



Disaster Coordination In the Capital Region

A Report to the Regional Emergency
Coordinators Commission
on Regional Disaster Coordination Models

Prepared For:

Capital Regional District

Planning and Protective Services Department

Contact: David Gibbs

Tel: (250) 360-3186

Prepared By:

Smart Risk Control, Inc.

Risk and Emergency Management Specialists

Contact: Jim LaMorte

Tel: (250) 383-4090

March 31, 2007

This document is formatted for double-sided printing, binding edge at left.

Executive Summary

After expressing concerns about the existing ability of response organizations to collaborate in a regional disaster, a Steering Committee of the RECC guided the development of a model to address the need. While many public and private organizations would play vital public safety roles in a Capital Region disaster, there is no overall framework for coordinating response resources, information, or operations among the stakeholders.

Interviews with local emergency coordinators revealed that many fear the existing local emergency programs would be incapable of meeting the demands of an area-wide disaster.

Concern for collaboration at the regional levels is not unique to the Capital Region. Research among jurisdictions elsewhere in the world identified six features of a successful regional disaster coordination structure:

1. Regional Situation Overview
2. Regional Management of Resources
3. Coordination of Operations
4. Coordinated Public Information
5. Multi-Agency Coordination
6. Operational Efficiency

Among available options, the favoured model calls for a single Regional Emergency Operations Centre at a suitable location in the region. When needed, such a facility would provide a “clearinghouse” for information, resources, and strategic policies, while relying on a collaborative operating and response structure.

The suggested model also recommends three Sub-Region Emergency Operations Centres, at locations to be determined, where municipalities

and electoral areas may choose to combine forces in joint Emergency Operations Centres. The single Regional and three Sub-Region Emergency Operations Centres could serve as mutual alternate sites. The recommended option facilitates collaboration among local government jurisdictions and other organizations in the extraordinary event of a regional disaster.

The proposed Regional Emergency Operations Centre and Sub-Region Emergency Operations Centres would provide coordination services only. Each municipality and electoral area would remain responsible for command and control of tactical resources.

All four facilities would draw staff from multiple local authorities, thereby enhancing coordination, reducing staff demands, and minimizing facility development costs overall. Implementing the recommended approach requires subsequent detailed planning, suitable training, and practice opportunities for selected personnel.

Costs of implementing the proposed model depend on many factors yet to be determined. However, early estimates of funding required in the first year for program staff, planning, emergency facilities, and related expenses suggest about \$600,000 will be needed. Subsequent costs for maintenance, training and exercises may require about \$300,000 annually. Federal and provincial grants are available for eligible aspects of the program.

The proposed model fits the particular needs of the Capital Region and could relieve the local authorities from developing separate Emergency Operations Centres. Overall, the recommended model provides the greatest benefits at the lowest net costs.

Table of Contents

Section	Page
1. Introduction.....	1
1.1 Why Regional Coordination is Important.....	2
1.2 Study Methods and Approach.....	3
2. Current Structure, Issues and Needs.....	4
2.1 Existing Response Structure.....	4
2.2 Regional Situation Overview.....	6
2.3 Regional Management of Resources.....	7
2.4 Regional Coordination of Operations.....	9
2.5 Coordinated Public Information.....	10
2.6 Multi-Agency Coordination.....	11
2.7 Operational Efficiency.....	12
3. Options Considered	13
3.1 Model Evaluation Criteria.....	13
3.2 Model Options.....	13
3.3 Evaluation of Models.....	13
4. Recommended Model for Regional Coordination	15
4.1 Model Description.....	15
4.2 Roles at the Response Levels.....	18
4.3 Activating the Regional EOC.....	18
4.4 Agency Staff Allocation.....	19
4.5 Regional Situation Overview.....	20
4.6 Regional Management of Resources.....	21
4.7 Regional Coordination of Operations.....	22
4.8 Coordinated Public Information.....	23
4.9 Multi-Agency Coordination.....	24
4.10 Rationale for Selection.....	25
5. Implementation of the Recommended Model	26
5.1 Measurable Objectives.....	26
5.2 Staff Time in Preparedness.....	26
5.3 Support Facilities.....	27
5.4 Incidental Costs.....	28
5.5 Funding.....	29
5.6 Governance.....	30
6. Conclusions and Recommendations.....	31
6.1 Conclusions.....	31
6.2 Recommendations.....	32

Appendices

A – Alternative Models Considered	A-1
B – Glossary of Terms.....	B-1
C – Information Sources.....	C-1

List of Figures

Figure	Page
<i>Figure 1. Emergency Resources</i>	<i>2</i>
<i>Figure 2. Models in Other Regions.....</i>	<i>3</i>
<i>Figure 3. Local Jurisdictions in Capital Region.....</i>	<i>5</i>
<i>Figure 4. Potential Emergency Facilities in a Capital Region Disaster.....</i>	<i>6</i>
<i>Figure 5. Summary of Model Options and Evaluation</i>	<i>14</i>
<i>Figure 6. Elements of an REOC.....</i>	<i>16</i>
<i>Figure 7. One Example of Sub-Region Allocations</i>	<i>17</i>
<i>Figure 8. Allocation of Agency Staff Suggested by Model.....</i>	<i>19</i>
<i>Figure 9. Flow of Regional Situation Information.....</i>	<i>20</i>
<i>Figure 10. Flow of Resource Requests</i>	<i>21</i>
<i>Figure 11. Coordination and Flow of Policy Decisions</i>	<i>22</i>
<i>Figure 12. Flow of Public Information in Recommended Model</i>	<i>23</i>
<i>Figure 13. Multi-Agency Coordination</i>	<i>24</i>
<i>Figure 14. Measurable Objectives in Developing Regional Disaster Coordination Capability</i>	<i>26</i>
<i>Figure 15. Annual Staff Time Estimates for Implementing Recommended Model.....</i>	<i>27</i>
<i>Figure 16. Cost Categories for Regional Emergency Operations Centre</i>	<i>28</i>
<i>Figure 17. Roles of the RECC.....</i>	<i>30</i>
<i>Figure 18. Recommendations for Model Implementation</i>	<i>33</i>

Acronyms in This Report

BCERMS	British Columbia Emergency Response Management System
CRD	Capital Regional District
EA	Electoral Area
EOC	Emergency Operations Centre
ESS	Emergency Social Services
FTE	Full-Time Equivalent
GIS	Geographic Information System
ICP	Incident Command Post
ICS	Incident Command System
IEPC	Inter-Agency Emergency Preparedness Council
JELC	Joint Emergency Liaison Council
JIC	Joint Information Centre
MAC	Multi-Agency Coordination
NIMS	National Incident Management System (USA)
PECC	Provincial Emergency Coordination Center
PEP	Provincial Emergency Program
PREOC	Provincial Regional Emergency Operations Centre
RECC	Regional Emergency Coordinators Commission
REOC	Regional Emergency Operations Centre
SEMS	Standardized Emergency Management System (California)

Disaster Coordination in the Capital Region

A Report to the Regional Emergency Coordinators Commission on Regional Disaster Coordination Models

March 31, 2007

1. Introduction

In November, 2006, the Regional Emergency Coordinators Commission (RECC) of the Capital Regional District initiated a review of possible models for coordinating response efforts in a major region-wide disaster. The RECC is concerned that individual municipal emergency preparedness alone would prove inadequate to meet the demands of a regional disaster, even with mutual aid agreements in place.

British Columbia's Capital Region, with nearly 360,000 residents, faces the prospect of a range of natural and technological disasters.

Response to a significant disaster will likely demand coordination among 17 jurisdictions in the region: 13 municipalities, 3 electoral areas, and the Capital Regional District. Other organizations would also take emergency actions, including First Nations, provincial ministries, federal agencies, and a host of non-government organizations and businesses.

While individual emergency plans are in place, there is no overall plan for coordinating regional information, resources, or operations among the response organizations. If the region experienced the type of disaster seen elsewhere in North America, local emergency organizations would face challenges at a number of levels.

Possible Regional Disasters

This report considers major threats to several municipalities or electoral areas concurrently, or the entire region. Examples include:

- **Severe storm** involving extreme rainfall, snow, ice, and/or winds, such as the 1996 snowstorm and Typhoon Freda in 1962
- **Power outage** during cold weather, such as the North American Ice Storm of 1998
- **Wildfire** affecting urban areas, such as the Barriere and Kelowna fires of 2003
- **Marine oil spill**, such as the Nestucca barge oil spill off Vancouver Island in 1988
- **Earthquake** with subsequent fires, interruption of water and power supplies, such as in California in 1989 and 1994
- **Pandemic influenza**, such as the Spanish Influenza effects in the region in 1918

Lack of regional coordination can lead to:

- Conflicting information about damage and delayed response decisions
- Intense competition for limited local and out-of-region resources
- Contradictory public messages that can lead to confusion and frustration.
- Mis-timed and uncoordinated response operations that could impair public safety.

The results could be catastrophic. As earthquakes, snow storms, hurricanes, and wildfires in other regions have repeatedly demonstrated, serious and long-term impacts can materialize when multiple jurisdictions fail to collaborate in regional response.

1.1 Why Regional Coordination is Important

There are good arguments for developing a collective vision of regional coordination before disaster strikes. First, the Capital Region is heavily inter-dependent, both socially and economically. Residents cross municipal borders daily to work, learn and play throughout region. Municipal staff members employed in one jurisdiction may live in another. Tourism in some communities depends on transportation in others. Regional food, water, power, transportation and communications rely on critical infrastructure shared by all.

Second, residents and businesses throughout the region share exposure to natural hazards. This means that many events will impact the entire region at the same time. As an island settlement, the Capital Region faces the prospect of isolation from outside assistance for long periods.

A third reason for regional coordination concedes that, in addition to local authorities, a number of organizations play fundamental roles in disasters. For example, response plans are in place for the Salvation Army, Canadian Red Cross, University of Victoria, the Vancouver Island Health Authority, Victoria Harbour Authority, and Canadian Forces. Four School Boards in the region bear corporate responsibility for managing emergencies at nearly 100 public schools; dozens of private schools have similar duties.

While these and many other organizations may be prepared, there is a need to coordinate their response efforts for all to be effective. For example, while all municipalities and the Capital Regional District have legislated responsibilities to warn citizens of an impending threat, a common and timely regional warning message would minimize public confusion.

A “clearinghouse” approach to information about an emergency and resources available to deal with a disaster would enable the multiple agencies and organizations to make decisions on their own behalf and for the good of the region. Refer to Figure 1 for a list of sample resources.

Figure 1. Emergency Resources

“Resources” is an inclusive term that refers to a wide range of human and material support in an emergency. Major resource categories include:

People

- Fire suppression teams
- Search and rescue teams
- Construction and public works crews
- Humanitarian support teams
- Individual volunteers

Facilities

- Buildings for mass shelter
- Open space for debris disposal
- Staging areas

Equipment

- Fire apparatus
- Sandbag filling machines
- Heavy equipment
- Generators
- Personal protective equipment

Materials

- Construction materials
- Tarps
- Sandbags and sand
- Oil absorbents

Supplies

- Food
- Water
- Prescription medications
- Emergency medical supplies

In short, many organizations would rise to meet the challenge of a major disaster in the Capital Region. Success, however, depends in important ways on the coordination of these response efforts and the information they rely on.

1.2 Study Methods and Approach

With the importance of regional disaster coordination in mind, the Regional Emergency Coordinators Commission adopted the following core objectives for the research effort:

- To understand the issues and options related to coordinated disaster response during region-wide disasters
- To explore coordination models in place elsewhere, and to recommend a model for consideration within the Capital Region
- To develop a plan for implementing the recommended model, including estimates of associated costs

Research and model development portions of the project were completed between November, 2006, and March, 2007. Tasks included:

1. Develop research plan
2. Research current coordination model
3. Research models used elsewhere
4. Evaluate coordination models
5. Develop models, prepare Draft Report
6. Prepare Final Report for approval

Research began with a series of interviews with emergency coordinators in local, regional, and provincial agencies to illuminate issues and requirements of regional collaboration. The consultant met with representatives of the Provincial Emergency Program to ascertain their views on the current regional response system and expectations for a successful regional model.

Interviews and research continued with an examination of representative systems in other regions of the world, specifically elsewhere in British Columbia and in the United States. The project team and the RECC Steering Committee sought the experience of others who have developed and tested regional models to identify successful elements.

As in other regions of the province, the Capital Region is subject to a wide range of hazards, and would call upon a collaborate effort of all local governments, service organizations and businesses in disaster response. Figure 2 lists the models and systems consulted in the course of the research.

Figure 2. Models in Other Regions

In British Columbia

- Central Okanagan Regional District
- Columbia Shuswap Regional District
- Cowichan Valley Regional District
- Greater Vancouver Regional District
- North Shore Emergency Management Office
- Regional District of Nanaimo
- Thompson-Nicola Regional District

Elsewhere in Canada

- City of Ottawa, Ontario

In United States

- California Standardized Emergency Management System (SEMS)
- King County, Washington
- Marin County, California
- Ohio State Emergency Management
- Polk County, Florida
- San Diego County, California
- US Federal National Incident Management System (NIMS)

Elsewhere in the World

- Wellington Region, New Zealand

Each region and system was examined for the core principles and organizational features that constitute “best practices” among governments applying regional disaster coordination. The project further called for development of a favourable model, with the specific needs and environment of the Capital Region in mind.

This project report was developed under the guidance of the Regional Emergency Coordinators Commission Regional Model Steering Committee.

2. Current Structure, Issues and Needs

Interviews with local authority representatives highlighted the challenges with coordinating disaster response in the Capital Region under the existing system. This section explores the crucial observations and implications with reference to fundamental requirements for a model.

2.1 Existing Response Structure

Emergency Program Act

British Columbia's *Emergency Program Act* defines the expectations for government management of emergencies and disasters at three levels: 1) Municipal, 2) Regional District, and 3) Provincial. The Act requires certain actions by and offers special powers to "local authorities," defined as:

- For a municipality, the municipal council
- For an electoral area in a regional district, the board of the regional district

Since 1993, the Act has required municipal governments to prepare plans for emergency response within their respective jurisdictions.

To implement recommendations of the Filmon Report that followed the devastating wildfires of 2003 in BC, the province revised the Act in May of 2004 to require each regional district board to ensure that local emergency plans exist for the electoral areas (unincorporated areas) within their boundaries.

While the *Emergency Program Act* requires all local authorities to prepare plans for emergencies, there is no guidance on how contiguous jurisdictions and organizations in one region should coordinate their response efforts.

Under Section 5 (b) of the Act, the Minister of Public Safety and Solicitor General may order several local authorities to prepare integrated plans and programs to deal with emergencies, but such a Ministerial Order has not been issued within the Capital Region. Section 2(3) of the *Local Authority Management Regulation* requires local authorities to coordinate emergency planning with neighbouring jurisdictions.

The Act is otherwise silent on the need for cooperative regional disaster planning.

BCERMS

In 2000, the Inter-Agency Emergency Preparedness Council (IEPC) adopted a single emergency management system to standardize the terms and concepts in use throughout the province. The British Columbia Emergency Response Management System (BCERMS) sets out a common vision for the relationships among four response levels: 1) Site, 2) Site Support, 3) Provincial Regional Coordination (e.g., PEP's Vancouver Island Region), and 4) Provincial Central Coordination.

All provincial government ministries, agencies and government corporations identified in Schedules 1 and 2 of the *Emergency Program Management Regulation* are required to apply the standards set out in BCERMS.¹ Adoption of BCERMS is currently voluntary for regional districts, municipalities, and businesses.

The BCERMS standard addresses multi-agency coordination for the site level, advising on the establishment of Unified Command and Unified

¹ IEPC, BCERMS Overview, 2000

Area Command, where more than one jurisdiction shares responsibility for tactical command. BCERMS does not, however, provide guidance on coordination at a regional level, although the California Standardized Emergency Management System, from which BCERMS drew principles, identifies such a level.²

While nothing in BCERMS precludes local authorities from working together to coordinate plans, it lacks specific guidance on how to accomplish this critical objective.

The Provincial Emergency Program (PEP) encourages all local authorities to integrate their emergency plans with neighbouring jurisdictions, including First Nations. PEP regional managers regularly work with regional committees, such as the following examples:

- Greater Vancouver Regional Emergency Planning Committee (REPC)
- Joint Emergency Liaison Council (JELC) of the Greater Vancouver Regional District
- Mid-Island Emergency Coordinators Committee (Vancouver Island)
- Regional Emergency Coordinators Commission (RECC) of the Capital Regional District.

Since 2004, the province has offered grants through the Union of British Columbia Municipalities to encourage local authorities to undertake regional planning. Funded through the Ministry of Public Safety and Solicitor General, these Integrated Emergency Planning Grants followed recommendations from the Filmon Report. Some local authorities in the Capital Region have applied for these grants. The grant budget for 2006 totalled about \$800,000.³

² California Standardized Emergency Management System (SEMS) Guidelines

³ Union of BC Municipalities

Local Authorities in the Capital Region

The Capital Region contains 17 local government jurisdictions with responsibility for emergency management, as listed in Figure 3.

Figure 3. Local Jurisdictions in Capital Region

Municipalities

- District of Central Saanich
- City of Colwood
- Township of Esquimalt
- District of Highlands
- District of Langford
- District of Metchosin
- District of North Saanich
- District of Oak Bay
- District of Saanich
- Town of Sidney
- District of Sooke
- City of Victoria
- Town of View Royal

Regional District

- Capital Regional District
 - Salt Spring Island, Electoral Area F
 - Southern Gulf Islands, Electoral Area G
 - Juan de Fuca, Electoral Area H

Each municipality and electoral area has an active emergency management program, and participates with others in enhancing preparedness within the Capital Region.

The Capital Regional District (CRD) is responsible for ensuring each electoral area has a local emergency plan. As a regional service provider for water, solid waste, and liquid waste systems, the CRD also contributes to overall regional response through the protection and emergency repair of these critical infrastructures.

Other Stakeholders

In addition to the local authorities listed above, the Capital Region is home to a number of provincial and federal agencies, as well as other government, quasi-government, and private organizations. Many may activate emergency facilities in a disaster to fill public safety or humanitarian roles, as listed in Figure 4.

Figure 4. Potential Emergency Facilities in a Capital Region Disaster

BC Ambulance Service	1
BC Coroner Service	1
BC Ferries	1
BC Hydro	1
BC Transit	1
Colleges and Universities	3
Canadian Forces Joint Operations Centre	1
Canadian Red Cross	1
CRD Corporate	1
CRD Electoral Areas	3
CRD Engineering	1
CRD Water Services	1
Greater Victoria Harbour Authority	1
Joint Rescue Coordination Centre	1
Municipalities	13
Parks Canada Agency	1
Provincial Regional Emergency Operations Centre	1
Public Safety Canada	1
Salvation Army	1
School Boards	4
Telus	1
Terasen Gas	1
Vancouver Island Health Authority	1
Victoria Airport Authority	1
Total	43

Figure 4 offers examples only, and does not list the many private organizations and businesses with a stake in disaster coordination, such as Thrifty Foods, Coast Capital Savings, and other organizations that have been long-time partners in regional emergency preparedness.

Lessons from others suggest six issues are important in selecting a regional disaster model:

1. Regional Situation Overview
2. Regional Management of Resources
3. Coordination of Operations
4. Coordinated Public Information
5. Multi-Agency Coordination
6. Operational Efficiency

The following sections discuss each issue in light of Capital Region requirements.

2.2 Regional Situation Overview

Importance of a Regional Overview

The ability to collect regional damage and response information, to collate and evaluate data, and to make significant findings available to response organizations throughout the region, is a vital quality of disaster coordination – one on which all other features rely.

Timely information on damage, response actions underway, and future threats allows organizations at all levels make effective decisions about their own involvement. Access to regional information requires three elements:

- **Collection** – The region as a whole must be able to gather relevant information at one location. Information includes the hazard or threat, observations on any damage, injuries, illnesses, or other effects, and summaries of actions underway and planned.
- **Analysis** – Successful coordination requires the ability to organize collected information and to generate a regional overview. Some sense of the impacted and vulnerable areas of the region is needed to set priorities for response actions and resource allocation.

-
- **Dissemination** – Regional coordination also means providing information summaries to a wide range of stakeholders in a timely manner. Not only do local responders and other organizations depend on region-wide overviews to allocate resources, it is important to keep the public and elected officials at all government levels informed.

Following the October 2003 wildfires in San Diego County, during which 16 lives were lost, a County Grand Jury concluded that the flow of information into and out of the county (region) operations centre was critical to the actions of others, including members of the public.⁴

Provisions Elsewhere

Several standards for disaster response systems, such as BCERMS and California's Standardized Emergency Management System (SEMS), address procedures for information flow during an emergency.

California has developed a dedicated electronic system to help move emergency information among five levels: 1) Field operations, 2) Municipal EOC, 3) County EOC, 4) State Regional EOC, and 5) State EOC.

The CRD has geographic information system (GIS) capability and recently partnered with the Vancouver Island Health Authority to develop an emergency management application to support regional response during emergencies.

Issues in the Capital Region

Although BCERMS calls for regular reports from the site of an emergency to a local authority Emergency Operations Centre, there have been problems with the free flow of information in

⁴ San Diego County EOC: Seeking Better Communication

past events. Some first responders in the Capital Region are neither trained in nor required to apply the principles of BCERMS, a fact that could impede the flow of information of regional importance.

Moreover, the region currently lacks a single organization capable of serving as a central point for the collection, analysis, and dissemination of regional disaster information. There is no common electronic system for sharing emergency information among local stakeholders.⁵

Needs in the Capital Region

A successful model for regional coordination would support a reliable flow of damage and response information from the field to a central location for assessment and dissemination.

2.3 Regional Management of Resources

Importance of Resource Management

Response to regional disasters can demand resources on a massive scale. No jurisdiction maintains the personnel, equipment, or supplies needed for all magnitudes of emergency. It is common practice for organizations, such as municipalities, to share resources in time of need through mutual aid compacts.

Major disasters, however, can demand resources that well surpass local mutual aid capabilities. Following an earthquake, for example, demand may exceed regional supply for potable water, food, power generators, building inspectors, search and rescue teams, heavy equipment, and many other resources.

⁵ The BC government recently selected E-Team as the software application for incident management among provincial agencies.

Managing response resources on a regional scale requires three capabilities:

- **Needs Identification** – Resource coordination depends on the receipt of requests for specific assistance. In most cases, an Incident Commander at the site of an emergency will request the required resources from a site support organization. Such requests in the Capital Region must be communicated to a common central point to facilitate assistance.
- **Resource Assessment** – Regional cooperation depends in part on an understanding of resources within the region, and if they are assigned, available, or out-of-service at the time of request. This requirement suggests a single-source system that can record a wide range of resources and contact information.
- **Resource Allocation** – Other emergencies have shown that problems may ensue if resources assigned to first-come requests are not available for later, perhaps more important demands. A system is needed to evaluate and set priorities, and to make decisions for the good of the whole region.

The equitable allocation of resources within a region implies that resource needs assessment and allocation occurs at a single centre.

Provisions Elsewhere

In recognizing the importance of managing resources, most regions have mutual aid agreements. King County, Washington, has developed a regional plan that facilitates agreements for mutual aid among a wide range of organizations, including First Nations, schools, hospitals, non-government organizations, businesses, and news media at a county EOC.⁶

⁶ King County Regional Disaster Plan

Issues in the Capital Region

In 1999, the 13 municipalities within the Capital Region adopted a mutual aid agreement that allows any municipality to request assistance from one or more others.⁷ However, the agreement contains no guidance on who may decide on priorities for allocating limited resources or how to do so. Resources throughout the region have not been identified or typed.⁸

The Capital Regional District has negotiated a number of inter-agency agreements, primarily for fire protection services with fire districts, Parks Canada, and BC Ministry of Forests and Range.

PEP's Vancouver Island Provincial Regional Emergency Operations Centre (PREOC) allocates provincial and out-of-area resources, but may be overwhelmed by requests in a major disaster that affects many Vancouver Island jurisdictions. Capital Region resource requests may be delayed as a result.

There are no protocols or decision-making structures in the region that could support widespread or sustained resource management. As a result, available resources may not be assigned where they are needed most.

Needs in the Capital Region

A unified coordination structure is needed to prioritize incidents and critical resources. All organizations in the Capital Region would benefit from ways to access available local and regional resources before requesting personnel, equipment, and supplies through the PREOC.

⁷ CRD has not signed the agreement. The 2003 Filmon Report says, "Plans must include mandatory mutual aid agreements among municipal and regional districts."

⁸ The Vancouver Island Health Authority is currently identifying resources in the Capital Region. "Typing" resources means sorting into easily identified categories.

2.4 Regional Coordination of Operations

Importance of Coordinating Operations

Successful regional disaster response relies on mechanisms for making coordinated decisions. Measures are needed to ensure local authorities and stakeholders take actions of mutual support and do not work at cross purposes.

For example, when Hurricane Ivan threatened the State of Louisiana in 2004, massive traffic jams resulted from uncoordinated evacuation announcements in several municipalities.⁹ During the snowstorm that hit the Capital Region in 1996, the road transportation system was impeded in part by a failure to coordinate municipal snow clearing activities.¹⁰

Examples of the need to coordinate response operations on a regional basis include:

- Transportation – Clearing debris and repairing roadways to support the regional network following an earthquake.
- Utility Repair – Setting priorities and timing for the repair of damaged power transmission and water delivery lines.
- Evacuations – Staged evacuations for affected communities to reduce traffic congestion and the potential for grid-lock.
- Mass Care – Coordinating Emergency Social Service reception centres in unaffected communities to ensure evacuees have places to go.
- Family Reunification – Helping regional residents find missing family members.

⁹ Cooper and Block, 2006

¹⁰ Provincial Emergency Program, 1997

Provisions Elsewhere

Elsewhere in the province, several regional districts have joined with electoral areas and municipalities to coordinate response operations in shared Emergency Operations Centers. Examples include:

- Central Okanagan Regional District
- Columbia Shuswap Regional District
- Cowichan Valley Regional District
- Regional District of Nanaimo
- Thompson-Nicola Regional District

The States of California and Florida require county-level EOC's to coordinate both response and recovery decisions among municipalities, First Nations, and community organizations.

Issues in the Capital Region

Through the efforts of the RECC and others, municipalities have adopted a coordinated snow removal plan for Capital Region roadways. The RECC has also developed Disaster Response Routes in the region, and is currently preparing plans for hazardous material response.

There is, however, no single facility where emergency coordinators can gather during a disaster to collaborate on regional response.

There is no organization or authority for municipalities and the CRD to coordinate regional response strategies. At present, there is no agreement on who would provide the policy direction needed to coordinate operations.

Needs in the Capital Region

The Capital Region requires a mechanism for coordinating specific operations among local authorities and other stakeholders, such as evacuations and utility repairs.

2.5 Coordinated Public Information

Importance of Public Information

The public need accurate and timely information during an emergency to allow residents and business owners to help themselves and others in a disaster. In some events, delivering public safety messages is the only feasible way to save lives and reduce suffering.

Examples of safety messages include reporting on the expected path of a dangerous wildfire, contamination of drinking water, the need for evacuation by specific routes, and advice on how to heat homes safely when the power is out.

Public information is better accomplished collectively and regionally than by individual local authorities. A regional approach allows the use of common information sources, ready access to updates, and preparation of aligned messages. Adopting uniform delivery mechanisms ensures coordination of public message timing, and allows all governments to promote confidence by sharing one consistent message.

Some public information is required by law. Section 2(3e) of the *Local Authority Emergency Management Regulation* requires all local authorities to “establish procedures by which those persons who may be harmed or who may suffer loss are notified of an emergency or impending disaster.” Local authorities can meet these requirements with fewer staff if messages are coordinated within the region.

One of the most effective methods of public information is the Call Centre, where call takers (paid or volunteer) make information available to the public through telephones.

Provisions Elsewhere

San Diego County’s “Major Incident Alert System,” developed by a joint government / media team, quickly notifies all media organizations in the region about emergency situations on a 24-hour basis.

Like many counties in the USA, Collier County Florida operates a Joint Information Center under the information management function in their Emergency Operations Center.

A recent Canadian Radio-television and Telecommunications Commission decision allows the use of 9-1-1 information in community notification systems that deliver emergency telephone messages to residents in specific areas.

Issues in the Capital Region

The most current information about an emergency situation can often best be delivered through local broadcast radio stations, which are regional by design.

No single organization has been identified to disseminate damage and response information for the entire Capital Region. News organizations would have to consult multiple sources to keep the public informed, even for essential safety messages. This could result in unsubstantiated reports and conflicting messages. There is no coordinated media communications plan, and this could result in public dissatisfaction and dangerous confusion in some major events.

Needs in the Capital Region

All stakeholders would benefit from a region-wide plan to coordinate public information requirements, including direct collaboration with local news organizations.

2.6 Multi-Agency Coordination

Importance of Multi-Agency Coordination

Multi-agency coordination refers to the participation of appropriate organizations in a shared regional response effort. Agencies may represent federal, provincial, regional district and municipal governments, First Nations, health organizations, special districts, utilities, community based organizations, humanitarian service agencies, private businesses, and others.

To support local authority responders, a number of other entities can bring much needed assistance to a disaster, including a willingness to take action for the greater community good.

Many of these organizations will take action whether or not they receive accurate information. Their mandates demand some form of response. If they act in isolation, the results can be unpredictable, frustrating, and perhaps dangerous, but failing to act is also unacceptable.

If invited to coordinate with other organizations in the region, most agencies are able to serve in some useful role, such as to:

- Share Information – Provide observations on a disaster and its effects on the community, and facilitating communication.
- Exchange Resources – Offer resources for the use of others under formal or informal arrangements.
- Coordinate Actions – Help to set priorities for their respective operations and resources, and developing strategies for resolving multi-agency response challenges.

A wide range of regional organizations may provide representatives to a site support EOC.

Provisions Elsewhere

BCERMS provides for multi-agency coordination at the site level through the use of Unified Command, but lacks guidance on extending this principle to site support levels. The Provincial Emergency Program strongly encourages the use of integrated Emergency Operations Centres during regional emergencies.

King County, Washington, has based their Regional Disaster Plan on multi-agency coordination. More than 130 organizations have signed an agreement to assist one another when disaster hits their region.¹¹

California requires all local governments to engage in multi-agency coordination in order to qualify for state post-incident funding.¹² Likewise, the US National Incident Management System requires local governments to practice multi-agency coordination to be eligible for federal planning grants.

Issues in the Capital Region

There is no Regional Disaster Plan at present that contains policies or protocols for multi-agency coordination. Without a mechanism for collaboration, specifically the sharing of disaster information and direction, many agencies will respond independently (e.g., freelancing).

Needs in the Capital Region

The region requires a widely-accepted and effective method for coordinating multi-agency response during an emergency or disaster.

¹¹ The 9/11 Commission recognized the King County Regional Disaster Response Plan as a “best practice” for integrating the private business sector into community-wide disaster planning.

¹² Title 19. Public Safety Division 2. Office of Emergency Services, California

2.7 Operational Efficiency

Importance of Efficiency

As the final element to consider in selecting a regional disaster coordination model, this section speaks to the need for efficiencies in development, operation, and maintenance of a regional system. Some models, while equally capable of satisfying other objectives, may demand more in staff commitments, implementation costs, and long-term upkeep.

Operational efficiency addresses three main features:

- **Staff Time** – A successful regional coordination model would account for the staffing and resource challenges of many small jurisdictions within one region during an emergency. Staff time is largely a function of the number of Emergency Operation Centres concurrently active in the region.
- **Costs** – The number of EOC's in the region also influences collective costs for all jurisdictions. Each EOC requires a minimum of building space, furnishings, office supplies and equipment, including computers and communications gear. Models that demand fewer EOC's and support facilities will naturally cost less than others.
- **Risk** – Some models offer more risk in terms of overdependence on a single point of failure. If success of regional coordination were to rely on a single facility, such as a regional emergency centre, the risk of failure would be higher than if two or more equally capable facilities were available.

If information exchange and communication among a number of facilities were to hinge on the performance of a single computer network, risks would be greater than in a model that employs redundant communications equipment and systems.

Provisions Elsewhere

As noted earlier, a number of municipalities and regional districts throughout BC have joined forces to share EOC personnel and facilities. The Cowichan Valley Regional District, for example, has an integrated plan with five municipalities and First Nations within the region to coordinate emergency response through one joint EOC.

Regardless of the location of the emergency, EOC staffing can draw from any of the participating organizations. The North Shore municipalities of Vancouver share one EOC and collectively provide the staff required, depending on the nature of the emergency at hand.

Issues in the Capital Region

In a major disaster, operating all 17 existing local government EOC's in the Capital Region would require a trained and available force of about 600 staff members.¹³

Needs in the Capital Region

The successful model would be most efficient, all things considered, in reducing staff time requirements, costs and risks while facilitating regional information, resource management, regional operations, public information, and multi-agency coordination.

¹³ Assumptions: A) Municipalities, electoral areas, and the CRD would activate 17 separate EOC's, B) A minimum of 12 trained persons would be needed to operate each EOC at any given time, and C) Three shift changes would be needed for 24-7 or long-term operations. (17 x 12 x 3 = 612)

3. Options Considered

3.1 Model Evaluation Criteria

One purpose of this study is to distinguish and compare the various disaster coordination models available for application in the Capital Region. Adapting the six issues identified in Section 2 yields the following core criteria for comparison:

- A. Provide Regional Situation Overview – A successful model for regional disaster coordination would facilitate the collection of essential information to provide a regional overview.
- B. Assist Regional Management of Resources – The selected model must be effective in maximizing access to resources available to organizations in the region and in the equitable allocation of critical resources.
- C. Coordinate Operations – All model options should be evaluated for their ability to coordinate operations among local authorities and stakeholders.
- D. Coordinate Public Information – The successful model would permit the timely coordination of public information, including collaboration with local news organizations.
- E. Support Multi-Agency Coordination – An effective model would help organizations throughout the region share resources, information, and response strategies.
- F. Promote Operational Efficiency – The favoured model would minimize staff time requirements, costs, and risks while meeting the other core criteria.

These are the criteria used to evaluate model options for the Capital Region, as summarized in the following section.

3.2 Model Options

Appendix A details eight distinct options for regional cooperation in a disaster.

Options Considered

1. Local EOC's to PREOC
2. Sub-Regions to PREOC
3. Regional EOC to PREOC
4. Local EOC's to Sub-Region EOC's to PREOC
5. Local EOC's to Regional EOC to PREOC
6. Sub-Region EOC's to REOC to PREOC
7. Local EOC's to Enhanced PREOC
8. Sub-Region EOC's to Enhanced PREOC

3.3 Evaluation of Models

Figure 5 presents a graphic comparison of the eight model options considered in this review, and indicates gross scores against the six criteria identified as key to successful regional disaster response coordination.

It is worth noting that each option has dozens of sub-alternatives. The reviewers attempted to optimize each option by considering the best combination of sub-alternatives in each case.

Figure 5. Summary of Model Options and Evaluation

Criteria Applied	A. Provide Regional Situation Overview	B. Assist Resource Management	C. Coordinate Operations	D. Coordinate Public Information	E. Support Multi-Agency Coordination	F. Promote Operational Efficiency
Model Options Considered						
1. Local EOC's to PREOC	-	-	-	-	-	-
2. Sub-Regions to PREOC	-	-	-	○	○	○
3. Regional EOC to PREOC	+	+	+	+	+	-
4. Local EOC's to Sub-Region EOC's to PREOC	-	○	○	○	-	-
5. Local EOC's to Regional EOC to PREOC	+	+	+	+	+	-
6. Sub-Region EOC's to REOC to PREOC	+	+	+	+	+	○
7. Local EOC's to Enhanced PREOC	+	○	○	○	-	-
8. Sub-Region EOC's to Enhanced PREOC	+	+	○	○	○	-

Legend: + = Positive features overall - = Negative features overall ○ = Positive, negative features balance

The status quo (Option 1) represents the worst option. Without a mechanism for resolving regional needs during a disaster, local authorities would lack a regional overview of the event, compete for limited resources, have no means of coordinating operational decisions, and suffer a frustrating and perhaps dangerously slow decision process. Not only is the current approach to regional coordination ineffective in many ways, it would be collectively costly to implement and maintain.

Overall, three of the eight options considered offer substantial benefits. Option 3 – Regional EOC to PREOC, offers considerable advantages in several areas, but carries significant risks. Options 5 and 6 offer similar benefits, with Option 6 requiring fewer EOC facilities and less cost and risk overall.

Option 6 is the favoured model.

In Option 6, the 17 local jurisdictions in the region would join resources to develop and staff a single Regional Emergency Operations Centre (REOC). The REOC would serve as a clearinghouse for information, resource requests, and strategic operations of a regional nature when the situation demands. The REOC would include service agencies and other regional stakeholders to access disaster information, share resources, and collaborate on strategies. The CRD could serve corporate needs, such as repairs to water and sewer systems.

In addition to a Regional EOC, municipalities and electoral areas could join with others in Sub-Region Emergency Operations Centres. This would reduce the requirement for 17 separate EOC's. Sub-Region EOC's could serve as backup facilities for each other and for the REOC. Option 6 is examined in more detail in the next section.

4. Recommended Model for Regional Coordination

The Regional Emergency Coordinators Commission requested the identification of a favoured model for consideration at the current stage of investigation. This section details the structure recommended for disaster coordination in the Capital Region.

4.1 Model Description

As outlined in the previous section, the proposed model offers two significant opportunities for regional coordination: 1) One Regional Emergency Operations Centre, and 2) Three optional Sub-Region Emergency Operations Centres. Each feature is described below.

Regional Emergency Operations Centre

In the suggested model, trained staff members from several organizations in the Capital Region would gather at a Regional Emergency Operations Centre (REOC), when needed, to perform the essential functions of information sharing, resource management, and response coordination.¹⁴ In effect, the REOC adds a layer of coordination to the existing BCERMS levels.

The facility serving as the Regional EOC would provide the working space, furnishings, and equipment needed to allow successful conduct of all activated functions.

¹⁴ Because the REOC would coordinate information, resources and operations, it could be called the Regional Emergency Coordination Centre. However, the acronym for this facility, RECC, could be easily confused with the Regional Emergency Coordinators Commission. Also, it is commonly understood in BC and elsewhere that EOC's do not command tactical resources. For the purposes of this document, REOC will be used with the understanding that command occurs at the site level.

The REOC provides the primary structure for coordination among the region's local authorities, and assisting and cooperating agencies. Staff for the REOC may include representatives from:

- Municipalities, electoral areas and First Nations within the region, such as discipline-specific functions, fire, police, and ESS from affected and unaffected jurisdictions
- Capital Regional District, including emergency response to water, sewer, and other regional services
- Humanitarian service providers, community organizations, and business representatives

Staff members from any municipality or electoral area assigned to the REOC would be authorized to make decisions on behalf of the public interest as a whole, without regard for jurisdiction. This may include setting priorities for resource deployment, where needed to save lives, reduce human suffering, and protect public property and the environment.

While it is feasible for the CRD to operate a separate EOC, it would be more practical to integrate the coordination of water, sewer, solid waste, and other shared regional services with other utilities within the REOC.¹⁵

A Regional EOC would be structured according to the standards set out in BCERMS, with the five functions of Management, Operations, Planning, Logistics, and Finance/Administration. Figure 6 illustrates the elements of an REOC that would serve regional needs.

¹⁵ Integrating CRD response coordination within the REOC would not require the CRD to be the lead agency.

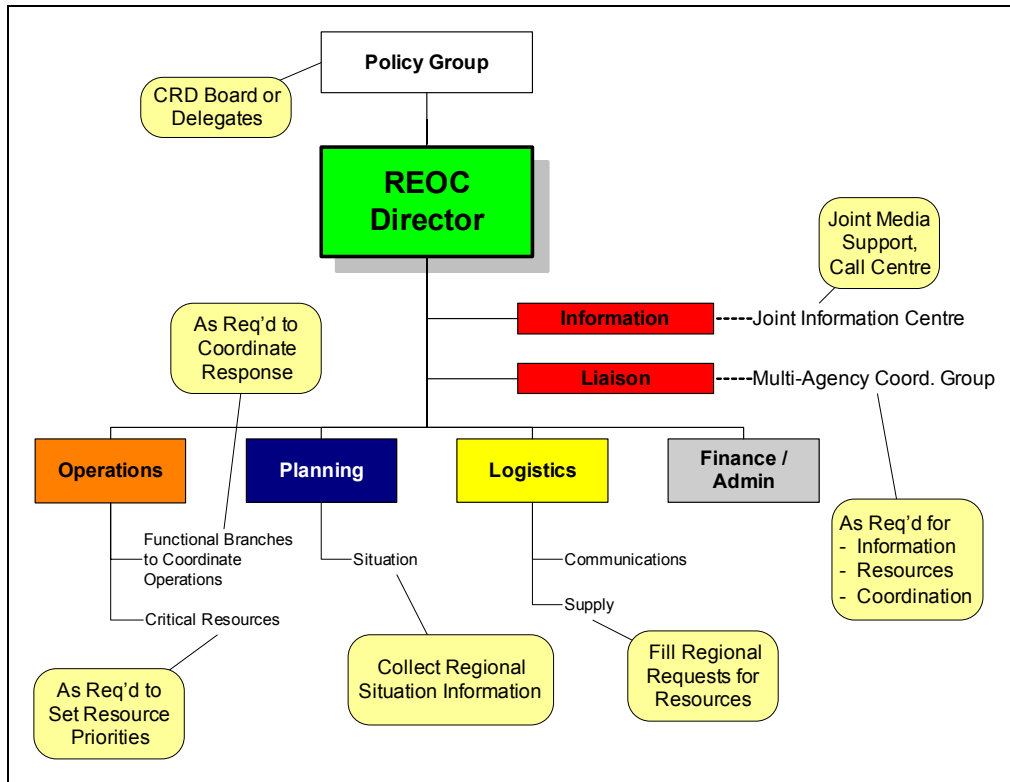


Figure 6. Elements of an REOC

Policy Group – The CRD Board of Directors, or delegates, would serve as the single Policy Group for the Regional EOC. The Policy Group provides strategic interpretation of existing policies to guide response to emerging situations.

Joint Information Centre – An Information Officer would likely establish a Joint Information Centre (JIC) and a Call Centre to serve the public information needs of affected organizations.

Multi-Agency Coordination Group – A Liaison Officer would call and chair meetings of a specific Multi-Agency Coordination Group to:
 1) Exchange information, 2) Share resources, and
 3) Coordinate individual response strategies.

Functional Branches for Coordination – The REOC Operations Section has responsibility for supporting any active EOC’s, as they in turn support Incident Teams or other municipal or electoral area facilities. Operations can be

organized and staffed as necessary to coordinate response operations on a regional level.

Critical Resources Branch –A Critical Resources Branch would specifically allocate available resources according to priority within the region. The Critical Resources Branch would work closely with the Logistics Section and the PREOC.

Situation Unit – The REOC Situation Unit would collect intelligence from EOC’s and assemble a regional overview of the situation. The Planning Section would gather, analyze, and disseminate information about regional damage, response status, current conditions, and any imminent or long-term threats throughout the region.

Supply Unit – The REOC Supply Unit in the Logistics Section would fill requests for resources from the Operations Section, working with the Multi-Agency Coordination Group.

Sub-Region EOC's

In addition to a Regional EOC, several municipalities and electoral areas in a geographic area may choose to join forces in a combined Sub-Region EOC. Separate jurisdictions could work together to coordinate site operations, and still manage their own resources, support site communications, and keep the local public informed.

A Sub-Region EOC would replace individual facilities among member municipalities and electoral areas. The Vancouver North Shore communities exemplify this feature of regional coordination, in which the District of West Vancouver, District of North Vancouver, and City of North Vancouver share one EOC.

The structure of a Sub-Region EOC organization would follow the BCERMS standard, with Management, Operations, Planning, Logistics, and Finance/Administration activated as required.

As with the REOC, staffing each Sub-Region EOC could draw trained personnel from member organizations, including municipalities, electoral areas, First Nations, and partner agencies within the sub-region.

Mayors and electoral area directors from the affected jurisdictions would comprise the Policy Group for each combined Sub-Region EOC. The Policy Group would be empowered to provide direction on issues that only affect the local governments represented in the sub-region.

Figure 7 shows an example of municipalities and electoral areas within three Sub-Regions. **The actual allocation of municipalities and electoral areas to Sub-Region EOC's is subject to future deliberation.**

The following sections explore how the recommended model meets the six criteria identified for a successful regional model.

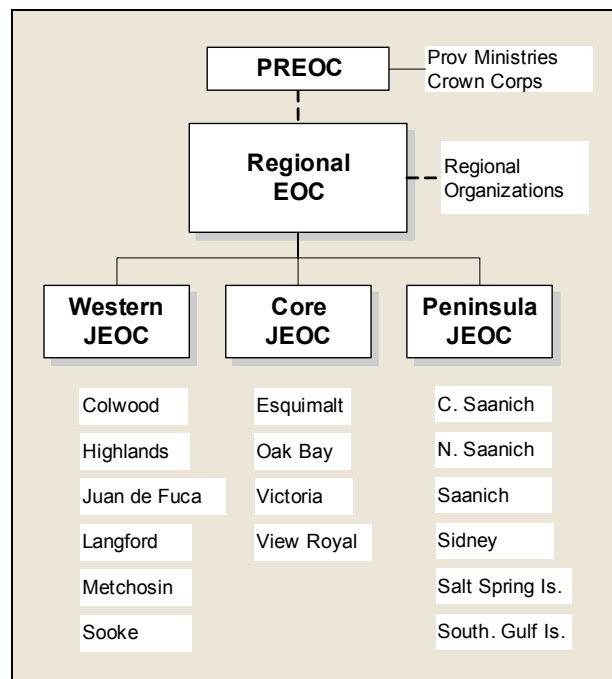


Figure 7. One Example of Sub-Region Allocations

4.2 Roles at the Response Levels

As noted, Option 6 calls for a new layer in BCERMS at a “Regional Area Support Level.” To highlight the purpose of this level, the following list distinguishes the BCERMS layers of interest in the Capital Region:

Site or Field Level (Incident Command Post)

- Command personnel from all levels of government and the private sector to manage response on site.
- Control resources applied to resolve threats to people, property and the environment presented by an emergency incident.

Site Support Level (e.g., Municipal EOC)

- Provide policy guidance to Incident Command Teams at the site of an emergency, as required.
- Manage multiple-agency support to the site level.
- Acquire and deploy additional local resources obtained locally.

Regional Area Support Level (Regional EOC)

- Provide strategic interpretation of existing regional policies to guide response.
- Allocate resources according to priority within the region.
- Relieve site support EOC’s of functions that can be better managed at a regional level, such providing public information through multiple news organizations.
- Coordinate response efforts that require a regional view of opportunities and consequences, e.g., evacuations.

Provincial Regional Support Level (PREOC)

- Coordinate provincial response activities to protect provincial infrastructure.
- Acquire and deploy resources at the request of the regional site support level.
- Manage the assignment of multiple ministry staff to Incident Command Teams or site support locations.

It is important to emphasize that, with this model and with BCERMS, Incident Commanders at the site or field level always retain command and control of tactical resources in an emergency.

4.3 Activating the Regional EOC

The Regional EOC may be activated in two possible ways.

Escalation – An emergency that is confined geographically at first may gradually advance in magnitude and importance. In this scenario, response may begin at the site level, then increase to the point of requiring site support by a municipal or electoral area EOC, and subsequently require a Regional EOC if coordination across a wider area is needed.

Sudden Disaster – With any emergency that limits communications or transportation systems, the REOC activation should be automatic. A pre-designated list of staff members should be authorized accordingly to attend the REOC facility and undertake certain functions.

Activation of the Regional EOC should be the subject of further planning, but may address the authority of specific individuals. For example, authority to activate an REOC may be given to:

- A senior official from any local authority in the region
- A pre-designated REOC Director whenever a local authority activates an Emergency Operations Centre

An essential principle of the REOC should be early and easy activation, even if there is doubt about the need for its services. The situation at hand will dictate the functions and elements to be activated in each case. As a minimum, an active REOC requires only a REOC Director.

To further explore how the recommended model meets the six criteria identified for a successful regional model, refer to Figure 6, presented earlier, and to the sections that follow.

4.4 Agency Staff Allocation

With a new Regional Area Support Level, the proposed model calls for the staffing of the Regional EOC by multiple organizations. Figure 8 suggests an allocation of agency staff among all response levels.

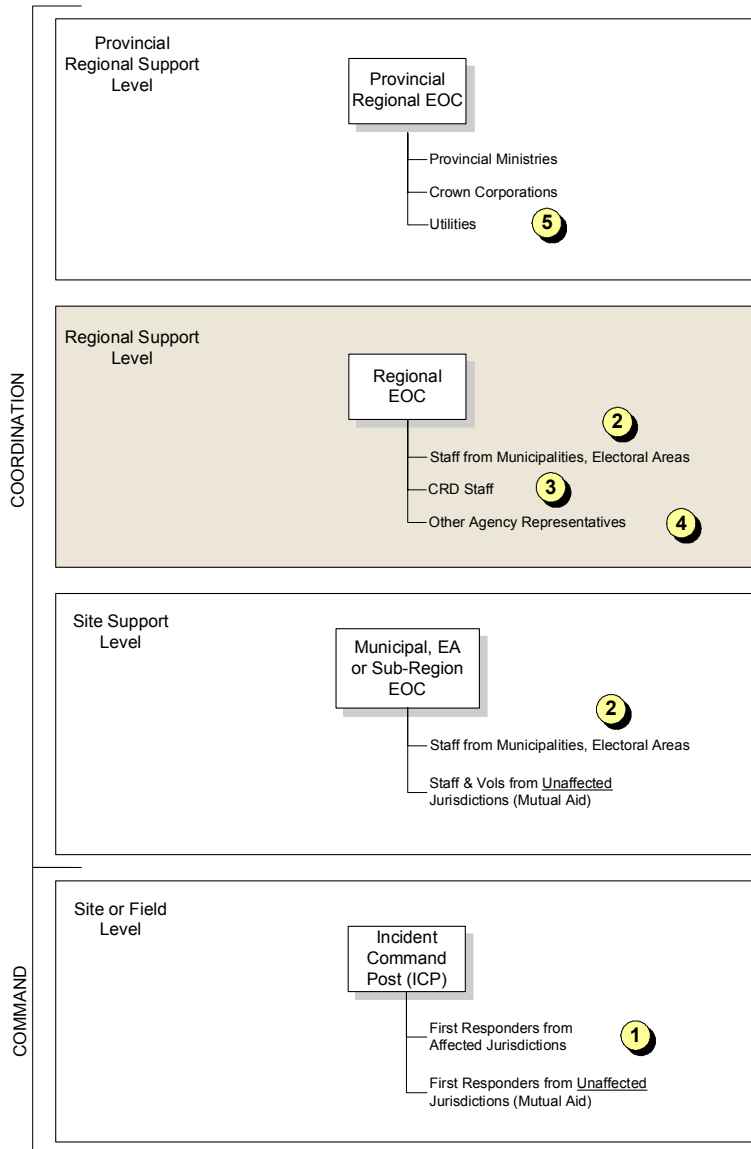


Figure 8. Allocation of Agency Staff Suggested by Model

1 As with all emergencies, **first response agencies** would provide Incident Commanders and would retain command of resources and apply tactical decisions to resolve threats to the public.

2 **Municipalities and electoral areas** in affected areas could activate EOC's to coordinate and support incident teams in the field. Where these jurisdictions agree ahead of time, they could staff and operate a Sub-Region EOC.

3 The **Capital Regional District** would likely allocate staff within the Regional EOC to share response information and decision-making, and to coordinate repair of regional services, such as sewer and water systems. CRD staff could be available for a number of functions, including logistics.

4 **Other agencies**, such as VIHA, Canadian Red Cross, School Boards, and other organizations active in response would be invited to send representatives to the Regional EOC. Some non-government organization staff and volunteer may be made available to other response levels in this model, including the site under the control of an Incident Commander.

5 Representatives from **Crown Corporations**, such as BC Ferries, and some **utilities**, such as Telus, would likely attend the Provincial Regional EOC, depending on the extent of the emergency and scope of response required. The PREOC would also manage coordination efforts by BC ministries.

Overall, the success of the recommended model depends on collaboration among all site, site support, and regional organizations in sharing available staff. This suggests an extension of the Mutual Aid Agreement in the Capital Region to include municipal, electoral area, and CRD support staff for incident management and coordination at all response levels.

4.5 Regional Situation Overview

In the proposed model, there is a clear flow of information from the site and site support levels to the REOC Planning Section and PREOC. Figure 9 highlights the information paths in the proposed model.

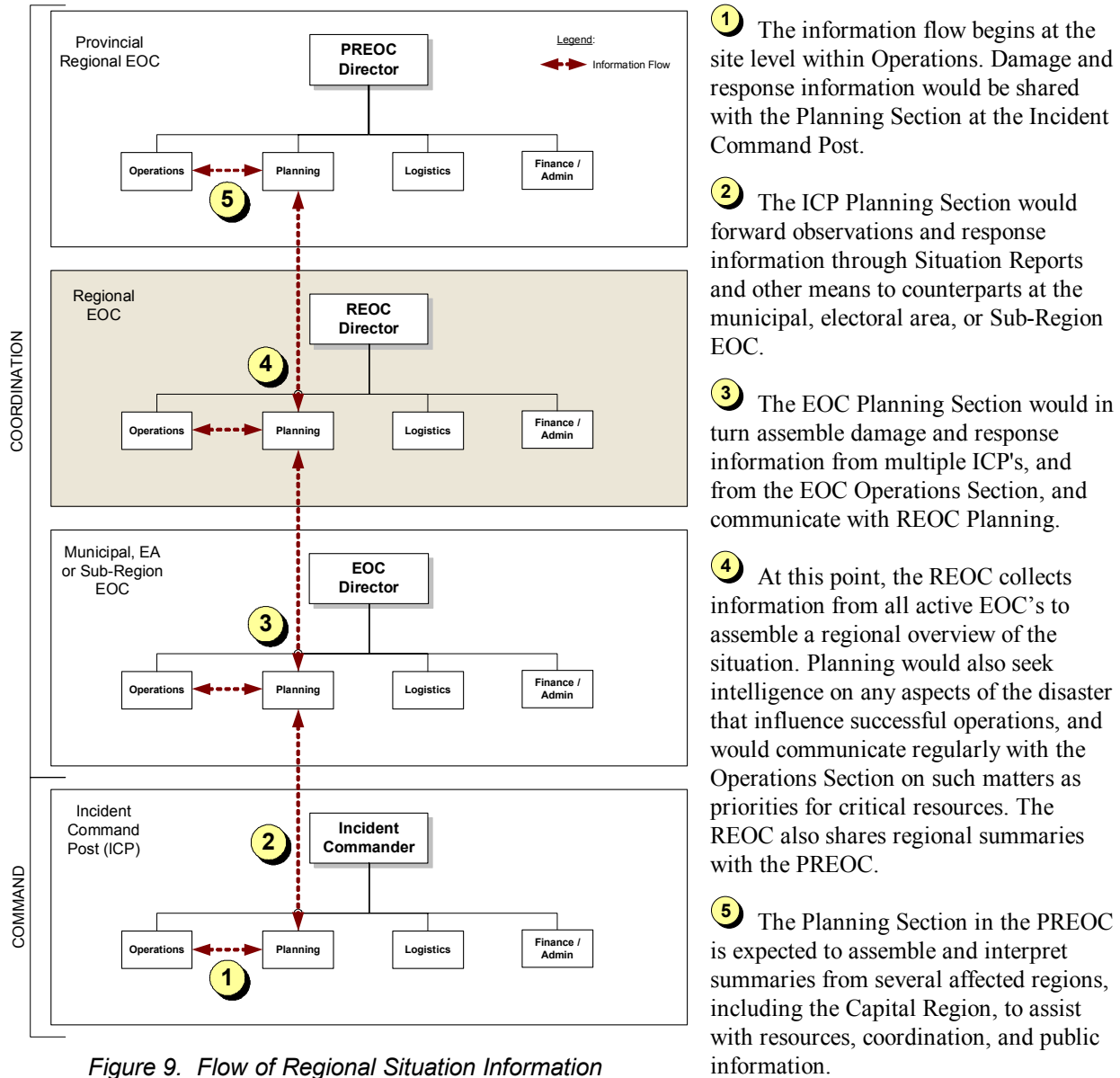


Figure 9. Flow of Regional Situation Information

All organizations active in regional disaster response would benefit by receiving consolidated information useful in decision-making. As a clearinghouse of up-to-date situation summaries, the REOC would relieve other organizations of the requirement to contact multiple agencies within the region. The REOC would also ease the burden for municipal, electoral area, and CRD EOC's of numerous status requests from other organizations. A Regional EOC would provide regular reports and maps on damage throughout the region, such as the condition of critical infrastructure and the implications for collective response.

4.6 Regional Management of Resources

The REOC will coordinate resource requests from individual municipal, EA or Sub-Region EOC's. Figure 10 illustrates the features of the recommended model that are particularly useful in resource management.

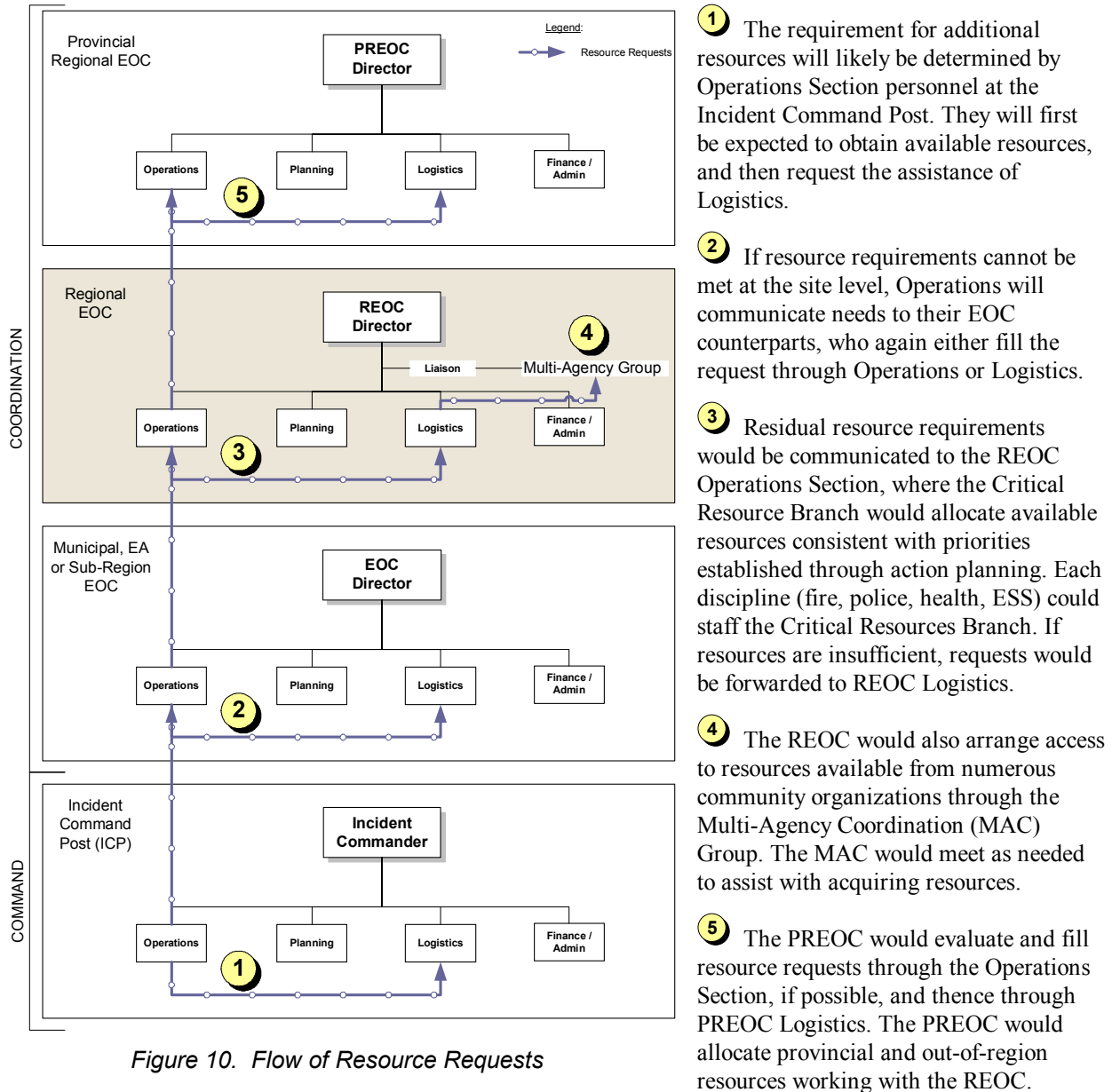


Figure 10. Flow of Resource Requests

With an REOC in place, municipal, electoral area, or Sub-Region EOC's would have one central facility to contact for resources. This “one-stop-shopping” approach to resource acquisition would reduce staff requirements at every EOC, including the PREOC. Incident management teams throughout the region would receive requested resources based on priority of need, as assessed by trained REOC personnel with local knowledge and an overview of the regional situation. By including the MAC Group and resources available through the province, the REOC would be able to access more resources than individual EOC's.

4.7 Regional Coordination of Operations

Some response strategies require coordination on a regional basis, such as debris clearing and evacuation sequencing. Figure 11 shows how the recommended model accommodates the need for coordination of response decisions and the influence of policy guidance.

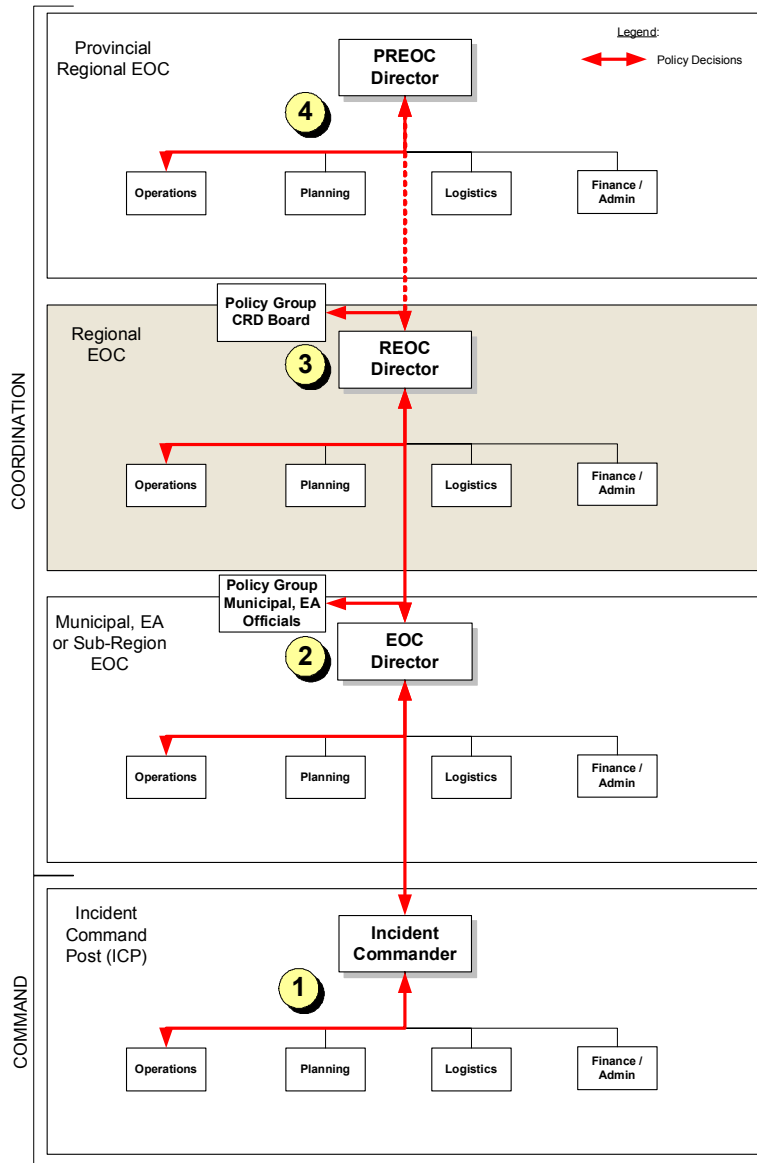


Figure 11. Coordination and Flow of Policy Decisions

Active municipal, electoral area, or Sub-Region EOC's would benefit from strategic coordination of certain operations, including advice on timing and location of specific tactics. The entire region would benefit from the efficiency of joint operations, faster resolution of threats, and reduced time to full recovery.

1 Incident Commanders are empowered to make tactical decisions that represent each jurisdiction's core policies. When faced with a situation that requires coordination or policy interpretation, the Incident Commander could request guidance from an activated municipal, electoral area or Sub-Region EOC.

2 The Operations Section of the EOC would coordinate response decisions within the geographic area. For strategic direction or policy needs within the Sub-Region, the EOC Director may turn to the Policy Group, in this case composed of elected officials or delegates from jurisdictions served by the Sub-Region.¹⁶

3 For response coordination or policy guidance of a regional nature, the municipal, electoral area, or Sub-Region EOC would request assistance from the REOC. As before, the Operations Section would coordinate response strategies. If required, the REOC Director would take regional issues to the Policy Group for the REOC, composed of CRD Board members or delegates.

4 The REOC may request assistance from the PREOC Director for some regional coordination issues, such as priorities for repair of provincial highways in the region or BC Ferries. Coordination with the PREOC will also be important in working with utilities and other providers of regional infrastructure.

¹⁶ The Policy Group for the North Shore joint EOC, serving West Vancouver, North Vancouver District, and the City of North Vancouver, consists of the mayors from the three municipalities.

4.8 Coordinated Public Information

News organizations are willing partners in disseminating public safety messages. The best source for Information Officers seeking information about the emergency and response activities is the Planning Section at each level. Figure 12 shows the expected flow of public information in the recommended model.

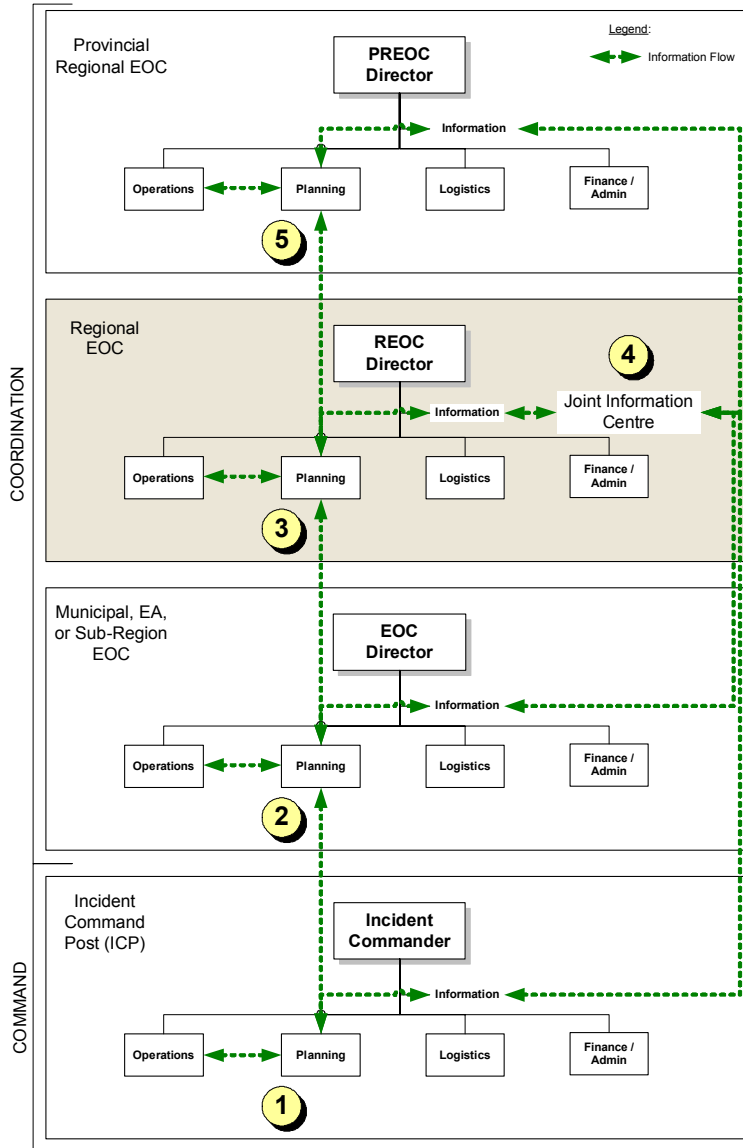


Figure 12. Flow of Public Information in Recommended Model

- 1 As with any emergency, the basic facts about damage and response activities should be available at the Operations and Planning Sections of the Incident Command Post.
- 2 Each ICP would forward information important to the public to the municipal, electoral area, or Sub-Region EOC, if active. There, the Information Officer may add sub-region knowledge and forward summaries to the REOC Planning Section.
- 3 The REOC Planning Section would in turn assemble information for use by the REOC Information Officer. All information released must be approved by the REOC Director.
- 4 The Regional EOC provides a single authoritative source of information for public release. Public information facilities may include a **Joint Information Center (JIC)**, a facility where an integrated team from multiple organizations can ensure uniform and consistent information releases. The Joint Information Centre would provide validated public messages to each of the other levels, including any active EOC's and Incident Command Posts.
- 5 In the recommended model, the PREOC would be included in decisions to release regional information.

A Joint Information Centre would relieve each of the EOC's from repeated enquiries from multiple local, national, and international news organizations. In addition, all municipal, electoral area or Sub-Region EOC's would receive reliable public messages they could use to inform residents and businesses in their jurisdiction. Relying on a single clearinghouse of public information would allow each organization to communicate core public messages, while reducing conflicting information and public frustration overall.

4.9 Multi-Agency Coordination

The recommended model includes several mechanisms for involving service agencies and other organizations in regional coordination. Figure 13 identifies the locations in the regional response structure that facilitate multi-agency coordination.

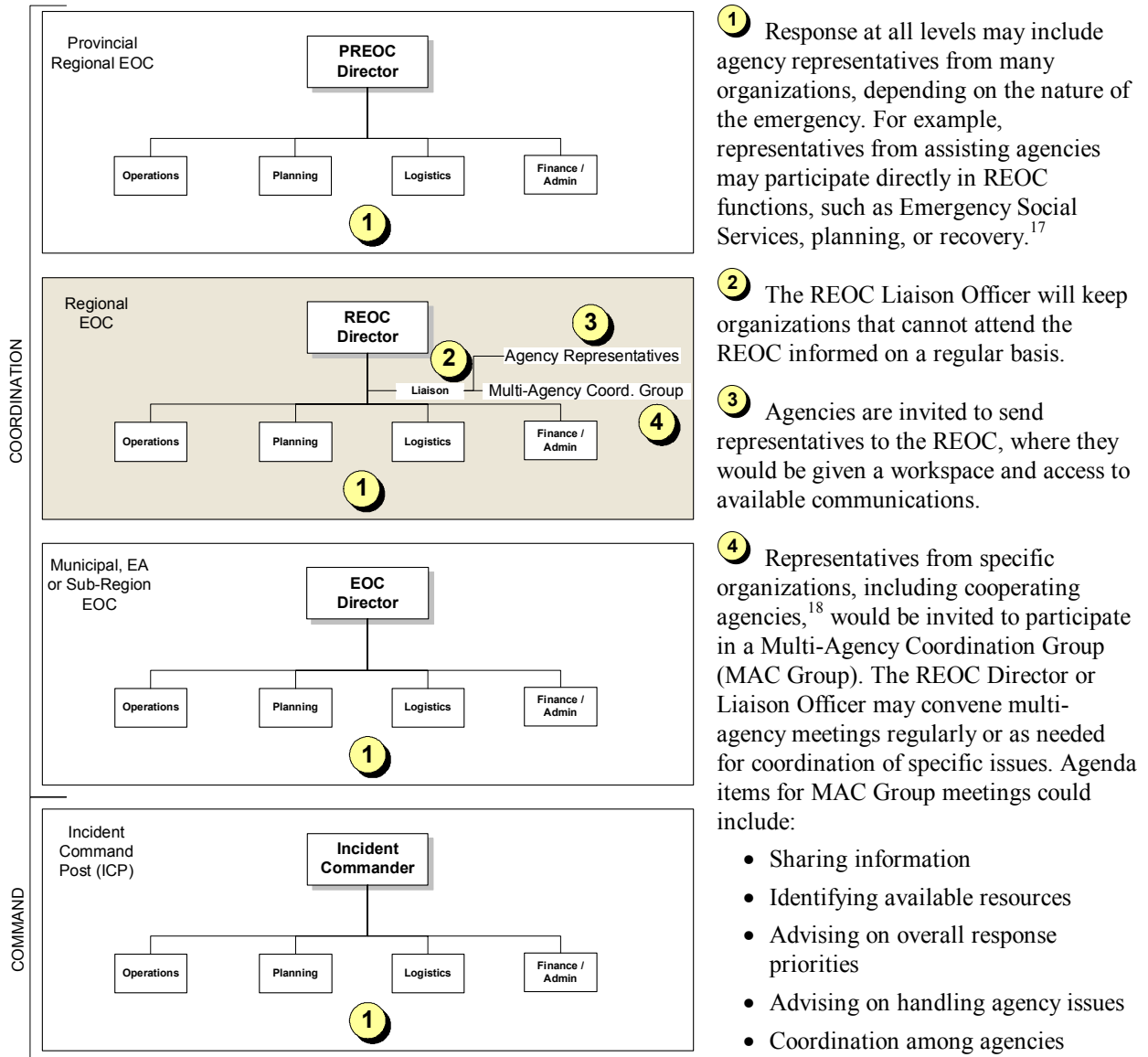


Figure 13. Multi-Agency Coordination

Many organizations in the region would benefit under the proposed model by having direct access to information they can use in response decisions. The proposed MAC Group, in particular, would allow each organization to select response actions that avoid gaps in and duplication of effort under REOC guidance.

¹⁷ Assisting agencies may provide resources for direct tactical support.

¹⁸ A cooperating agency supplies assistance other than direct tactical resources to the incident control effort.

4.10 Rationale for Selection

For the Capital Region, the proposed model most closely fits the requirements for a practical and cost-effective disaster coordination structure.

The recommended model provides the best opportunities for optimizing all six elements of a successful model, as summarized below.

1. Regional Situation Overview – The model facilitates the collection of essential damage, resource information, and intelligence needed for a regional overview of the situation. It provides a single information clearinghouse - the Regional EOC -- where essential information can be gathered, assessed, and disseminated.
2. Regional Management of Resources – The selected model includes a specific function in the Regional EOC to address the equitable allocation of limited resources. The Critical Resource Branch in REOC Operations would authorize trained personnel drawn from local authorities to seek available resources set priorities for assignment.
3. Coordination of Regional Operations – The Regional EOC would also gather in one place the personnel who are able to coordinate operations among the many local authorities and assisting agencies.
4. Coordinated Public Information – The recommended model includes several features designed to facilitate the timely coordination of public information. In addition to information flowing to a single Regional EOC Information Officer, the model calls for a regional Call Centre and a Joint Information Centre, where multiple jurisdictions can develop and distribute coordinated public messages.

5. Multi-Agency Coordination – The model encourages the exchange of information, resources, and response strategies among the many organizations active in disaster. The Regional EOC will accommodate agency representatives and host a Multi-Agency Coordination Group with an explicit role in promoting collaboration.
6. Operational Efficiency – Using three Sub-Region EOC's would minimize staff requirements, facility development costs, and risks for municipal and electoral area partners. Moving some functions to a regional level would relieve each local authority from staffing and funding the development of separate fully-functional jurisdictional EOC's. Well-designed Sub-Region EOC's could serve as backup facilities for the Regional EOC, reducing the chance of loss of this community facility.

If adopted, the REOC and three Sub-Region EOC's could be used in any combination, depending on the event, adding a significant measure of flexibility.

For example, a crash of a large passenger aircraft in Sidney shortly after takeoff from Victoria International Airport would likely make use of the Peninsula Sub-Region EOC, but need not cause the activation other EOC's.

On the other hand, a marine oil spill that affected Saanich, Oak Bay and Victoria may call for the activation of the Regional EOC only. A major disaster, such as a severe earthquake, could see the full use of the REOC and all EOC's, with support by the PREOC. The model could be scaled to meet the demands of any emergency.

Overall, the recommended model provides the greatest benefits at the lowest costs.

5. Implementation of the Recommended Model

Realizing the capabilities outlined in the recommended model will require significant and collective effort. Disaster coordination among key stakeholders, while valid on humanitarian and economic grounds, will not be achieved without multilateral commitments of time and funds from member jurisdictions.

For success, a regional disaster coordination program must have five attributes:

- Measurable Objectives
- Staff Time for Preparedness
- Support Facilities
- Funding
- Governance

This section identifies the factors required to implement the recommended model.

5.1 Measurable Objectives

Any program benefits from a clear delineation of objectives to be achieved. In implementing the regional disaster coordination model, such objectives support the goal of enhancing the capability of all local authorities and other organizations to work collaboratively during disaster response and recovery.

While the list of measurable objectives should be developed in subsequent planning meetings, Figure 14 presents representative examples.

These objectives address only those elements required to implement the recommended model. Additional economies may be gained in coordinating other emergency management objectives on a regional scale, such as individual and family preparedness and disaster mitigation.

Figure 14. Measurable Objectives in Developing Regional Disaster Coordination Capability

1. **Facilities** – To establish one REOC facility, ready for immediate activation, including communications and IT services.
2. **Multi-Agency Plans** – To ensure that each organization that could serve as an assisting or cooperating agency in the Capital Region has a plan for participation in regional response and recovery.
3. **Regional Plan** – To develop and maintain a single, integrated Regional Disaster Plan that describes the emergency management structure involving the region’s key stakeholders, including municipalities, electoral areas, the CRD, service agencies and news organizations.
4. **Training** – To train all personnel who may serve in a regional coordination function in their specific roles in a REOC or other support facility.
5. **Exercises** – To conduct at least one exercise of the regional disaster coordination capability each year, and collect recommendations for improvement.

5.2 Staff Time in Preparedness

Achieving the above objectives will require significant staff time to coordinate each aspect of regional preparedness before an emergency. This takes concentrated effort by a dedicated staff, and cannot rely on part-time personnel or voluntary commitments from response organizations.

To gain a measure of the staff time required to implement the selected model, we anticipated tasks and person-day requirements for ten strategies:

1. Support Regional Executive Committee
2. Liaise with Multiple Organizations
3. Assemble Information on Regional Hazards, Vulnerabilities and Risks
4. Facilitate Regional Planning
5. Research Issues to Support Planning
6. Develop Regional Disaster Plan
7. Design and Oversee REOC Facility Development and Maintenance
8. Train REOC Personnel
9. Conduct REOC Exercises
10. Manage the Regional Program

These **10 strategies** amount to the implementation steps required for the recommended model.

Implementing a regional structure will also require skilled personnel in **three disciplines**:

- Emergency Management
- IT and Emergency Communications
- Administrative Support

In addition, staff time may be allocated to **two distinct phases**: 1) Development Phase, and 2) Maintenance Phase.

With the appropriate commitments from core jurisdictions, the development phase may require about two years to conduct the planning, develop the facilities, and hold the required training and exercises. Following this development period, staff requirements would reduce as the program transitions to a phase of annual maintenance.

Figure 15 presents an early estimate of time requirements for the two development phases and three skill categories, expressed in Full-Time Equivalent (FTE) staff positions per year.

Figure 15. Annual Staff Time Estimates for Implementing Recommended Model

Phase	Emergency Manager	IT / Communications	Admin Support
Year 1	1.7 FTE	1.0 FTE	1.0 FTE
Year 2	1.2 FTE	0.7 FTE	0.6 FTE
Annual	0.8 FTE	0.5 FTE	0.5 FTE

These estimates are in line with guidelines for staffing regional emergency programs in other jurisdictions. For example, the North Shore Emergency Management Office currently employs three full-time and two part-time staff to serve a sub-region population of 168,000 in West Vancouver, the City of North Vancouver, and the District of North Vancouver.¹⁹ The State of Ohio recommends at least one full-time emergency program director and four full-time support staff for a regional population of 400,000 persons.²⁰

5.3 Support Facilities

The suggested model for regional coordination requires physical facilities where trained personnel can gather to collect and assess information, allocate regional resources, and coordinate operations. Facilities fall into two general categories: 1) Emergency Facilities and 2) Office Space.

Emergency Facilities

At a minimum, the recommended model calls for one Regional Emergency Operations Centre (REOC). Additional facilities are required for a Joint Information Centre (JIC) if this feature cannot be accommodated within the REOC. Depending on the results of future planning and the design of REOC, there may also be a need for

¹⁹ The North Shore EMO also provides regional facilitation of preparedness for neighbourhoods, schools, and ESS services

²⁰ State of Ohio Emergency Management

meeting space to accommodate members of the Multi-Agency Coordination Group.

The REOC facility must possess an effective communications system, and be capable of activation at any time.

Due to uncertainties at this early stage of model development, it is not possible to forecast accurate costs of developing the response facilities required to support regional coordination. Once the suggested model has been refined and approved, future research should document either the need for newly constructed facilities in suitable locations or the opportunities to collaboratively use existing buildings.

It is possible, however, to approximate the funding needed for a REOC facility given some basic assumptions. Figure 16 lists the cost categories anticipated for the Regional EOC.

If an existing building can be leased (i.e., no costs for new construction), it will likely require renovation to suit the space needs of the Regional EOC. Cost estimates further assume that the facility must be outfitted with furnishings and communications equipment required for specific functions, such as desks, telephones, and computers.

Development costs for emergency facilities may total about \$300,000, with some funding needed for annual upgrades and maintenance.

Office Space

Regional program staff will also require office space from which to coordinate the tasks of planning and program development. This includes the usual office workspace features, such as desks, chairs, computers, network access, communications, printer, fax machine, telephones, scanner, and a photocopy machine.

Early estimates suggest four workstations may be needed in the first two years of program development. The office space could be combined with the emergency facilities discussed above.

Figure 16. Cost Categories for Regional Emergency Operations Centre

- REOC Building, including lease costs, design costs, renovation to suit requirements, backup power systems.
- Furnishings, including tables, desks, chairs, lighting, computers, software, printers, photocopiers, fax machines, projectors, maps, scanner, display boards, projectors, file cabinets, cameras, voice / video recorders, EOC Vests, documents and maps, kitchen and first aid equipment.
- Communications Equipment, including telephones, cell phones, personal data assistants, conference-call telephone, call centre telephone system, satellite phone, network connections, ISP services, video conference equipment, amateur radio systems, UPS, television, radio, display screens, automated dial-out services, Emergency Management Information System, mapping software.

5.4 Incidental Costs

In addition to the staff and facility cost categories described above, any effort to implement a regional coordination program will incur incidental costs in a number of areas. The types of incidental costs will likely include:

Office Supplies – As with any office, staff will require a range of consumable office supplies to meet their objectives. Examples include printer cartridges, photocopy machine toner, software, paper, binders, and filing materials. There will likely be ongoing expenses for telephone services and Internet Service Provider (ISP).

Training – The recommended model assumes that all emergency personnel have appropriate training in Incident Command System, BCERMS, and Emergency Operations Centre functions.

Some specific training will be needed in the overall regional structure represented by the model, and in such features as the Critical Resource Branch, the Joint Information Centre, and the Multi-Agency Coordination Group. Most local authority personnel will require training in Emergency Management Information Systems whether the recommended model is selected or not.

Meeting Costs – To facilitate regional collaboration, emergency management staff would host a series of ongoing meetings, perhaps requiring space rental and refreshments from time to time.

Local Travel – If the coordination role of emergency management staff is confirmed, there may be a requirement for local transportation costs, either through the provision of mileage for local travel or access to a dedicated vehicle.

Costs will depend on the number of staff allocated to implementation effort and the approved tasks, such as the proposed training. Incidentals may require annual expenditures of \$35,000, with an additional \$20,000 one-time cost for training.

In total, preliminary estimates of funding required to implement the proposed model amount to about \$600,000 in the first year. Subsequent training, exercises and ongoing maintenance of the regional planning program may require \$300,000 annually, including all facility and personnel costs.

5.5 Funding

Options exist for funding the recommended program, and much depends on the participation of the local authorities in the region. Selection of the appropriate funding method is the purview of the CRD Board.

As described in the foregoing sections, both capital and long-term funding are needed to develop the required facilities and ensure ongoing preparedness.

Most regional programs in BC (and county emergency programs in California and elsewhere) draw per-capita funding through service taxes on local residents and businesses.

In one example, the North Shore Emergency Management Office jointly serving West Vancouver, North Vancouver, and the City of North Vancouver draws funds from the member municipalities on a per capita basis. With an annual program cost of about \$400,000 and a collective population of 168,034 (2001 census), the annual costs of the North Shore program amount to \$2.38 per resident.²¹

Integrated Emergency Planning Grants are available through the Ministry of Public Safety and Solicitor General to initiate regional planning. Individual local authorities are also eligible to apply for Joint Emergency Preparedness Program (JEPP) grants for such items as plans, generators, and EOC equipment.

The Joint Emergency Liaison Committee of the GVRD currently receives \$75,000 per year from the provincial government to support regional planning.

²¹ North Shore Emergency Management Office

5.6 Governance

The term “governance” refers to the process by which member organizations can make joint strategic decisions. Governance of the regional disaster coordination program has yet to be determined but may involve the CRD Board, an Executive Committee, and high-level directives, policies or guidelines.

The governance process should facilitate consensus among the many differing interests in the region on how best to ensure regional preparedness for disaster.

The BC Emergency Program Act allows local authorities to delegate authority under the Act to an emergency management organization for a wide range of responsibilities, with the exception of the authority to declare a state of local emergency.²²

One organization must lead the overall effort to coordinate local authorities, regional agencies, and support groups within the Capital Region. This organization should be selected by mutual consent of the participating organizations.

Options for governance include:

1. Capital Regional District
2. One municipality in the region
3. One existing non-government organization
4. A new non-profit organization

Although the Regional Emergency Coordinators Commission (RECC) promotes collaboration in preparedness, it does not currently function on the level needed to implement the regional model. The RECC has no full time staff or budget, and has no authority to act on behalf of member

organizations either during preparedness or in an emergency. Figure 17 summarizes the current roles of the RECC.

Figure 17. Roles of the RECC

The principal role of the Regional Emergency Coordinators Commission is to increase inter-municipal communication and cooperation for emergency response within the region.

The RECC ensures that the emergency and mutual assistance plans of the 14 local authorities are compatible and standardized wherever possible. Responsibilities include:

- a. Utilize a common format for emergency plans to ensure a consistent approach to disaster response, mitigation and recovery.
- b. Develop communications protocols and networks to ensure the public is suitably and promptly informed in the event of an area wide emergency event.
- c. Develop a transportation plan that includes but is not restricted to establishing primary routes and collection points for conveying first responders.
- d. Development of standard procedures for public service advisories, provision of disaster health services, emergency water supply, etc.
- e. Develop an inventory of resources and equipment available from both the private sector and the public sector within the Greater Victoria area.
- f. Carry out any coordination or advisory function as the Regional Board sees fit.

The Regional Emergency Coordinators Commission serves no operational function during a disaster.

Collective governance could be achieved by way of bylaw that authorizes a specific organization to facilitate regional emergency management on behalf of all municipalities, electoral areas, and the CRD. Local authority personnel would work with other jurisdictions in regional and joint emergency facilities, when needed.

²² Emergency Program Act, Sec. 6(3, 4)

6. Conclusions and Recommendations

6.1 Conclusions

This research project, completed with the guidance and advice of the Regional Emergency Coordinators Commission, explored potential strategies for coordinating regional response during disasters.

Research shows that, not only are there other examples of regional disaster coordination from which to draw lessons, there is an abundance of frameworks in jurisdictions that suffer disasters more frequently than the Capital Region.

In fact, the benefits of facilitating regional information flows, resource management, and multi-agency coordination are such that these features are required by law in California, Florida, and other US states.

Using six criteria to define requirements, the consultant and RECC Steering Committee explored eight models for use in the Capital Region.

The RECC Steering Committee favours a model that offers two significant opportunities for regional coordination:

- One Regional Emergency Operations Centre (REOC)
- The option for municipalities and electoral areas to collaborate in Sub-Region Emergency Operations Centres

Use of a single Regional Emergency Operations Centre, based on BCERMS, will greatly enhance intelligence gathering and sharing capabilities in the region, and improve the mobilization and equitable deployment, of resources.

The advantages of collaboration are evident in the “lessons learned” from regional emergencies that have occurred elsewhere. The Capital Region can expect lower impacts overall, faster and more effective response efforts, and less time needed for full recovery. Regional economic losses will be minimized, as well as impacts on employment and local government revenues. The public will appreciate cooperative efforts to keep them informed, and the ability of multiple public and private organizations to work together on their behalf.

In addition, reliance on Sub-Region EOC’s, if selected, would significantly reduce staff requirements and enhance opportunities to share information, resources, and decision-making.

There are cost savings when compared to the current approach, as well. Sharing Sub-Region EOC’s relieves each of the municipalities, electoral areas, and the CRD from developing separate emergency facilities, call centres, and media centres. While implementing the recommended model will require some funding, there are options for cost sharing in a collaborative approach.

A collective investment in a regional disaster response capability will reduce the shared risks, enhance the region’s ability to respond to disasters, and minimize the time required to recover from emergencies of all types and magnitudes.

The implications of continuing without a regional coordination plan in place are evident in the consequences observed in disasters elsewhere in the world. The existing approach would mean delays in response measures, inability to provide suitable resources, and failure to keep the public

and elected officials informed. These and other problems with response frequently extend the time needed for community recovery, and may prolong human suffering and economic hardship throughout the region.

Doing nothing to promote regional coordination will ultimately prove to be the costliest course of action in terms of lives lost, personal trauma, property damage, business closures, and long-term economic impact in the Capital Region.

6.2 Recommendations

This final section of the report presents recommendations to consider in advancing and implementing the recommended model.

Figure 18 lists a number of recommendations for implementing the model.

Most suggestions address the detailed planning needed to advance the model and to cultivate a successful program for regional disaster coordination. Working under the facilitation of a qualified emergency manager, local authorities and other organizations could develop the policies and protocols needed to support regional disaster coordination.

The planning effort should result in the preparation of a written Regional Disaster Plan, one that summarizes the core policies and procedures that support regional coordination.

In addition to these planning elements, actions are needed to identify potential staff for the REOC and any Sub-Region EOC's, among available municipal, electoral area, and regional district personnel. A staffing plan is needed not only for rapid activation of the plan, but also to

help identify those who require training and exercises.

Developing the single REOC and support facilities will demand a significant effort to design new or locate existing buildings, and to develop, and oversee the preparation of these emergency facilities.

Once the facilities can be occupied, a series of training and exercise sessions should be arranged to help emergency personnel become familiar with their roles and surroundings. Initial development should take about two years, allowing significant time for planning.

In addition to the recommendations listed in Figure 18, further action should be considered in three related areas:

BCERMS – As noted earlier, BCERMS does not currently provide sufficient guidance on regional coordination for local authorities. PEP should be requested to address the need for regional guidance in response and recovery in an updated version of BCERMS.

Incident Command System Use – Some first responders in the Capital Region are neither trained in nor required to apply the principles of the Incident Command System or BCERMS. This presents a potentially dangerous situation that should be remedied whether the recommended model is adopted or not.

Recovery – The scope of this research and development project was specifically limited to disaster response in the Capital Region. However, the recommended model should be examined with local authority and community recovery in mind. The Regional Disaster Plan should contain guidance for both response and recovery.

Figure 18. Recommendations for Model Implementation

<p>Plans</p> <ol style="list-style-type: none"> 1. <u>Determine REOC Functions</u> – There is considerable flexibility in the way REOC branches and units may be arranged under BCERMS. Municipalities and electoral areas should consider the individual advantages of the Sub-Region EOC concept. 2. <u>Develop REOC Procedures</u> – Develop procedures for key REOC functions, e.g., evacuation and ESS coordination, situation reports, debris disposal, and mass care. 3. <u>Prepare REOC Information Strategy</u> – Address how the REOC will accommodate and work with news organizations. Prepare plans for a regional Call Centre, a Media Centre, and a Joint Information Centre. 4. <u>Plan for Resource Management</u> <ol style="list-style-type: none"> a. Identify resource needs by scenario, e.g., earthquake, oil spill. Develop a database that can be updated by suppliers. b. Inventory resources available in the region, identify access methods. c. Type resources according to standard descriptions. d. Review existing mutual aid agreements to identify needs for improvement. e. Invite each discipline (e.g., fire, law enforcement, public works) to designate Mutual Aid Coordinators within the region. f. Develop guidelines for Critical Resources Branch, including setting priorities. g. Identify sub-regional staging areas, location, management, security protocols. 5. <u>Identify How to Activate the REOC</u> – Determine when and how to activate and deactivate the REOC. Identify expenditure limits by REOC position. 6. <u>Prepare Hazard Specific Plans</u> – Discuss specific response and recovery coordination needs for earthquake, severe weather, oil spill, wildland fire, pandemic, power outage, and other regional events. 7. <u>Prepare Regional Disaster Plan</u> – Assemble the core policies and procedures in a written Regional Disaster Plan for consultation and training. 	<ol style="list-style-type: none"> 8. <u>Develop Regional Disaster Recovery Plan</u> – Prepare plans for coordinating local authority and community recovery, including uniform processes for meeting the needs of impacted jurisdictions, e.g., business restoration, mass housing, and donations management. <p>People</p> <ol style="list-style-type: none"> 9. <u>Identify REOC Staffing Requirements</u> – Determine staffing requirements for the REOC, considering the need for shifts. 10. <u>Identify REOC Staff</u> – Identify staffing options for REOC organization. Designate staff from each local authority to serve in the REOC facilities. 11. <u>Identify Stakeholder Staff</u> – Identify key stakeholders, including First Nations, and determine the functions each organization may fill in the Regional EOC. <p>Facilities and Equipment</p> <ol style="list-style-type: none"> 12. <u>Determine REOC Location</u> – Determine where the REOC will be located, considering the use of partnerships. 13. <u>Develop REOC Facilities</u> – Design, renovate existing or construct new facilities to serve as the REOC. 14. <u>Develop REOC Communications</u> – Plan communications among all potential ICP's, any Sub-Region EOC's, the REOC, and the PREOC, and set out guidelines for local authorities, and facilitate the process. Install Uninterrupted Power Supply and backup power systems. 15. <u>Install and Test Emergency Management Information System</u> – Discuss requirements with PEP and other regional organizations, and install desired system. <p>Training</p> <ol style="list-style-type: none"> 16. <u>Plan Training Sessions</u> – Set requirements, develop courses and materials, and deliver training. <p>Exercises</p> <ol style="list-style-type: none"> 17. <u>Develop Scenarios</u> – Prepare scenarios for testing plans, people, equipment, and facilities. 18. <u>Hold Joint Exercises</u> – Develop and deliver exercise sessions for multiple agency coordination.
---	---

APPENDICES

Appendix A – Alternative Models Considered

Option 1 – Local EOC's to PREOC

Description

The first option represents the current expression of BCERMS in the Capital Region. In the event of a major disaster, first responder organizations would undertake site response, with the support of 17 Emergency Operations Centres (EOC) in local authority jurisdictions, including municipalities, electoral areas, and the CRD (refer to Figure A-1).

The Capital Regional District would activate an EOC to serve two related purposes: 1) To coordinate emergency support to Electoral Areas (EA's), and 2) To direct CRD business continuity efforts, primarily related to critical infrastructure.

For resource management, local authorities would be expected to: 1) Rely on their own resources first, 2) Request mutual aid, 3) Contract locally for required goods and services, and 4) Address resource requests to the PREOC.

The PREOC would coordinate information and resources from a wide array of organizations, including BC ministries and Crown corporations, utilities, regional service providers, health organizations, and school districts.

Pros

This option conforms to BCERMS and is familiar throughout the region.

Cons

The PREOC would be the only organization capable of gaining an overview of the situation in the Capital Region. Simultaneous damage in other regions could overwhelm the PREOC.

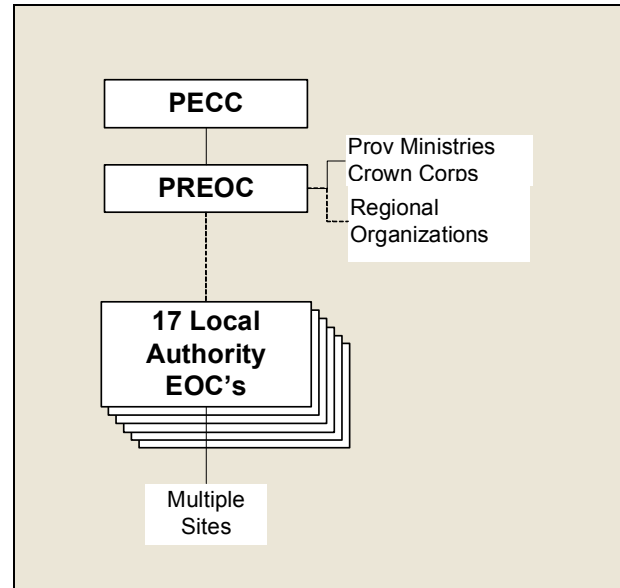


Figure A-1. OPTION 1 – Local EOC's to PREOC

Option 1 would result in competition among the local authorities and other organizations for some of the same resources. For example, many public and private organizations may vie for available generators during a prolonged power outage.

Response activities, such as evacuations, among the local authorities would be difficult to coordinate. Likewise, each local authority would be required to collect and disseminate public information independently, leading to confusion and delays.

Each of the community organizations with response roles would be required to liaise with all EOC's at the same time, and would have limited opportunities to exchange information and resources. Developing 17 functional EOC's would be collectively labour intensive to staff during a disaster, and costly to develop and maintain ahead of time.

Overall, the existing situation represents a state of unpreparedness for regional disaster.

Option 2 – Sub-Regions to PREOC

Description

Under Option 2, several municipalities and/or electoral areas within a shared geographic area would join together in a single Sub-Region Emergency Operations Centre.

In one example, there could be three sub-regions defined in the Capital Region, and each would have a multi-jurisdictional Emergency Operations Centre (EOC). Member jurisdictions would jointly staff and manage a Sub-Region EOC, and including contiguous electoral areas. Figure A-2 illustrates the concept.

Each municipality or electoral area could manage community resources and information through an Incident Command Post or other facility.

In this option, the CRD would operate a separate corporate EOC to coordinate emergency response for water, sewer, solid waste, parks, and other shared regional services.

Resource management in this option would require local authorities to: 1) Use their own resources first, 2) Request mutual aid and contract locally, 3) Request assistance through their Sub-Region EOC for access to locally available resources, and 4) Request resources from the PREOC.

To ensure authority for decision making, municipalities and the CRD would delegate their legislated authority to individual Sub-Region EOC groups. The Policy Group for each EOC would be drawn from Councils and Electoral Area Directors from affected areas. This option is currently in place for the District of West Vancouver, the City of North Vancouver and the District of North Vancouver.

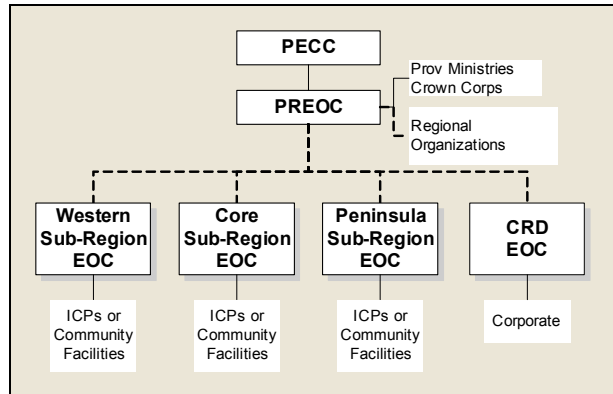


Figure A-2. OPTION 2 – Sub-Regions to PREOC

Pros

The need for only 4 emergency operations centre facilities, instead of the current requirement for 17, greatly reduces the collective need for staff during activation, capital costs for development, and annual maintenance efforts. Costs could be equitably shared among all local authorities in the region.

This model improves the flow of public information by reducing the number of collection and dissemination points, although there is no single regional clearinghouse.

Cons

Option 2 would not allow for a regional situation overview. While agencies could coordinate response actions within each sub-region, cross-region coordination would be difficult.

Sub-regional critical resources may be evaluated locally, but would still require PREOC oversight to set regional priorities. Service providers and community organizations would be split among the four EOC's, or would attend the PREOC to acquire the information and coordination required.

Option 3 – Regional EOC to PREOC

Description

In the third option, all local authorities would join in one Regional EOC, with geographic divisions to serve the sub-regions of the Capital Region. An integrated approach would be used to develop strategies and to share resources. Figure A-3 summarizes the concept.

Option 3 would also allow for the coordination of site tactics under Unified Area Command²³.

In a major disaster, all local and regional resources would be shared, including access to regional service organizations. Once local resources were exhausted, the Regional EOC would turn to the PREOC for support.

To ensure the legal authority is secured to act on behalf of all municipalities and the CRD, municipal councils and the CRD Board would delegate their authority to a single REOC group. The CRD Board members or delegates would serve as REOC Policy Group.

The REOC would be staffed by personnel drawn from all municipalities, electoral areas, and the CRD. Regional service agencies and community organizations could participate directly in the REOC to share information and resources, and to coordinate individual response strategies.

There are several examples of Option 3 within the province, such as the Central Okanagan Regional District (RD), Thompson Okanagan RD, RD of Nanaimo, and Cowichan Valley RD. The City of Ottawa (formerly a region) also applies this model.

²³ Unified Area Command may be established to oversee multiple incident commands operating in general proximity to each other, and where multiple jurisdictions are involved.

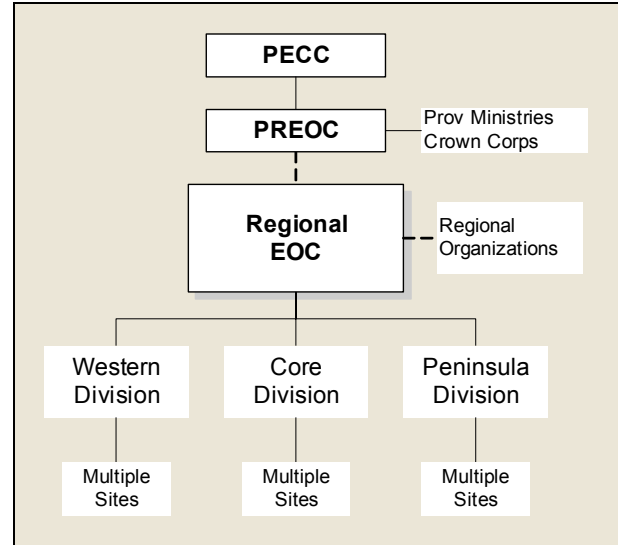


Figure A-3. OPTION 3 –Regional EOC to PREOC

Pros

Option 3 presents good opportunities for collecting and evaluating regional information through a single organization, the REOC. This feature, in turn, would yield benefits to resource management and public information.

A single regional EOC assists the many community organizations and service providers by consolidating all disaster information, including damage and needs, in one place.

This is the lowest cost option both in terms of demands for staff during an event and in EOC development and maintenance. Staff and costs could be shared among local authorities.

Cons

Total reliance on one EOC presents the risk of failure if the facility is damaged or otherwise unusable. This option limits the flexibility to adapt to a range of emergency situations offered by other models.

Option 4 – Local EOC’s to Sub-Region EOC’s to PREOC

Description

Under Option 4, shown in Figure A-4, each municipality and electoral area would activate an EOC to support multiple sites. In addition, the CRD would open an EOC to manage business continuity and to support the electoral areas.

In a regional disaster, local authorities would also jointly activate three Sub-Region Emergency Operations Centres (see Option 2), each intended to coordinate information, resources, and strategic operations.

These Sub-Region EOC’s would use relatively few staff, and could facilitate community organizations active in each sub-region.

Policy direction could come from two levels. Each municipal or electoral area EOC would seek guidance from their Policy Group, i.e., members of council or EA Directors. Each Sub-Region EOC would also have a Policy Group composed of municipal mayors or EA Directors from affected jurisdictions. The CRD EOC would turn to the CRD Board for direction.

To access resources, each jurisdiction would be expected to: 1) First exhaust their own resources, 2) Call for mutual aid assistance, 3) Contract locally, 4) Request resource support through a Sub-Region EOC, and 5) Sub-Region EOC’s would request aid through the PREOC.

Local governments in King County, Washington, apply this model, where many public and private organizations activate separate EOC’s but agree to voluntarily coordinate response objectives and resources through a few Sub-Region EOC’s.

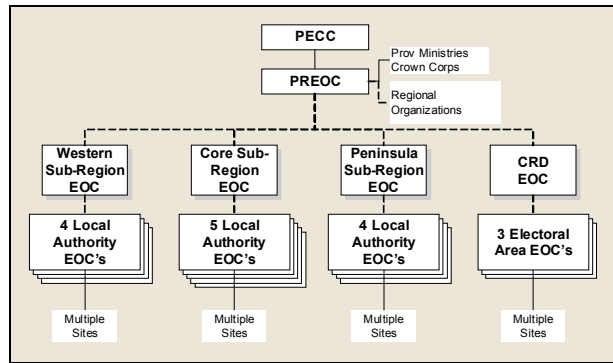


Figure A-4. OPTION 4 – Local EOC’s to Sub-Region EOC’s to PREOC

Pros

Option 4 enhances the ability of responders to coordinate resources within specific sub-regions, and helps ease demands on the PREOC.

Cons

This option does not facilitate a regional overview unless undertaken by the PREOC. Coordination of response actions throughout the Capital Region would be challenging.

The Sub-Region EOC’s could prioritize critical resources within their boundaries, but would not have the information needed to establish regional priorities. Cross-regional operations could not be coordinated without assistance from the PREOC.

There is no single source that news organizations can access to acquire consistent and coordinated public information.

Service organizations would be required to consult four Sub-Region EOC’s instead of having a one-stop source of information and guidance.

Staffing all emergency centres required under this option would be labour intensive. It would be costly to develop, maintain and upgrade all facilities.

Option 5 – Local EOC’s to Regional EOC to PREOC

Description

Option 5 inserts an additional level in the BCERMS model, one devoted to regional area coordination. Figure A-5 displays the concept.

A Regional EOC (REOC) group located at a single facility would support active municipal, electoral area, and CRD EOC’s by coordinating information, resources, and priorities among the local authorities.

The REOC would also serve as the coordination and communication link between the local government level and the PREOC.

In this model, each local authority would activate its own EOC in a disaster to support sites within its jurisdiction. The CRD could either open a separate EOC to address corporate needs, or integrate response operations within the REOC.

The REOC would use relatively few staff, drawn from municipal, electoral area, and regional district personnel, and could facilitate regional service providers. The Policy Group for the REOC would be the CRD Board of Directors.

For resource management, local authorities would be expected to: 1) Use own resources, 2) Request resources including mutual aid and local contracting through the REOC, and 3) The REOC would request resources through the PREOC when they cannot be located within the Capital Region.

Coordination and communications would be established between each activated local authority EOC’s and the REOC. This includes both voice and data communications between each EOC and the Regional EOC.

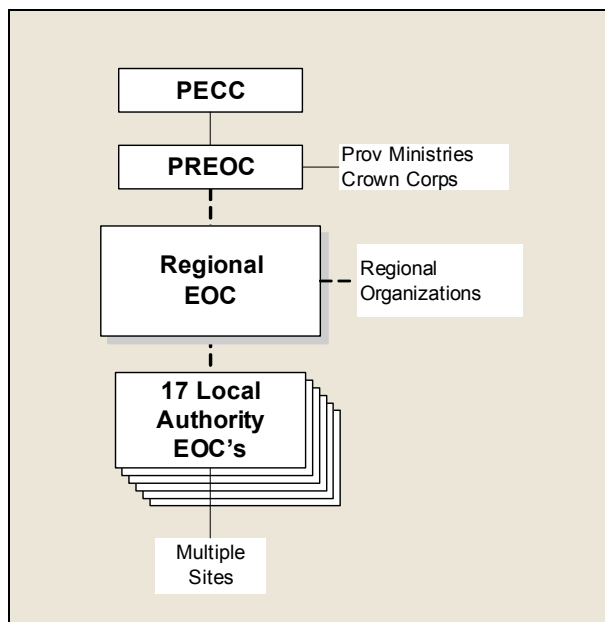


Figure A-5. OPTION 5 - Local EOC's to Regional EOC to PREOC

Pros

Option 5 provides a single organization (the REOC) to collect, assess, and disseminate regional disaster information. This option would facilitate overall access to local resources, and the REOC would help coordinate regional operations.

Service providers and community organizations could either join or communicate with the REOC to access the information and coordination needed to meet their respective mandates. Likewise, news outlets could engage the REOC as a single source of verified public information.

Cons

This model adds an additional emergency facility (for the REOC) to the 17 local authority EOC’s. Staffing of all 17 EOC’s plus the new REOC could be challenging in a disaster. The capital costs required to develop, maintain and upgrade all EOC’s would be greater than in other options.

Option 6 – Sub-Region EOC's to REOC to PREOC

Description

Option 6 is similar to Option 5 with the exception that each municipality and electoral area could join a geographic Sub-Region EOC to support response sites within affected jurisdictions. Refer to Figure A-6.

In this option, CRD managers would work within the structure of the Regional EOC to serve the CRD corporate needs, such as repairs to water and sewer systems.

As in other options, the REOC would coordinate information, resource requests, and strategic operations. However, the number of site support EOC's is reduced to three in this model.

If properly designed and outfitted, each Sub-Region EOC could serve as a backup facility for each other and for the REOC.

Each municipality could manage community resources and information through an Incident Command Post or other community facility.

For resource management under Option 6, local authorities would be expected to: 1) Rely on own resources first, 2) Request resources including mutual aid and local contracting through their own municipal EOC or respective Sub-Region EOC, 3) The Sub-Region EOC would seek assistance from the Regional EOC for resources located within the Capital Region, and 4) The REOC would request resources through PREOC.

This option also supports Unified Area Command among multiple incident management teams within sub-regions for some types of emergencies.

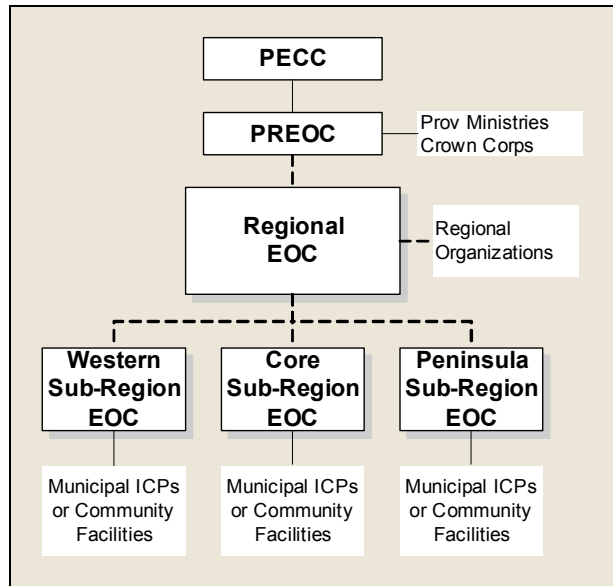


Figure A-6. OPTION 6 – Sub-Region EOC's to REOC to PREOC

Pros

This option acquires the information needed for resource allocation from sites and EOC's. With a single REOC in place to centralize regional information, this option would enable responders to coordinate regional resources, public information, and response strategies.

The REOC provides a single point of contact for service agencies to access disaster information, and could be used to facilitate shared resource allocations and collaboration on strategies.

The staffing requirements of the single REOC and the three EOC's, if selected, are much reduced from other options that call for 17 separate EOC's. Staffing could be shared among the local authorities.

Cons

This option is somewhat more expensive than Option 3 in that four EOC facilities are needed instead of one. Redundant EOC's, however, reduce the risk of losing one facility needed for regional coordination.

Option 7 –Local EOC's to Enhanced PREOC

Description

With the objective of coordinating regional information and resources from a single centre, Option 7 explores the use of the Provincial Emergency Program's PREOC²⁴ for the purpose.

Using staff with local knowledge from municipalities, electoral areas and the CRD, the PREOC could construct geographic divisions within its Operations Section. Figure A-7 illustrates the concept.

Under this model, each local authority would activate an EOC to support sites within its jurisdiction. The CRD would open an EOC to meet corporate needs and to coordinate response in the electoral areas.

Three geographic divisions would be staffed within the PREOC to coordinate regional information, resource requests, and strategic operations. These geographic divisions would require about 10 staff members, depending on the event, and would share planning, logistics, and finance/admin services with the PREOC.

For resource management, local authorities would be expected to: 1) Use own resources initially, 2) Use mutual aid, 3) Contract locally, 4) Request resources through the PREOC Operations Section.

²⁴ The Provincial Regional Emergency Operations Centre (PREOC) for the Vancouver Island coordinates provincial response to communities in 7 regional districts, and could be required to coordinate information and resource requests from more than 40 communities in a wide-spread disaster. Located in Saanich, the PREOC facility accommodates about 25 workstations.

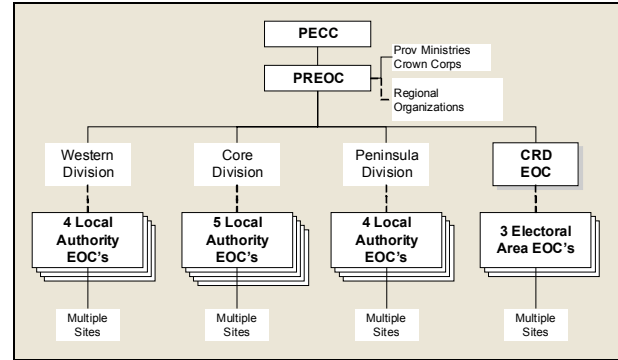


Figure A-7. OPTION 7 - Local EOC's to Enhanced PREOC

Pros

Regional information would be centralized under this model (at the PREOC), which would assist both public information and the flow of situation reports to provincial decision makers and senior officials.

Resource requests from local authority EOC's could be managed through one organization. This model also places local and regional resources on the same table with provincial resources for more efficient allocation.

Consolidating the coordination of regional strategies at one location would help regional service providers access important status information.

Cons

The required staff would place unacceptable workspace demands on the PREOC facility. In addition, if many other communities in PEP's Vancouver Island Region required PREOC assistance, the facility could become overwhelmed.

Staffing all 17 EOC's as well as the PREOC geographic divisions is more labour intensive than in other options. Developing and maintaining all EOC's would be costly.

Option 8 –Sub-Region EOC’s to Enhanced PREOC

Description

Option 8 is similar to Option 7 with the conversion of 17 local authority EOC’s into three geographic Sub-Region EOC’s to support sites.

The CRD would activate a separate EOC to serve corporate needs for response, continuity and recovery. Refer to Figure A-8.

As with the previous option, local authorities from the Capital Region would provide selected personnel to staff three geographic divisions in the PREOC Operations Section.

These staff members would coordinate information, resource requests, and strategic operations on behalf of the Sub-Region EOC’s and CRD EOC.

The Policy Group for each Sub-Region EOC would be drawn from the elected officials and administrators for the affected jurisdictions.

For resources, local authorities would be expected to: 1) Use own resources, 2) Use mutual aid, 3) Contract locally, 4) Request resources through their Sub-Region EOC, and 5) Sub-Region EOC’s would request resources through the PREOC Operations Section.

Pros

Option 8 would see the PREOC serve as a centralized clearinghouse of regional information. This would satisfy multiple objectives of resource management, strategy coordination, and public information.

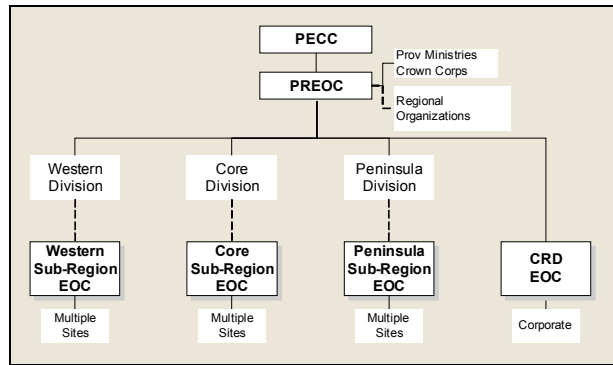


Figure A-8. OPTION 8 – Sub-Region EOC’s to Enhanced PREOC

The PREOC could provide a one-stop service for resource requests from Sub-Region EOC’s, and would combine access to local, regional, provincial, and federal resources at one location.

The PREOC would also serve as a single source of information and coordination for regional service providers and community organizations.

The staffing requirements of the three Sub-Region EOC’s, single CRD EOC, and PREOC geographic divisions are much less than those required for 17 separate EOC’s.

PREOC staffing could draw from any of the local authorities in the Capital Region. Costs could be shared to develop the Sub-Region EOC’s.

Cons

The PREOC could be overwhelmed with requests for information and coordination if other communities in PEP’s Vancouver Island Region suffered damage or threat at the same time as the Capital Region.

Workspace availability in the PREOC is limited, and this option could seriously challenge the operability of the centre.

Appendix B – Glossary of Terms

Agency – An agency is a division of government with a specific function, or a nongovernmental organization (e.g., private contractor, business, etc.) that offers a particular kind of assistance.

Area Command – An organization established to (1) Oversee the management of multiple incidents that are each being handled by an ICS organization, or (2) Oversee the management of large or multiple incidents to which several Incident Management Teams have been assigned. Area Command has the responsibility to set overall strategy and priorities, allocate critical resources according to priorities, ensure that incidents are properly managed, and ensure that objectives are met and strategies followed. Area Command becomes Unified Area Command when incidents are multi-jurisdictional. Area Command may be established at an emergency operations center facility or at some location other than an incident command post.

Assisting Agency – An agency or organization providing personnel, services, or other resources to the agency with direct responsibility for incident management.

BC Emergency Response Management System (BCERMS) – A comprehensive management system that ensures a coordinated and organized provincial response and recovery to all emergency incidents. The standards address operations and control management at four levels: Site Level, Site Support Level, Provincial Regional Coordination Level, Provincial Central Coordination Level.

Business Continuity – An ongoing process supported by senior management and funded to ensure that the necessary steps are taken to identify the impact of potential losses, maintain viable recovery strategies, recovery plans, and continuity of services.

Cooperating Agency – An agency supplying assistance other than direct operational or support functions or resources to the incident management effort.

Compacts – Formal working agreements among agencies to obtain mutual aid.

Electoral Area – An unincorporated area in a regional district specified as an electoral area, as defined in the Local Government Act, by the letters patent for the regional district.

Disaster – A calamity that (a) is caused by accident, fire, explosion or technical failure or by the forces of nature, and (b) has resulted in serious harm to the health, safety or welfare of people, or in widespread damage to property.

Emergency – A present or imminent event or circumstance that (a) is caused by accident, fire, explosion, technical failure or by the forces of nature, and (b) requires prompt coordination of action or special regulation of persons or property to protect the health, safety or welfare of a person or to limit damage to property.

Emergency Operations Center (EOC) – The physical location at which the coordination of information and resources to support domestic incident management activities normally takes place. An EOC may be a temporary facility or may be located in a more central or permanently established facility, perhaps at a higher level of organization within a jurisdiction.

Function – The five major activities in the Incident Command System, specifically Command, Operations, Planning, Logistics, and Finance/Administration. The term function is also used when describing the activity involved, e.g., the planning function.

Hazard – Something that is potentially dangerous or harmful, often the root cause of an unwanted outcome.

Incident – An occurrence or event, natural or human-caused, that requires an emergency response to protect life or property. Incidents can, for example, include major disasters, emergencies, terrorist attacks, wildland and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, typhoons, public health and medical emergencies, and other occurrences requiring an emergency response.

Incident Commander (IC) – The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site.

Incident Command Post (ICP) – The site location at which the primary tactical-level, on-scene incident command functions are performed. The ICP may be collocated with the incident base or other incident facilities and is normally identified by a green rotating or flashing light.

Incident Command System (ICS) – A standardized on-scene emergency management framework specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents.

Joint Information Center (JIC) – A facility established to coordinate all incident-related public information activities. It is the central point of contact for all news media at the scene of the incident. Public information officials from all participating agencies should collocate at the JIC.

Local Authority – A term defined in the BC Emergency Program Act to mean: (a) For a municipality, the municipal council, (b) For an electoral area in a regional district, the board of the regional district, or (c) For a national park, the park superintendent or the park superintendent's delegate if an agreement has been entered into with the government of Canada under section 4 (2) (e) in which it is agreed that the park superintendent is a local authority for the purposes of this Act;

Multi-Agency Coordination Systems (MACs) – Multi-agency coordination systems provide the architecture to support coordination for incident prioritization, critical resource allocation, communications systems integration, and information coordination. The components of multi-agency coordination systems include facilities, equipment, emergency operation centers (EOC's), specific multi-agency coordination entities, personnel, procedures, and communications.

Mutual-Aid Agreement – Written agreement between agencies and/or jurisdictions that they will assist one another on request, by furnishing personnel, equipment, and/or expertise in a specified manner.

Resources – Personnel and major items of equipment, supplies, and facilities available or potentially available for assignment to incident operations and for which status is maintained. Resources are described by kind and type and may be used in operational support or supervisory capacities at an incident or at an EOC.

Recovery – The development, coordination, and execution of service- and site-restoration plans; the reconstitution of government operations and services; individual, private-sector, nongovernmental, and public-assistance programs to provide housing and to promote restoration; long-term care and treatment of affected persons; additional measures for social, political, environmental, and economic restoration; evaluation of the incident to identify lessons learned; and post-incident reporting.

Response – Activities that address the short-term, direct effects of an incident. Response includes immediate actions to save lives, protect property, and meet basic human needs. Response also includes the execution of emergency operations plans and of prevention activities designed to limit the loss of life, personal injury, property damage, and other unfavourable outcomes.

Stakeholder – Any individual, group, or organization that might affect, be affected by, or perceive itself to be affected by the emergency.

Strategic Direction – Strategic elements of incident management are characterized by continuous long-term, high-level planning by organizations headed by elected or other senior officials. These elements involve the adoption of long-range goals and objectives, the setting of priorities, the establishment of budgets and other fiscal decisions, policy development, and the application of measures of performance or effectiveness.

Tactical Direction – Direction given by the site-level Operations Section Chief that includes the tactics required to implement the selected strategy, the selection and assignment of resources to carry out the tactics, directions for tactics implementation, and performance monitoring for each operational period.

Tactics – Deploying and directing resources on an incident to accomplish incident strategy and objectives.

Unified Command – An application of the Incident Command System used when there is more than one agency with incident jurisdiction or when incidents cross political jurisdictions. Agencies work together through the designated members of the Unified Command, often the senior person from agencies and/or disciplines participating in the Unified Command, to establish a common set of objectives and strategies and a single Incident Action Plan.

Appendix C – Information Sources

RECC Steering Committee Members (acknowledged with appreciation)

- Val Fletcher, Emergency Program Coordinator, District of Highlands
- Ron French, Emergency Program Coordinator, District of Central Saanich
- David Gibbs, Protective Services Manager, Capital Regional District
- Doug Henderson, Emergency Program Special Project Coordinator, District of Oak Bay
- John Hill, Emergency/Disaster Plan. Manager, Vancouver Island Health Authority
- Frank MacDonald, Deputy Emergency Program Coordinator, District of Saanich

Interviews

- Gerry Adam, Deputy Emergency Coordinator, Oak Bay Emergency Program
- Doug Allan, Project Manager, Joint Emergency Liaison Committee, GVRD
- Peter Anderson, Professor, Simon Fraser University
- Laurie Bean, Administrative Supervisor, North Shore Emergency Management Office
- Rene Blanieli, Regional Emergency Coordinator, Central Okanagan Regional District
- Steve Braz, Researcher, Vancouver Island Health Authority
- A.J. Bryan, Provincial Emergency Program
- Sue Clark, Program Manager, Union of BC Municipalities
- Dan Derby, Emergency Program Coordinator, Cowichan Valley Regional District
- Cam Filmer, Executive Director, Provincial Emergency Program
- David Gibbs, Manager Protective Services, Capital Regional District
- Mervin Harrower, Senior Advisor, Emergency Management BC
- Gary Hendren, Capital Regional District
- Mike Heppell, Canadian Red Cross volunteer
- Kathryn Howard, Regional Planning Programs Manager, King County, Washington
- Beryl Itani, ESS Director, Central Okanagan Regional District
- Brad Judson, Director of Policy and Planning, Provincial Emergency Program
- Terry Kress, Emergency Program Coordinator, Thompson-Nicola Regional District
- Bob Lapham, Director Planning and Protective Services, Capital Regional District
- Peter Malone, Manager, Engineering and Planning, CRD Water Services
- Barbara McLintock, Coroner, BC Coroners Service
- Ken Neilson, Emergency Program Coordinator, Victoria Emergency Management Agency
- Kimberley Nemrava, Director, BC Coastal Region, Canadian Red Cross

-
- John Oakley, SW Senior Regional Manager, Provincial Emergency Program
 - Alan Perry, news media consultant
 - Lise-Anne Pierce, Emergency Services Coordinator, Canadian Red Cross Society
 - Jim Price, Senior Regional Manager, Vancouver Island Region, Provincial Emergency Program
 - Jani Thomas, Emergency Program Coordinator, Regional District of Nanaimo
 - Brenda Warner, Emergency Program Coordinator, Township of Esquimalt
 - Jim Whyte, Director Operations, Provincial Emergency Program
 - Tracy Wynnyk, ex-Emergency Program Coordinator, Columbia Shuswap Regional District

Documents

- BC Office of the Auditor General. 2005. *Report on EQ Recommendations, Follow-up of the Recommendations of the Select Standing Committee on Public Accounts contained in its Fourth Report of the 3rd Session of the 36th Parliament: Earthquake Preparedness; Performance Audit*, May.
- BC Provincial Emergency Program. 1997. *Overview of Greater Victoria's Emergency Response to the "Blizzard of '96"*. March 21.
- BC Provincial Emergency Program. 2000. *British Columbia Emergency Response Management System (BCERMS) Overview*.
- BC Provincial Emergency Program. 2005. *Bulletin 05.11 Reimbursement For Local Government Services*. November.
- BC Provincial Emergency Program. 2005. *Financial Assistance for Emergency Response and Recovery Costs*. September.
- British Columbia Government. 2004. *Emergency Program Act*, [RSBC 1996] Chapter 111. Queen's Printer, Victoria, British Columbia, Canada.
- California, State of. 1994. *Standardized Emergency Management System (SEMS) Guidelines*. December.
- California, State of. 2003. *Standardized Emergency Management System Approved Course of Instruction Emergency Operations Center Course – G611 Participant Reference Manual*.
- California, State of. 2005. *Standardized Emergency Management System*. February.
- California, State of. 2006. *California Implementation Guidelines for the National Incident Management System Workbook and User Manual*. Prepared for the California emergency management community, version 09.26.06. September.
- California, State of. *Title 19. Public Safety Division 2, Office of Emergency Services*.
- Collier County, Florida. 1999. *Collier County Board Resolution No. 202, Adopting Comprehensive Emergency Management Plan*.
- Conference Board of Canada. 2007. *Tough Times in the Big Easy - Lessons From a Catastrophe*. March.
- Cooper, Christopher and Robert Block. 2006. *Disaster: Hurricane Katrina and the Failure of Homeland Security*. Times Books, an imprint of Henry Holt & Co.
- Filmon, the Honorable Gary. 2004. *The Filmon Report – FireStorm 2003, a Provincial Review*. February 15.

-
- Greater Vancouver Regional Administrative Advisory Committee. 2006. *Resolution of Nov 29 2006, PPT provided by Doug Allen, Also RACC Proposal to the Board of Directors re: Regional Emergency Management*. November.
- Holdeman, Eric. 2004. *Emergency Coordination Centre (ECC) Design Considerations*. Office of Emergency Management, King County, Washington. February 27.
- Inter-agency Emergency Preparedness Council (IEPC). 1999. *Draft BC Emergency Response Management System (BCERMS), Operations & Management Standard 1000*. February 2.
- James Lee Witt Associates. 2007. *Independent Report on the Mid-February 2007 Winter Storm Response for the Commonwealth of Pennsylvania*. March 27.
- Joint Emergency Liaison Council. 2006. *An Integrated Regional Emergency Management Strategy for Greater Vancouver: Governance to Move Forward*. Prepared for the Committee of GVRD Mayors. November.
- Justice Institute of British Columbia. ND. *Introduction to Emergency Management in British Columbia. Emergency Management Division, 715 McBride Boulevard, New Westminster, BC*.
- Marin County. California. ND. *Office of Emergency Services Overview, Emergency Management Organization*.
- Metro King County, Washington. 2003. *Regional Disaster Plan*.
- Metro King County, Washington. 2004. *Kent Pullen Regional Communications and Emergency Coordination Center*.
- Metro King County. 2004. "King County receives national recognition for Park's Business Transition Plan and Partners' Regional Emergency Response Plan," *King County Website*. July 22.
- Michigan State Police. 2003. *Design Recommendations and Criteria for Emergency Operations Centers*. Emergency Management Division. February.
- National Commission on Terrorist Attacks upon the United States. 2003. *Public Hearing, Wednesday, November 19, 2003, Drew University, Madison, New Jersey. Private-Public Sector Partnerships for Emergency Preparedness*.
- National Fire Protection Agency. 2007. *NFPA 1600: Standard on Disaster/Emergency Management and Business Continuity Programs*. 1 Batterymarch Park, Quincy, MA 02169-7471.
- NovaTec Consultants, Inc. 1989. *Regional Emergency Planning Study, Capital Regional District – A Report to Ad-Hoc Committee Regional Emergency Planning Coordination*. Project No. 1027-16. October.
- Ottawa, City of. 2006. *City Emergency Services*. Ottawa Emergency Management Organization.
- San Diego County Grand Jury. 2004. *San Diego County Emergency Operations Center: Seeking Better Communication*. Report 2003/4-08. May 25.
- Santa Cruz County, California. 2005. *Operational Area Emergency Management Plan*. Office of Emergency Services. September.
- US Federal Emergency Management Agency. 2004. *National Incident Management System*, March 1.
- Washington State Task Force on Local Programs. 2004. *A Study of Emergency management at the Local Program Level*. Presented to the Washington State Emergency Management Council. September 2.
- Wellington Region Emergency Management Group. 2005. *Wellington Region Civil Defence Emergency Management Group Plan*.
- Wisconsin, State of. 2005. *Wisconsin Emergency Response Plan, Emergency Support Function, ESF 2 Communications*. February.