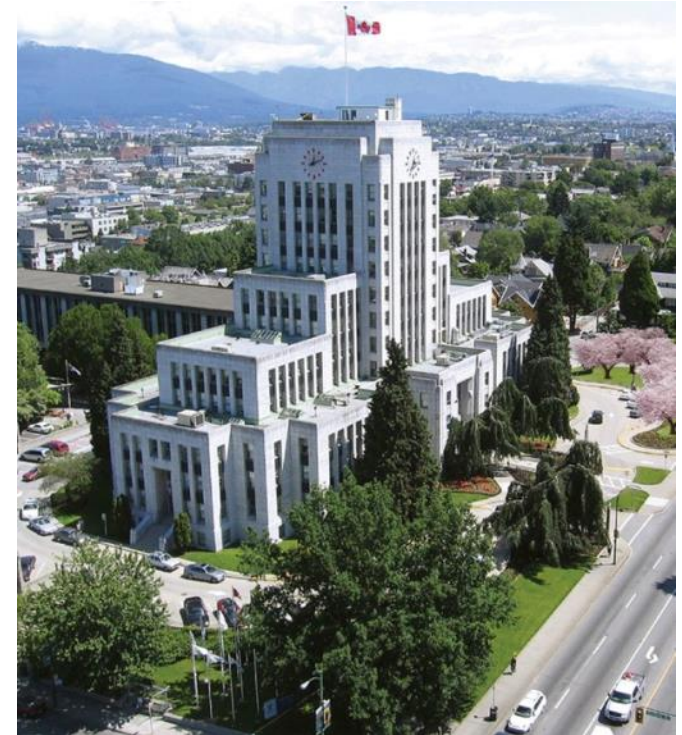


Earthquake Preparedness Strategy Update 2016



- **Strategy Overview**
- **Strategy Implementation Update**
 - **Sewer and Water Systems**
 - **Transportation Systems**
 - **Civic Facilities**
 - **Private Buildings**
 - **Continuity of Operations**
 - **Volunteers and Community Support**
 - **Training and Exercises**
 - **Coastal Response and Firefighting**
- **Capacity**
- **Summary**



Highlights – Council Directed Initiatives

- Started seismic upgrades to bridges
- Dedicated fire protection system
- Canada Task Force 1 - Heavy urban search & rescue team
- Emergency supply containers
- Emergency operations centre

1990-2010

Development of the Earthquake Preparedness Strategy

Concurrent implementation of Quick Win initiatives

Strategy adopted by Council in Dec 2013

2012-2013

Strategy Implementation

- Public Events
- Emergency Info. Plan
- Vancouver Volunteer Corps
- Cont. Bridge Upgrades
- Hardening key components of water system
- Emerg. Transportation Plan for Downtown
- Seismic Review of City Facilities
- Training & Exercises

2014-2015

Status

- 85 % of actions complete or in progress

Disaster Support Hubs roll-out

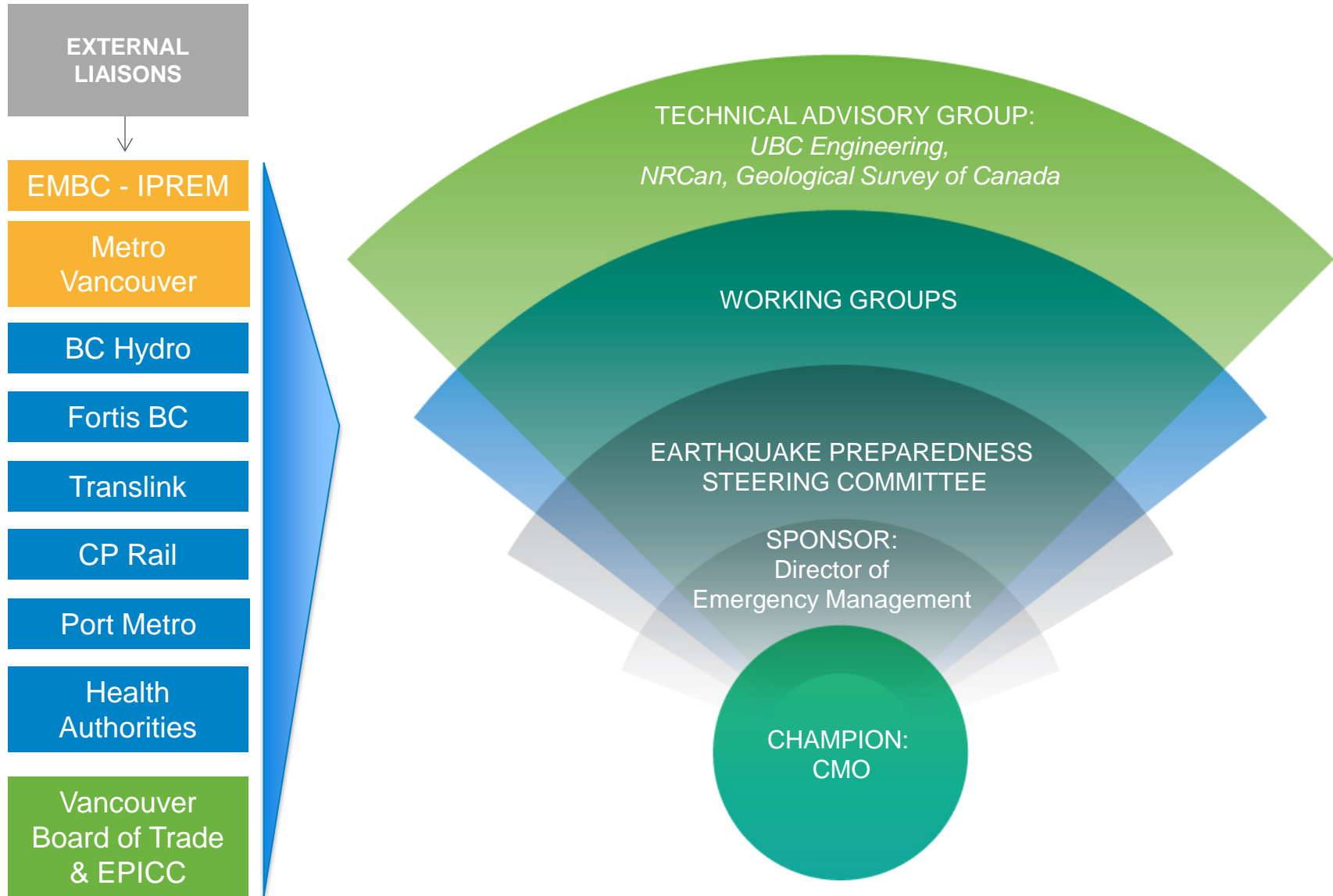
Civic Facility Upgrades

Seismic Retrofit Initiative

Coastal Response Exercise

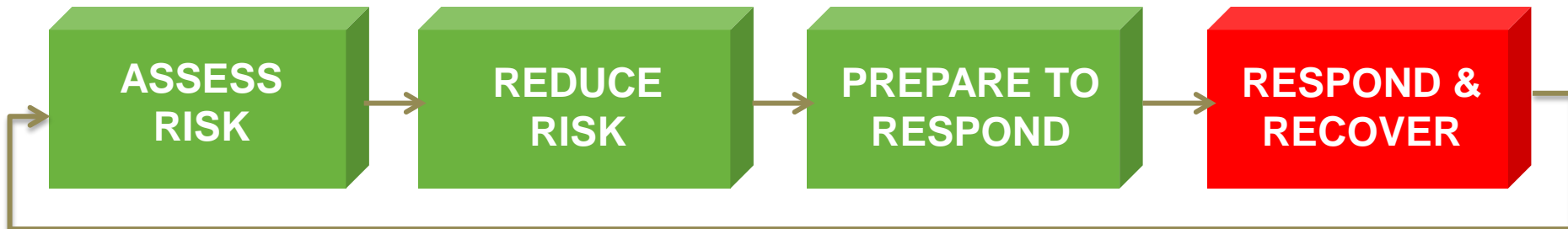
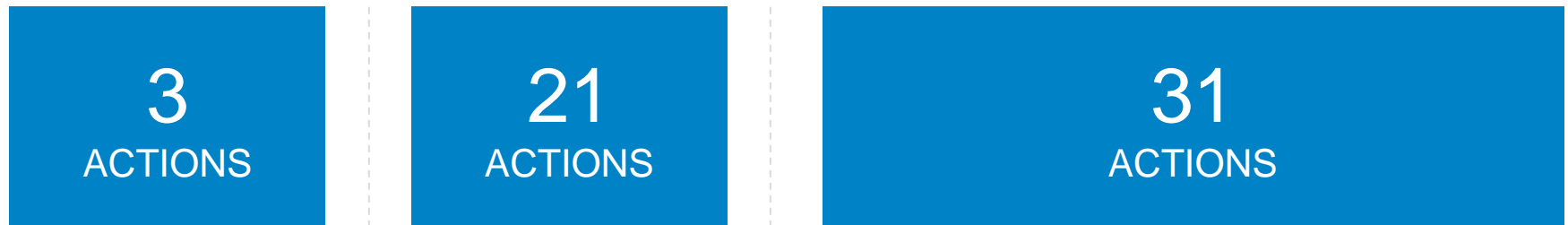
Oct 2016

Earthquake Preparedness Strategy - Partners



55 Actions

Continuous Review: 2016
- 4 actions + 3 Actions



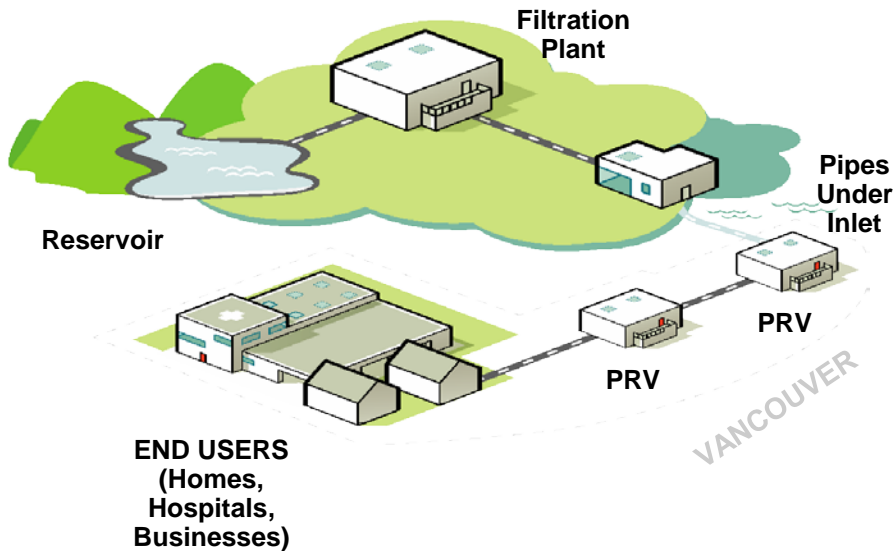
Scorecard – October 2016

	Completed	In Progress	Remaining
# Actions	10	37	8
% Actions	18%	67%	15%

- 47 of the 55 actions (85%) are complete or in progress.
- Remaining actions are scheduled to begin in 2017 or 2018.

Sewer and Water Systems



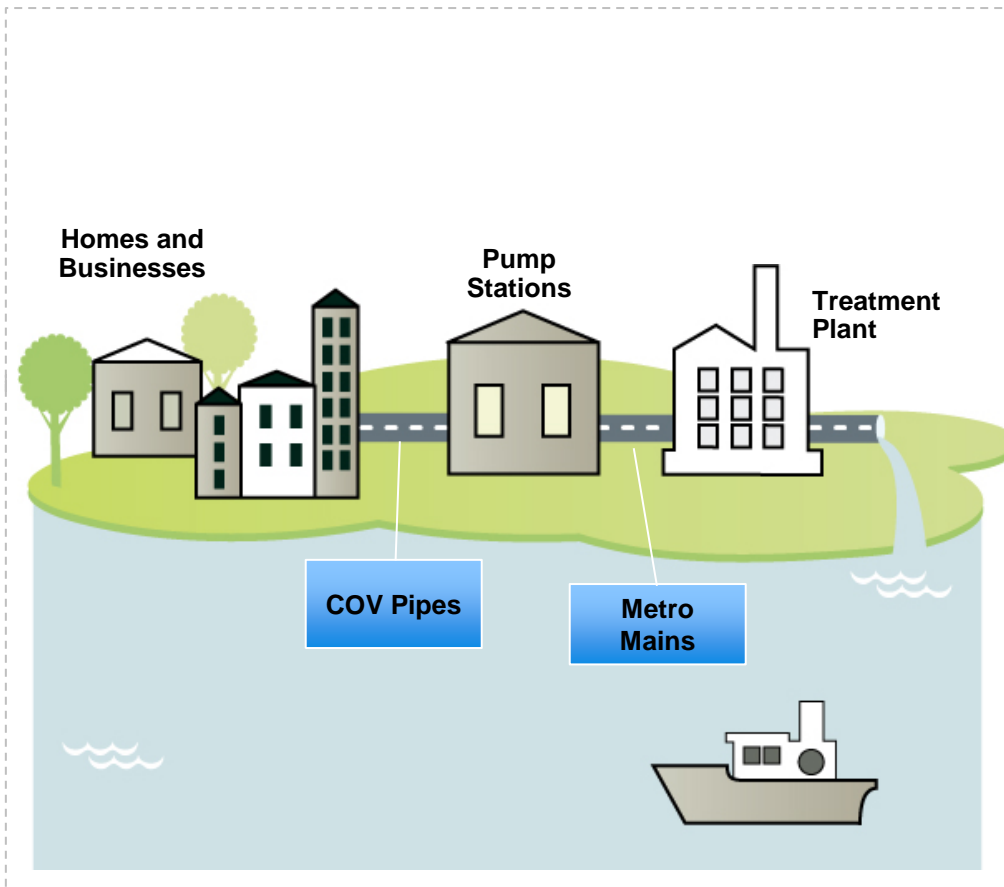


Past Action

- Water Utility Response Plan
- Dedicated Fire Protection System (DFPS)
- Maintain emergency wells
- Ongoing water main replacement program
- Restrained-joint transmission mains
- Pilot Japanese Couplings
- Pressure-reducing Valve Stations are earthquake resilient

- Risk-based strategy for hardening key vulnerabilities in the water system
- Enhanced access to post-earthquake fire-fighting water supply, including Fire Boat Pumping Capacity and portable hose-reel for above-ground hydrant system
- Collaborating with Health Authorities to enhance post-earthquake servicing plans





Past Action

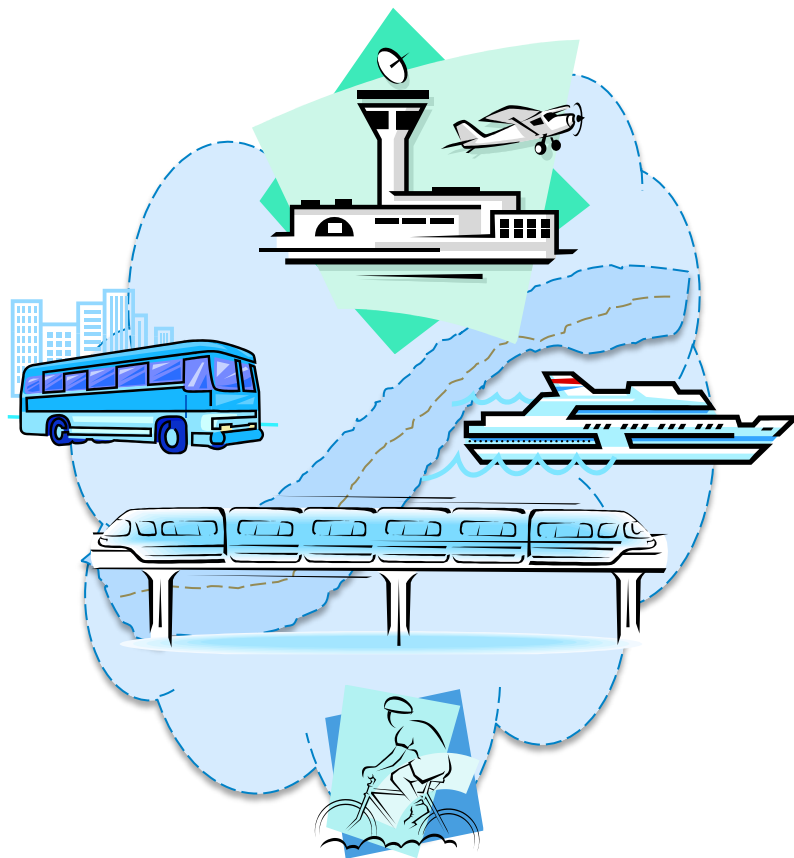
- Sewer utility response plan
- Regional plans to upgrade treatment plants
- 100% sewage pump stations have back-up power generation capacity

- Ongoing: new pump stations are designed to be post-disaster operational and have flexible connections



Transportation Systems





Past Action

- Seismic upgrades to key bridges (\$14 million in seismic upgrades over past 20 years)
- Disaster Response Routes
- Bridge Response Plan
- Downtown Transportation Emergency Response Plan
- 67% upgrades to Granville St. Bridge
 - Self-ready design for remaining Granville Bridge Upgrades



- Bridge Seismic Screening Assessment
- Bridge post-earthquake Inspections Guides
 - 3 of 4 guides complete. Next step is to train staff on the inspections.

Continuity of Operations



Past Actions

- ↘ Business Continuity Facilities
 - ↘ Assessment and prioritization of City's business units
 - ↘ Assessment and identification of suitable unoccupied worksites for business continuity functions



Current Actions

- ↘ Business Continuity Facilities
 - ↘ Enhance alternate worksites to support operational continuity of critical business units
 - Evaluation and implementation of back- up power generation options
 - IT and equipment upgrades
- ↘ Earthquake Response Supply Chain Assessment
- ↘ Update of fuel service contracts
- ↘ Emergency Management Information Systems procurement
- ↘ Pilot of Emergency Notification System for staff



Civic Facilities



Structural and Non-Structural Seismic program

- ↘ Approach:
 - ↘ Program → prioritize buildings
 - ↘ Screening and studies
 - ↘ Define implementation projects
 - ↘ Implement

- ↘ Prioritization Principles:
 - ↘ Emergency Response
 - ↘ Business Continuity
 - ↘ High Occupancy

↘ Structural program:

- ↘ Complete: 170 screening reviews, 11 detailed studies
- ↘ In progress:
 - 25 further detailed studies
 - East Wing / West Annex

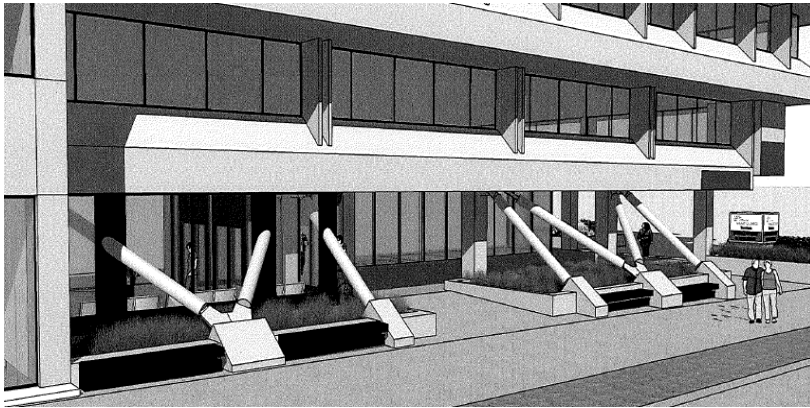
↘ Non-Structural program:

- ↘ In progress:
 - RFP for consultant for 12 prioritized buildings
 - VPD Kootenay Building - Skylight Upgrade





- **East Wing Deconstruction**
 - Moved 370 staff
 - Training in Vacant Building
 - Deconstruction now
 - Reconstruction of platform Spring 2017
 - Used vacant East Wing for Police and Fire exercises

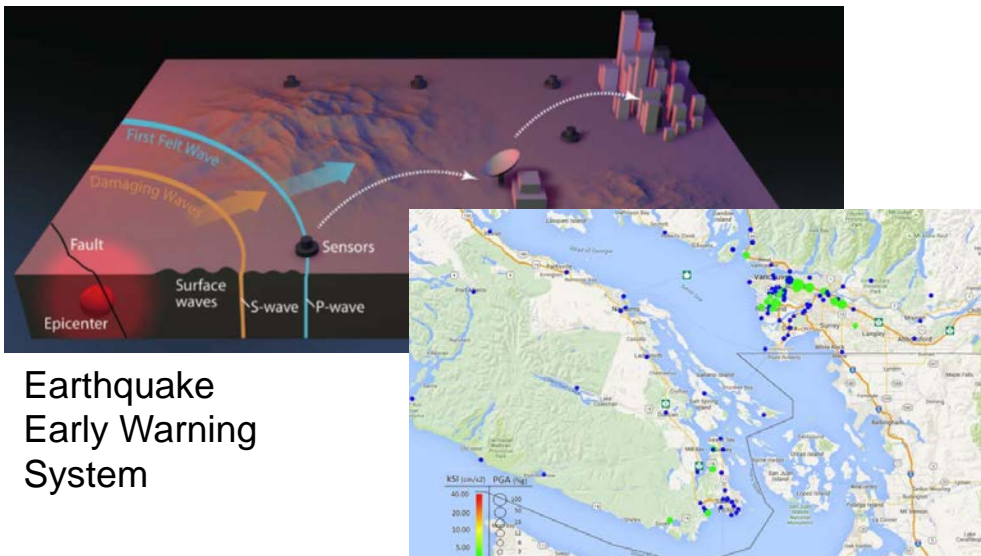


West Annex seismic upgrade

- **West Annex Seismic Upgrade**

- Contract awarded
- Start of construction Sept. 2016

- Pilot installation of Early Warning System and Strong Motion Instrumentation



Private Buildings



- Phased approach incorporating **response preparedness** and **mitigation/prevention** initiatives

Response Preparedness

Life-saving, rescue, coordination

Building Damage Assessment

Mitigation

New buildings

Existing Buildings

- Phased approach incorporating **response preparedness** and **mitigation/prevention** initiatives

Response Preparedness

CAN-TF1
Heavy Urban
Search and Rescue

**Disaster
Staging Areas**

**Training &
Exercises**

**Damage
Assessment
Program**

**Tools &
Equipment**

Collaboration
BC Housing, APEG BC,
AIBC, NSEM

Mitigation

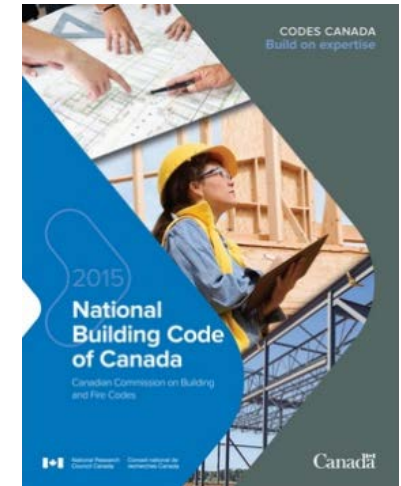
**Seismic Provisions
in VBBL**

**Adopt New National
Seismic Provisions early**

**Seismic Upgrade
Triggers in VBBL**

**Seismic Retrofit
Initiative**

- Review revised National Building Code with a view to adopt seismic provisions early
- Leadership with experience in this field
 - Kaye Krishna
GM Development, Building, and Licensing
 - Gil Kelley
GM Planning, Urban Design, and Sustainability



↘ Launch Seismic Retrofit Initiative

↘ Interdisciplinary Task Force:

- Risk assessment
- Regulatory review
- Existing CoV tools
- Levels and methods of retrofitting
- Potential retrofit strategies

↘ Collaboration:

- Mechanisms and tools used by other state and local governments
- Leverage 100 Resilient Cities network
- Engage senior levels of government for support



Volunteers and Community Resilience



➤ Ongoing development of the Vancouver Volunteer Corps

➤ Specialized teams:

- Emergency Social Services (ESS)
- Neighbourhood Emergency Assistance Team (NEAT)
- Public Education
- Amateur Radio (VECTOR)

➤ 833 active volunteers, over 1000 trained since 2012

➤ Simplified intake process

➤ Focus on developing depth in our volunteer pool

- Building capacity through new leadership opportunities and advanced training.
- Established Volunteer Advisory Committees



VVC at Pride Parade 2016

➤ **Public Safety Deployments and Response (2015-16)**

- Marathassa Oil Spill
- Roundhouse Group Lodging Centre
- Fort McMurray Wildfire (Red Cross call centre)
- Celebration of Light, Canada Day, FIFA World Cup, Santa Claus Parade, Pride
- Over 20 Emergency Social Services Call-outs supporting more than 260 displaced residents



Disaster Support Hubs Launch

- Officially launched during Emergency Preparedness Week - April 29, 2016
- Low-tech tool to promote grassroots response and planning at neighbourhood level
- 25 signs installed to identify Hubs across the City (including 23 Park Board Community Centres, Fraserview Library and Oppenheimer Park)

Ongoing Community Resilience Building

- Incorporating Hubs into deployment plans for volunteers
- Creating community emergency planning tool-kit
- **Pilot Map your Resilientville community workshop in Dec 2016**



Plan. Meet. Share. Help.

Training and Exercises



2015

- Significant response operations (Port Chemical Fire, Marathassa Oil Spill, Windstorm)
- **CMT Oil Spill Tabletop Exercise**

2016

- Develop and train on new Standard Operating Procedures and new systems to implement lessons learned from 2015 operations
- **Exercise Coastal Response & CMT Earthquake Tabletop Exercise**

2017

- Training on Building Damage Assessment Plan
- Training on new Emergency Information Management System
- **Functional EOC Exercises and Building Damage Assessment Tabletop Ex.**

2018 –
2019

- Planning and execution of **Full Scale Earthquake Exercise**, including activation of Disaster Staging Areas, Disaster Support Hubs, and Building Damage Assessment Plan.
- Exploring opportunities for regional and provincial partnerships for the exercise.

Exercise Coastal Response



- Can-TF1: Heavy Urban Search And Rescue Team
 - **June, 2016 – Port Alberni Full Scale Exercise of B.C. Initial Response Protocol to a Catastrophic Event**
 - 9.0 earthquake and 20 meter Tsunami Wave Scenario
 - Port Alberni was the most damaged community in the 1964 Alaska Earthquake
 - Exercises from Mexico to Alaska – Military to Civilian



Coastal Response “Base of Operations”



Exercise Coastal Response 2016





Key Learnings

- ↘ Can-TF1 is prepared – Great inter-operability for skills with Can-TF2, 3 & 4.
- ↘ Communication challenges, enhancements required to meet the current needs and inter-operability with other agencies.
- ↘ Transportation challenges
- ↘ Importance of regular training Exercises

Recommendations

- ↘ Continue to maintain joint training with other Can-TF Teams.
- ↘ Currently evaluating other Can-TF Teams technology to determine appropriate requirements.
- ↘ Upon receipt of Federal funding procurement process will be initiated for required transportation.

Fire-fighting Capacity





Fire Boats





Oil Boom Reel



- ↘ Extended above ground hydrant system
 - ↘ 3 Trailers – each carries 660 feet of 6" Firehose supply.



Summary



- We continue to review the strategy as we identify further actions and remove redundancies
- The risk to City's Critical Infrastructure and services continues to be mitigated. Response plans are in place to restore and respond to impacted services.
- Significant upcoming work includes
 - Continued empowerment of the community to build resilience around the Disaster Support Hubs
 - Launch of a seismic retrofit initiative for private buildings
 - Major seismic work on City Facilities (East Wing and West Annex) and implementation of an early warning system in the West Annex
 - Implementation of a multi-year training and exercise plan