portland Fire & Rescue

Risk – the probability that a hazard will cause harm

URM – unreinforced masonry building

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