Oregon
Statewide Communications Interoperability Plan

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Record of Change

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OREGON STATEWIDE COMMUNICATIONS INTEROPERABILITY PLAN

Executive Overview

The Oregon Statewide Communications Interoperability Plan (SCIP) serves as the reference and roadmap for stakeholders regarding public safety wireless voice and data interoperability in our State. It is a living document, and as such, reflects past progress, the timelines for our strategic goals and initiatives, and projects future issues and needs critical to the delivery of public safety services.

Interoperability efforts in Oregon have been guided and championed by the State Interoperability Executive Council (SIEC) since its establishment by Governor Kitzhaber's Executive Order in 2002[1]. Council members represent a broad range of multi-disciplinary and multi-jurisdictional public safety service providers and public/private stakeholders across the State. Through this diverse membership, the SIEC has provided leadership in the development of policies, guidelines, and legislative recommendations aimed at improving interoperability. The SIEC has researched and provided forums for both technology developments and Federal Communications Commission (FCC) requirements that led to a conceptual design for a basic infrastructure that will serve State radio users and provide options for interoperability for other public safety radio users. The SIEC has also actively promoted collaborative partnerships to maximize resource sharing at all levels. This plan references a growing number of examples of system sharing and partnering.

Oregon's priorities for interoperable communications planning and capacity development have been based upon the criteria established by the United States Department of Homeland Security (DHS), SAFECOM, Disaster Management (DM) and feedback from public safety stakeholders in Oregon. The SAFECOM Interoperability Continuum provides us with a clear and consistent measurement tool so that we can track status and communicate consistently with others about the goals and progress on our work. Ultimately, Oregon's SCIP is aiming for establishment of an interoperable network that incorporates standardized sites and equipment that do more than coexist – they can actually be connected to one another. In addition to that backbone and its connectivity to growing regional systems, the plan will provide the information we need to access surge and back up capacity/disaster recovery resources, including radio caches, mobile repeaters, gateway devices and power supplies. This SCIP will provide guidance on governance, speak to the need to establish standard operating procedures and basic requirements for regular training and exercise of the established system-of-systems[2] available for use. It is our intent to

[1] Executive Order 02-17, Appendix D

2 'System of Systems' is defined as using communication technology gateways as well as promoting technology standards in network build-out so that communications infrastructure Statewide can be connected and compatible. Local, regional, and/or tribal systems have the ability to be connected to the State radio users' system or other public safety entities and vice versa.

ensure that these interoperability resources are used on a regular basis so that all system users gain familiarity with their functionality and are able to use them smoothly when the stakes are particularly high.

The SIEC assesses Oregon's statewide interoperability levels as follows:

- **Governance:** Moderately high. The Oregon SIEC was established in 2002 and meets monthly with a diverse group of stakeholders engaged in improving communications, coordination and cooperation across disciplines and jurisdictions and has adopted a strategic plan (See Appendix C and D). While regional radio committees exist in various parts of the State, they are not statewide. Efforts to communicate between the existing regional groups and the SIEC are largely informal. The SIEC Partnership Committee is working on formalizing a connection with statewide technology efforts through a non binding survey distributed in September 2007 to local sheriffs, police and fire chiefs. Work is in progress on a number of regional governance agreements, including the Portland-Vancouver UASI region, Lane County, and the six county Hospital Preparedness Planning Region 2.
- **Standard Operating Procedures:** Moderate. This issue has been called out for action by the SIEC[3]. Coordination of a set of statewide SOPs is primarily limited to large wildland fires and VHF frequency 154.280. Individual agencies and some regions in the State have joint Standard Operating Procedures (SOP)s and regularly use them over mutual aid frequencies. The sole Urban Area Security Initiative (UASI) region currently has a Tactical Interoperable Communications Plan in place. In Morrow and Umatilla counties, the Chemical Stockpile Emergency Preparedness Plan (CSEPP) includes extensive notification and interoperable communications procedures, financed with federal dollars, as part of the mission to protect both population and the environment from any disaster related to the chemical weapons stored locally. Federal funding to maintain the program will be gone once destruction of the stockpile is complete, leaving a significant gap for the region to address. As an interoperable communications network and/or short term interoperability solutions become available, SOPs will need to be established to promote smooth operations and minimize interference. Throughout the State, it is common to find that staff resources to develop and update SOPs and then train and conduct exercises are either missing or lack the capacity needed to effectively accomplish goals in this area.
- **Technology:** Moderately low. This varies by region but on a state level, the four State radio system users operate on separate systems and have no State provided access to mobile data. Non State shared systems exist now or will soon exist in some of the more highly populated areas in Oregon. Through these local/regional projects, significant technological advances have been made and will be leveraged by the State to increase both operability and interoperability exponentially. Mobile data for non State users is generally tied to metropolitan parts of the State where infrastructure and coverage required for data are better than existing systems in rural areas. Today, swapping radios remains a simple and universal standard for interoperability. As the Oregon Wireless

[3] SIEC Policy Actions are contained in the SIEC Strategic Plan, Appendix C.

Interoperability Network (OWIN) system continues forward, a technology solution to tie State radio users with regional and local system users together will become readily available. Individual or groups of local/regional/tribal governments and hospitals have made significant technological advances through individual and regional projects. These projects will be leveraged by the State to increase both operability and interoperability exponentially.

- **Training and Exercise:** Moderate. Oregon Emergency Management conducts regular earthquake exercises and coordinates Federal grant awards to promote both regional and local multi-disciplinary training and exercise. Training and exercise have been a high priority in the past few years in grant awards. The SIEC has a goal of developing a twice yearly plan for statewide exercises coming in the 2007-09 biennium. TOPOFF 4 was conducted in the Portland metropolitan area in October 2007. In 2008, another national level exercise is scheduled in Oregon, providing an opportunity to take lessons learned in TOPOFF 4 around interoperability to a different locale in the state.
- **Usage:** Moderately high. Although the technology is at the low end of the scale, interoperability is required on a regular basis for day-to-day public safety operations. Often this is accomplished through dispatch relay, swapping radios or use of mutual aid channels.

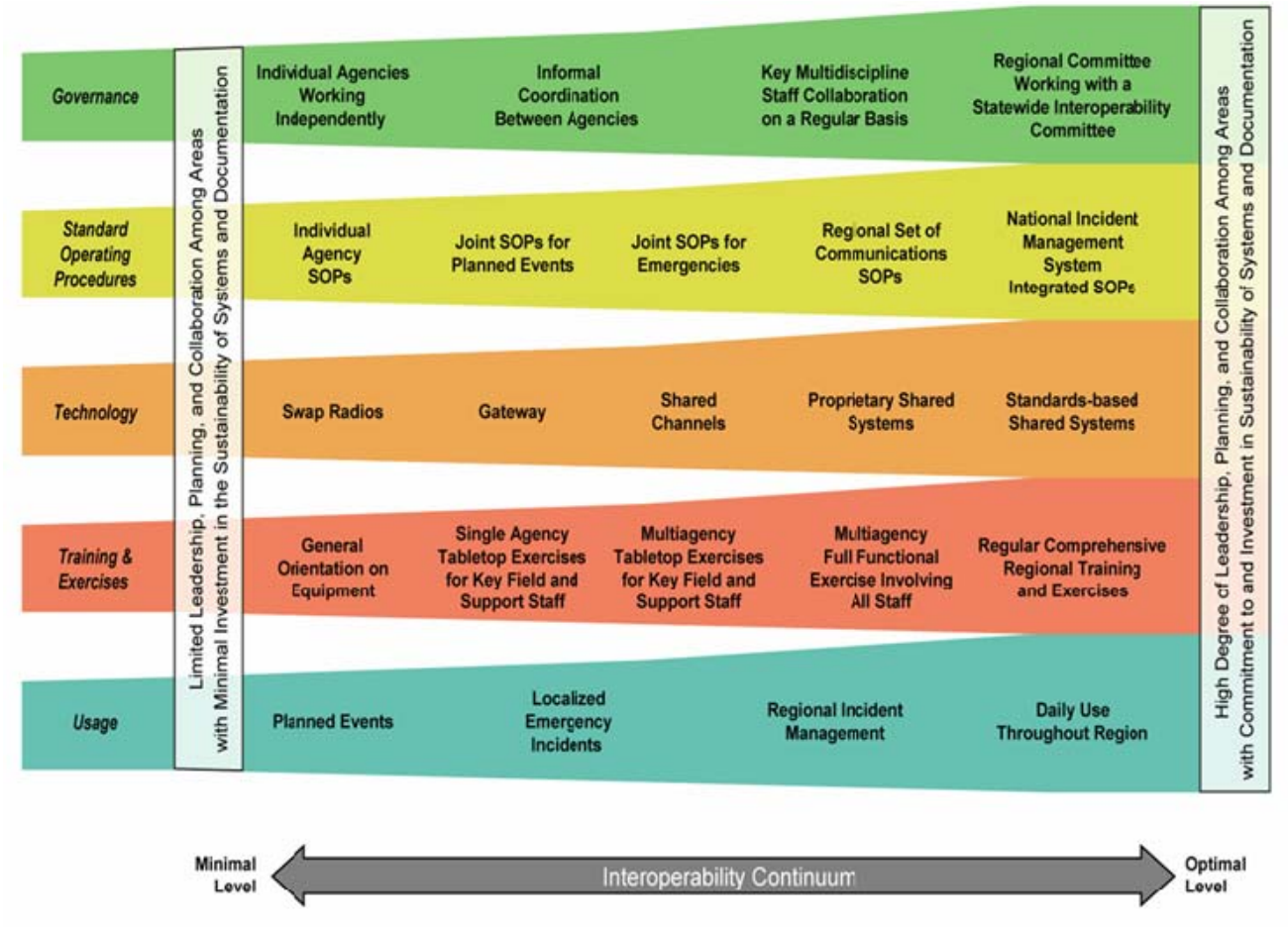

Figure 1 SAFECOM Interoperability Continuum[4]

The Oregon SIEC is depending on local participation to provide feedback on strategic goals and initiatives. The most current version of this plan is posted on the SIEC website: www.oregon.gov/siec. The four statewide strategic goals are:

1. Create a common understanding of communications interoperability throughout Oregon.
2. As appropriate, utilize common language, coordinated protocols and standards statewide.
3. Integrate existing and future interoperable communications systems.
4. Facilitate multi-disciplinary training to enhance effective use of communication systems.

Refer to Section 2.4 and Section 5 of the SCIP for more on strategic goals and initiative specifics, along with projected timelines. Comments on progress and priorities are welcome and can be made in a variety of forums. The SIEC meets from 1-3 pm on the

[4] www.safecomprogram.com

second Tuesday of each month at the Anderson Readiness Center on State Street in Salem. Contact names, numbers and additional information on the meetings and actions of the SIEC are also available on the website.

1 Introduction

In any public safety incident[5], no matter the size or cause, reliable critical communications are key to the outcome. The ability of responders to speak to those they need to, in real time, when needed and authorized is the most basic tenant of interoperability. In all aspects of Oregon's statewide interoperable communications planning, working to achieve this goal is the priority of the Oregon State Interoperability Executive Council (SIEC).

Oregon is the nation's ninth largest state[6] by land mass, a geographically diverse[7] state totaling 98,466 square miles that presents many challenges to those responsible for delivering public safety services. A mix of mission critical communications solutions is required to meet the combination of needs in densely populated metropolitan areas, valuable protected forestland, rangeland, farmland, mountains, valleys, and an extensive coastline. One of the nation's most important transportation and energy generation regions is the Columbia River – a border of more than 300 miles between the States of Oregon and Washington. The western side of the State is bordered entirely by the Pacific Ocean. Varied geography and a dispersed population both contribute to the lack of economic viability for both commercial and privately owned broadband voice and data services.

In addition to the pressures to replace the public safety communications systems in Oregon that were exacerbated by September 11, 2001 and related subsequent events, Oregon is also faced with the federal requirements to increase efficiency of radio system use. The Federal Communications Commission (FCC) rules require completion of narrow-banding to 12.5 KHz channels by January 1, 2013, with subsequent reductions to 6.25 KHz channels. Narrow-banding by itself requires almost complete replacement of the public safety radio infrastructure in Oregon. While a few jurisdictions have successfully completed narrow-banding, most have not. FCC mandates aside, the wireless systems used by emergency services in this state are generally well past their useful life. They are seriously aging and in some cases, in danger of imminent failure.

Many of Oregon's public safety agencies struggle with operability problems. They are still looking to have adequate coverage in order to support field personnel in their internal, day-to-day operations and in their capacity to make sure critical messages can be transmitted immediately. Add to that the need for interoperability. As jurisdictional resources over the past several decades have been stretched, there is a growing need for different agencies to work together to maximize the effectivness of the responders in the field. This adds an equal requirement for interoperability to the already critical need for operability.

At this point in time, wireless data is not an option for State radio and many rural system users primarily due to insufficient coverage and funding.

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[5] For the purpose of this document Public Safety includes Police, Fire, EMS, 9-1-1 Systems, Public Health and Medical, Public Works, Public Utilities, Transportation, and Emergency Management.

[6] Oregon is 27th by population and 39th by population density. (see Figure 8 Map of Oregon Counties)

[7] Oregon is topographically diverse with elevations ranging from sea-level to 11, 239 feet.

The need to rectify the critical infrastructure problems that exist in public wireless communications systems is magnified in certain rural areas where even basic operability has yet to be achieved. Communications systems in Oregon need major replacement and/or upgrade in order to achieve our crucial communications goals to protect life and property. When resources are short and the need to act is critical, we must plan to ensure that every resource is maximized and able to be used when needed; that costly future expansion of public safety communications maximizes opportunities by the sharing of systems, planning, training and building out in concert with one another.

It is not unusual for responders from multiple agencies and disciplines to work together to bring an incident under control. Remember also that to public safety responders, their communications resources are a tool, not the work product itself. Responders must react to their own situation without worrying about the technical or operational intricacies of their radio system. Just as the public does not need a high degree of technical expertise in order to use their cell phone; responders should at least have the same system-controlled level of support that phoning home has. Add to that the fact that public safety systems must always be operational. There can be no time spent considering whether the local television station or cellular service or first responder should have priority access in high traffic times. At each step of the way, system users should be clear on their options so that their mission critical goals are met.

Interoperable communications allow diverse entities to join together using scarce resources. It is all about protecting life and property as efficiently as possible while minimizing and/or mitigating further harm.

In the course of addressing the lack of reliable communications systems, Oregon must also ensure that our system-of-systems solution meets the mandates of the FCC and is scalable, upgradeable and sustainable.

2 Background

Since its inception in 2002, the State Interoperability Executive Council (SIEC) has adopted a strategic plan focused on these concepts and has updated it regularly (see Appendix C). The SIEC and our stakeholders have written and adopted policy actions that serve as further guidance towards the priorities and planning efforts for interoperability leadership and expansion in Oregon. Key participants on the SIEC Strategic Planning Committee have also been actively involved in local and regional interoperable planning efforts.[8]

The Oregon Statewide Communications Interoperability Plan is a natural outcome of all of these previous efforts. This statewide plan will identify our key long and short term initiatives as we work together to improve capabilities. As standard operating procedures are developed and documented, and resources are expanded and catalogued, it will be the mechanism to align responders across the State in order to support coordinated emergency response, especially as resources needed stretch beyond jurisdictional boundaries. As we discuss the vision and initiatives, public safety agencies at all levels will have a shared focus and be better able to jointly plan and move forward to improve effectiveness and coordination of emergency communications interoperability.

In 2005, the Oregon Legislative Assembly established that "it is the policy of the State of Oregon: to develop, finance, maintain and operate a single emergency response wireless communications infrastructure that supports both the communications needs of all State agencies and ensures communications interoperability among all State, local, tribal and federal public safety agencies, thereby maximizing shared use of this invaluable public asset."[9] In this same bill, the Legislature established membership of the SIEC and directed it to "…develop an Oregon Interoperable Communications Plan. The goal of the plan shall be to achieve statewide interoperability within six years of the effective date of this 2005 Act."[10] Compiling this plan and ensuring that responders have been trained and have practice in using the resources outlined within it should improve the efficiency of our response to incidents that put our public at risk across the State.

The mission of the Oregon SIEC is to develop and process recommendations for policy and guidelines, identify technology and standards, and coordinate intergovernmental resources to facilitate statewide wireless communications interoperability with emphasis on public safety[11].

The SIEC is representative of all emergency response disciplines and regions in the State. Local representatives make up fifty percent of the membership of the SIEC and are a strong voice in guiding priorities and direction in all activities. Regular reporting to the Governor's Office and the Oregon Legislature has been critical to both inform and receive feedback on key initiatives. The SIEC will continue to ensure that stakeholders are active participants, providing input on

[8] SIEC Policy Actions contained within Appendix C

[9] http://www.oregon.gov/SIEC/docs/resources/hb2101_en.pdf

[10] http://www.oregon.gov/SIEC/docs/resources/hb2101_en.pdf

[11] SIEC Strategic Plan mission, Appendix C

review and improvement of interoperability in Oregon, ensuring that they are familiar with the resources available for this purpose, and through regular exercise and use, access and appropriately use infrastructure, policies, and procedures to maximize their ability to deal with emergency response.

While the SIEC is the policy body overseeing the development, expansion and maintenance of interoperability in Oregon, the Oregon Wireless Interoperability Network (OWIN) will be a key mechanism towards accomplishing this mission for many parts of the State. OWIN staff are present at SIEC meetings reporting on project progress for members and interested parties.

Through OWIN, four separate aging radio systems currently supporting State radio users will be consolidated into a single system. That system will be planned and constructed in a manner that will be standards based and scalable, anticipating connection to federal, regional, local and tribal systems in Oregon in order to improve capacity and efficiency, and lastly, providing a consistent and easily available means of interoperable voice and data options for public safety radio system users.

2.1 State Overview

As the nation's ninth largest state geographically, Oregon covers 98,386 square miles (land and water) and has 296 miles of coastline. With 3,641,056 residents (2005 PSU population data), the majority of the population is based along the I-5 corridor on the western side of the State. Included in this is the greater Portland metropolitan area, the State's sole Urban Area Security Initiative Region (UASI) and three smaller metropolitan areas further south along the I-5 corridor (Salem, Eugene and Medford). An estimated 50,000 Native Americans live in Oregon. There are ten federally recognized tribes and five reservations. Most of the State is rural and includes the Cascade Mountain range, the Willamette Valley, 29 million acres[12] of forest land, desert and numerous waterways. Oregon is bordered by the Pacific Ocean on the west, Washington State on the north, Idaho on the east, and both California and Nevada to the south.

[12] Oregon has the most forested acres by State outside of Alaska.

Figure 2 States Bordering Oregon

2.1.1 Population[13]

Area Type

Table 1 Oregon Population Estimates by Area Type and for Specific Areas, 2000 & 2006

Date	State	Incorporated	Un-Metropolitan	Non-Incorporated	Metropolitan
Apr1, 2000	3,421,399	2,280,361	1,141,038	2,617,759	803,640
July1,2006	3,690,505	2,557,135	1,133,370	2,856,240	834,265

Specific Metropolitan Statistical Areas (MSA's)

Date	Portland-Vancouver Beaverton	Eugene Springfield	Medford	Salem	Corvallis	Bend
Apr1,2000	1,927,881	322,977	181,273	327,214	78,153	115,367
July1,2006	2,121,910	339,740	198,615	373,335	84,125	152,615

Portland-Vancouver-Beaverton, Oregon-Washington MSA consists of Clackamas, Columbia, Multnomah, Washington and Yamhill Counties in Oregon; and Clark and Skamania Counties in Washington. Washington county estimates obtained from Washington's Office of Financial Management.

- Eugene-Springfield MSA consists of Lane County

[13] Population Research Center, Portland State University

- Medford MSA consists of Jackson County
- Salem MSA consists of Marion and Polk Counties
- Corvallis MSA consists of Benton County
- Bend MSA consists of Deschutes County

2.1.2 Emergency Response Agencies

Oregon's emergency response agencies include 272 law enforcement agencies, 334 fire agencies, 138 licensed Ambulance Service agencies, 629 licensed ambulances agencies, 449 EMS and First Responder agencies and fifty 9-1-1 centers. The four State radio agencies are currently operating on separate radio systems[14] with limited interoperability. Oregon Department of Transportation (ODOT), Oregon State Police (OSP) and Department of Corrections (DOC) are on VHF wideband analog while forestry (ODF) has recently migrated to VHF narrowband analog technology. None of the State radio users have access to data through State systems. Based upon 2005 data (for additional information, see Appendix I), there are approximately 385 VHF systems, 62 UHF Systems, and six 800 MHz Systems. This count does not include federal systems operating within the State such as Department of Interior, Department of Justice, Department of Agriculture, and the National Guard etc. Data access is limited to local jurisdictions' ability to pay and coverage issues associated with the diverse geography making access nearly impossible in rural areas.

2.1.3 Climate/Hazards/Geography

Oregon has a very diverse climate, ranging from high desert plateaus in the east receiving fewer than 10 inches of yearly rain to the rain forest in the west which can collect well over 100 inches of rain per year. From an all hazards standpoint, the State has experienced and is significantly at risk for earthquakes, tsunamis, floods, landslides, wildland fires, volcanic activity, and windstorms. The ports, rail system, I-5 and I-84 provide major transportation corridors and increase the risk of hazardous materials and/or terrorism incidents. In eastern Oregon, Umatilla and Morrow Counties house the chemical weapons depot, with years remaining until the destruction process is complete.

[14] Oregon Department of Forestry also serves by agreement the Oregon Department of Fish and Wildlife, Oregon State Parks and Recreation Department. Oregon State Police system also serves the Oregon State Fire Marshal system.

Table 2 Major Recent Federal Disaster Declarations in Oregon[15]

Year	Date	Disaster Types	Active	Disaster Number
2007	02/22	Severe Winter Storm and Flooding	■	1683
2006	12/29	Severe Storms, Flooding, Landslides, and Mudslides		1672
2006	03/20	Severe Storms, Flooding, Landslides, and Mudslides		1632
2004	02/19	Severe Winter Storms		1510
2002	03/12	Severe Winter Windstorm with High Winds		1405
1998	06/12	Oregon Flooding		1221
1997	01/23	Severe Winter Storms/Flooding		1160
1996	12/23	Severe Storms/Flooding		1150
1996	03/19	Severe Storms/High Winds		1107
1996	02/09	Severe Storms/Flooding		1099
1995	08/03	Flash Flooding		1061
1994	08/02	El Nino Effects (The Salmon Industry)		1036
1993	10/15	Earthquakes		1004
1993	04/26	Earthquake		985
1990	01/24	Flooding, Severe Storm		853

[15] http://www.fema.gov/news/disasters State.fema1

2.1.4 Risk Assessment

Contagious Disease

Pandemic flu and other contagious disease outbreaks will change response strategies and may create new and different communication needs. The establishment of field hospitals, public health points of distribution (PODS), and EMS surge will drive the need for new interoperable communication capacities and capabilities.

Terrorism, Agriculture, or Industrial Accident

Certain incidents may cause failure of traditional critical infrastructure due to damage of system overload. It may become necessary as response strategies shift and evolve, new and different relationships emerge and response strategies adapt to need, that the technological systems be capable of shifting rapidly from a traditional daily operation to one capable of managing a disaster. Systems must be able to support non-daily operational partners.

In Oregon, bio-security can mean that field staff from the State's Department of Agriculture and public health responders and related NGO's may be involved with others in a coordinated response to animal, food and plant emergencies stemming from natural or human caused disaster. Disease and contamination require swift action to avert spread and mitigate consequences that can immediately impact the health of our population (human and livestock) and economy.

2.1.5 Earthquake and Tsunami Assessment

Roughly 80% of Oregon's population resides within a high risk area for strong ground shaking as a result of earthquakes.

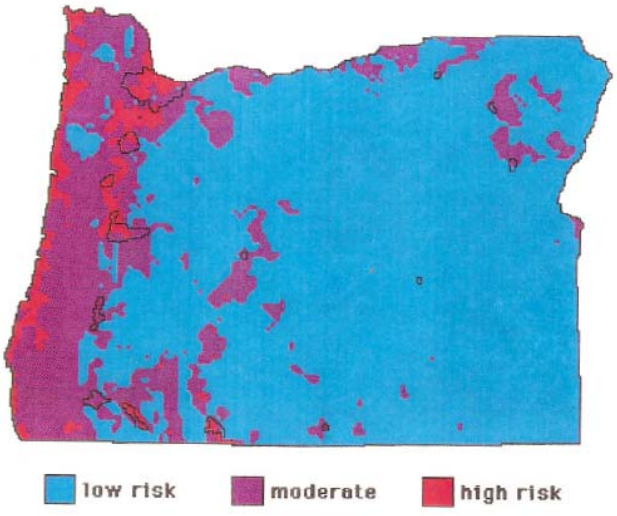

Figure 3 "Risk to Oregon's Population from Strong Shaking"[16]

[16] University of Oregon Geology Dept

The Cascadia subduction zone is an 800 mile earthquake fault where the Juan de Fuca plate meets the North American plate and stretches from southwestern British Columbia, through Washington and Oregon to northwestern California. The earthquakes in this region have generated more widespread effects than other types of quakes. Earthquakes of a potential magnitude of 8 or 9 in the Cascadia subduction zone have occurred anywhere from 200 to 1,000 years apart, with an average of 500 years between them. The last occurred on January 26, 1700. The 2004 Sumatra and 1964 Alaskan earthquakes and tsunamis offer guidance as to what we could expect to see. Because of the widespread area that will feel the shaking, even areas without great building damage will be affected by outages in utilities, transportation, and other systems.[17]

Tsunamis are caused by earthquakes under the ocean or by landslides into or under the ocean. A tsunami, often incorrectly referred to as a "tidal wave," is a series of waves that can travel great distances from their source and inundate coastal areas. The time of arrival of tsunami waves depends on a location's distance from the source event. Waves generated by distant sources may arrive hours after the earthquake has occurred. Tsunamis pose a real threat to Oregon coastal communities from Cascadia subduction zone earthquakes and also from distant earthquakes near Alaska or Asia.

The Oregon Coast Region borders the Pacific Ocean on its western edge, and thus is the only region that would be directly affected by tsunamis. All of Oregon's 60 cities and unincorporated communities facing the Pacific Ocean or located on Oregon's bays and estuaries are vulnerable to damage from tsunamis to varying degrees.

Because tsunamis typically occur as a result of a seismic or volcanic event, the timing and magnitude of such events adds to the difficulty in adequately preparing for such disasters. If a major earthquake occurs along the Cascadia subduction zone, a tsunami could follow within 5 to 30 minutes. Although tsunami evacuation routes have been posted all along the Oregon Coast, damage to bridges and roadways from an earthquake could make evacuation quite difficult even if a tsunami warning were given. In addition, if a major earthquake and tsunami occurred during the "tourist season," causalities and fatalities from these disasters could be far greater than if the same events occurred during the winter months[18].

2.1.6 Wildfire Risk Assessment

Oregon's forests are exposed to a number of wildfire hazards and risks, both natural and human-caused. Out of the 29 million acres total, there are currently about 20 million acres (69%) of forestland in Oregon that have missed fire cycles and are in conditions that are considered moderately to severely outside the normal range (known as Condition Classes 2 and 3 out of 3). Most of these acres are on federal ownership. Where fires historically burned frequently, forest stands are now overstocked and in danger of losing key ecological components to uncharacteristically severe wildfire. Some forest stands that historically had 50 to 100 trees per

[17] CREW Cascadia Subduction Zone Earthquakes: A Magnitude 9.0 Earthquake Scenario, 2005.

[18] State of Oregon's Enhanced Natural Mitigation Plan, http://www.oregonshowcase.org/index.cfm?mode=resources&page=tsunamis

acre now have as many as 500 or 1000 trees per acre. When fires burn in overstocked stands they are much more likely to climb into the crowns of the trees and consume the entire forest, rather than staying on the ground, thinning the forest from below, and removing fuels that have accumulated on the forest floor. This is an extremely large problem that without proper land management will continue to get worse with time.

2.1.7 Wildland-Urban Fire Interface

In view of the expanse of forest in Oregon, it is not unexpected that the risk of wildland urban interface has grown with the build out of population. Population spread in the U.S. has resulted in rapid development in the outlying fringe of metropolitan areas and in rural areas with attractive recreational and aesthetic amenities such as those found in Oregon, especially forests. This demographic change is increasing the size of the wildland-urban interface (WUI), defined as the area where structures and other human development meet or intermingle with undeveloped wildland. The expansion of the WUI in recent decades has significant implications for wildfire management and impact. The WUI creates an environment in which fire can move readily between structural and vegetation fuels. Its expansion has increased the likelihood that wildfires will threaten structures and people.[19] Predictably, these type fires require a dual response of both wildland and structural firefighting personnel.

[19] Forest and Wildlife Ecology, University of Wisconsin. website

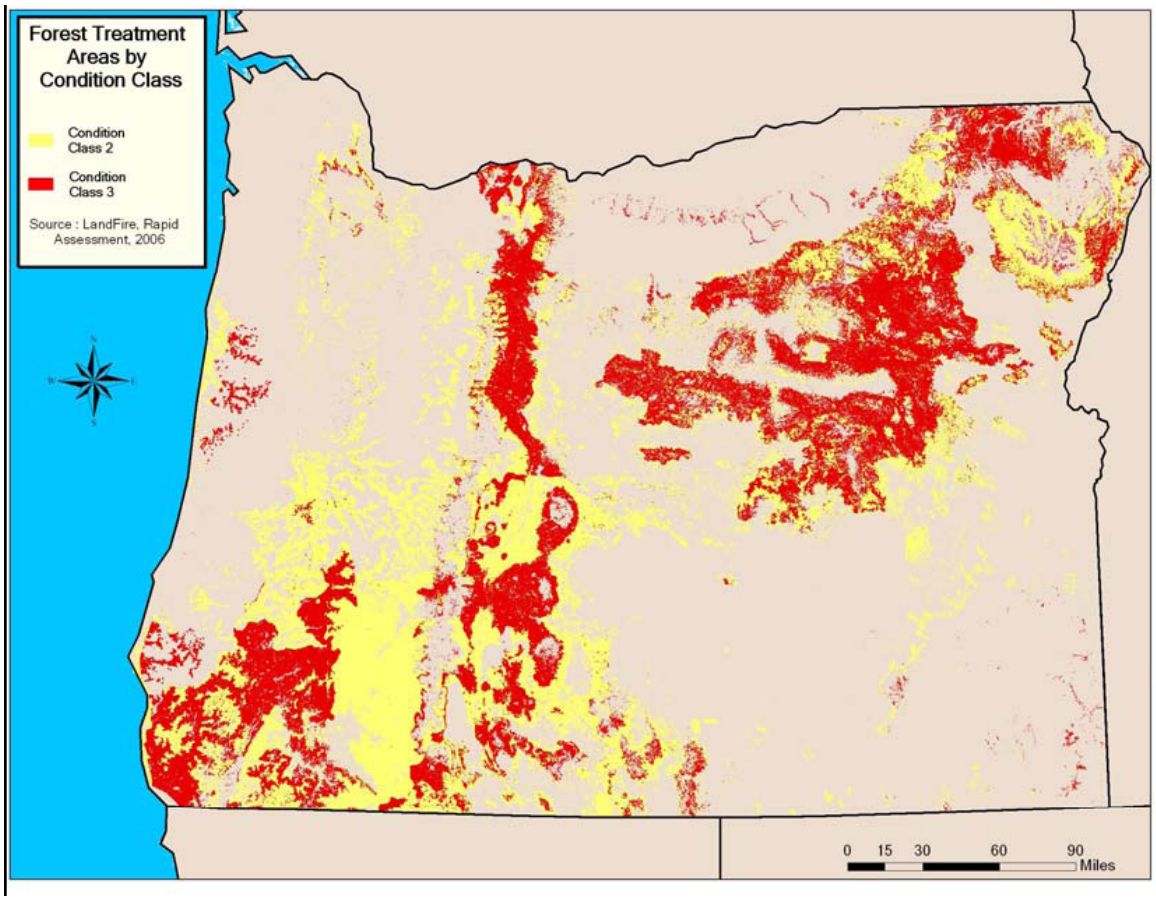

Figure 4 Wildfire Condition Classes

2.1.8 Topography

Oregon has one of the most diverse landscapes of any state in the U.S. Oregon is well known for its tall, dense forests, its accessible and scenic Pacific coastline and its rugged, glaciated Cascade volcanoes. Semiarid scrublands, prairies, and deserts cover approximately half of the State in eastern and north-central Oregon. Starting with a low of sea level on the west, the highest point is Mt. Hood at 11,239 feet. The State is crisscrossed by 5 major mountain ranges and contains the deepest lake (Crater Lake) in the United States and the deepest gorge (Hells Canyon) in North America.

In addition to scenic waterways, the Army Corps of Engineers manages a number of dams in Oregon that provide for flood control, irrigation and recreation. The Columbia River is one of the nation's most important transportation and energy generation regions, forming a border of more than 300 miles between the States of Oregon and Washington.

This topography poses significant communications barriers for the cities, counties, tribes, and the State.

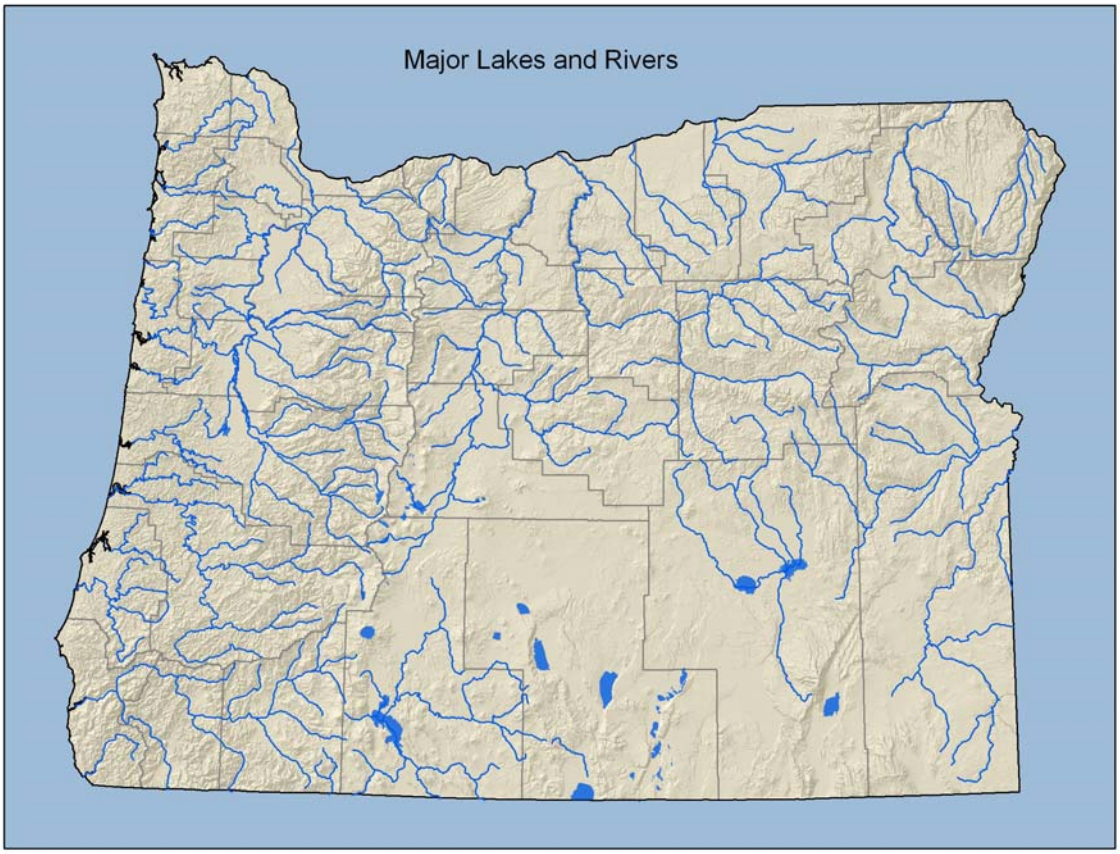

Figure 5 Map of Oregon Major Lakes and Rivers

2.1.9 Recurring/Significant Events

The coast and mountains provide many tourism destination points and population surges significantly for seasonal and special events. Whether it is major sports events like the Hood to Coast run or University of Oregon hosted track meets and football games; annual festivals such as the Rose Festival on the Portland waterfront, the Bach Festival in Eugene, the Shakespearean Festival in Ashland or the Wine and Seafood festival in Newport, there are regular events that bring in the equivalent of an additional city's worth of population with all of the logistics associated with the surge.

Oregon has also experienced significant incidents associated with anarchists and environmental activists (Earth Liberation Front (ELF) and Animal Liberation Front (ALF)) and recently closed a multi agency, multi-state investigation of terrorism/arson referred to as 'Operation Backfire'. The challenges of managing vast forestland with their urban interface and an extensive state park system stretch resources every fire season.

2.1.10 Economy

During the past two decades, Oregon has attempted to make the transition from a resource-based economy to a more mixed manufacturing and marketing economy, with an emphasis on high technology. Oregon's hard times of the early 1980s signaled basic changes had occurred in

traditional resource sectors — timber, fishing, agriculture — and the State worked to develop new economic sectors to replace older ones. Most important, perhaps, was the State's growing high-tech sector, centered in the three counties around Portland. Intel is the State's largest private employer. Rural Oregon counties have generally been left out of any shift to a new economy[20].

Oregon is home to the world headquarters of Nike, Inc., in Beaverton, and to two of the largest mail order companies in the country, Harry and David Operations Corp. and Musician's Friend, both in Medford. Portland is home to one of the West's largest trade book publishing houses, Graphic Arts Center Publishing, and has the largest number of breweries of any city in the world.

Oregon's gross state product is $137 billion (2006), making it the 27th largest GSP in the nation.

Table 3 Oregon's top ten employment industries (May 2006)

1. Food services and drinking places (124,200)
2. Administrative and support services (88,500)
3. Professional and technical services (70,000)
4. Specialty trade contractors, construction (62,300)
5. Ambulatory health care services (62,200)
6. Hospitals (49,800)
7. Computer and electronic product manufacturing (42,500)
8. Nursing and residential care facilities (38,200)
9. (tie) Food and beverage stores (37,100) and General merchandise stores

The value of exports from Oregon to foreign countries topped $12 billion in 2005, about 9 percent of the State's gross state product. Oregon's trade with other U.S. States far exceeds its trade with foreign nations[21].

[20] Oregon Blue Book, http://bluebook.State.or.us

[21] Oregon Blue Book, http://bluebook.State.or.us

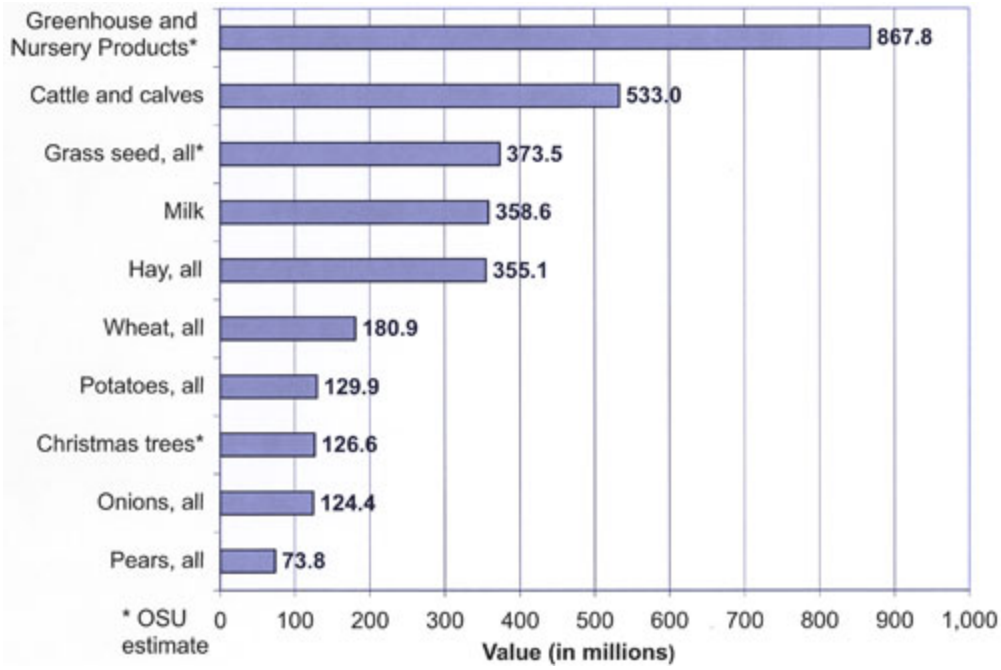

Figure 6 Oregon's top ten commodities in 2005[22]

2.1.11 Tourism

In 2006, direct travel spending was reported to be one of the State's top five industries, estimated at $7.9 billion. During that same year, visitor spending in Oregon directly supported 88,900 jobs with a payroll of $1.9 billion. Visitors staying in commercial accommodations such as hotels, motels, resorts and bed & breakfasts accounted for one half of all visitor spending in Oregon.[23] Keeping in mind the high numbers of visitors using highways, air and lodging in unfamiliar surroundings, planning for mitigation and response to both natural hazards and transportation incidents presents a significant challenge for public safety and emergency managers.

2.1.12 Critical Infrastructure

Oregon Emergency Management has established an objective aligning the State with the Interim National Infrastructure Protection Plan in order to enhance coordinated development of critical infrastructure protection capabilities.[24] Those seventeen areas of critical infrastructure are:

1. Agriculture and Food. Agriculture is a leading industry in the State. Oregon's economic reliance on natural resource industries remains higher than most other areas of the U.S., indicating that the benefits from enhanced economic performance and sustainable production are significant. Oregon is also more

[22] Oregon Blue Book, http://bluebook.State.or.us

[23] Oregon Travel Impacts report produced by Dean Runyan Associates for the Oregon Tourism Commission, January 2006.

[24] Oregon Homeland Security State Strategy, March 2007.

reliant than most states on traded-sector exports –and more than 60% of the volume and 25% of the value of exports through Oregon's major ports are agriculture and food products, fishery, wine, forestry and wood products.[25] Governor Kulongoski has proposed a State-level Food Policy Council to assist local councils in their efforts to support and enhance an economically viable, socially beneficial, and environmentally sustainable food system in Oregon. Part of the role of a food policy council is to work with appropriate agencies and organizations to ensure that communities have reasonable emergency plans for food distribution during natural disasters or other crises.[26]

2. Banking and Finance. In 2002, Oregon had 39 insured banks with assets totaling $22.9 billion.

3. Chemical Industry and Hazardous Materials Industry. The Oregon chemical industry provides products to industries that make paper, lumber, microelectronics, food products, plastics, and other products for commercial or domestic use. Some of those products include: specialty gasses, fertilizers, adhesives, paint, detergents, chlorine and even explosives.[27] In 1985, the Oregon Legislature passed the Oregon Community Right to Know and Protection Act which requires the Office of State Fire Marshal to administer an annual Hazardous Substance Information Survey of Oregon businesses and government agencies. The survey is sent to facilities that have reportable quantities of hazardous substances and to facilities that operate under North American Industrial Classification System (NAICS) codes that have been determined to likely store, possess, use, generate, manufacture or dispose of hazardous substances.[28]

4. Defense Industry Base. The Defense Industrial Base refers to the facilities of the United States Military and Oregon National Guard, their affiliated organizations, and the support systems and capability of industry to produce essential material to support national military objectives—e.g. repair parts, ammunition, and chemical defense, food, medical, and fuel supplies. In Morrow and Umatilla Counties, the security of the Chemical Weapons Depot is a priority on a number of fronts. The Oregon Military Department's purpose is to administer, house, equip and train the Oregon National Guard - a ready force to support the Governor during unrest or natural disaster and as a reserve force to the United States Air Force and the United States Army[29].

[25] http://egov.oregon.gov/ODA/do_reports_higher_ed.shtml#Background_information_about_this_area

[26] http://www.oregon.gov/ODA/bd_rpt_food.shtml

[27] http://www.oregon.gov/ENERGY/CONS/Industry/chemical.shtml

[28] http://www.oregon.gov/OSP/SFM/CR2K_Home.shtml

[29] From the website: www.oregon/gov/OMD

5. Energy. Included are the Bonneville Power Administration; hydro-electric dams and wind farms in other parts of the State. Oregon's largest public utility is the Eugene Water & Electric Board.

6. Emergency Services. People are the most valuable of our resources to emergency services. Designated emergency managers are in all 36 counties, two tribal agencies and thirteen cities. There are 236 police departments (includes tribal law enforcement), 36 sheriffs departments, and three state patrol districts. Paid and volunteer fire agencies number 334. There are 13 Forest Protection Districts across the State. For Emergency Services there are 138 licensed Ambulance Services, 629 licensed Ambulances, 449 EMS and First Responder agencies. Emergency communications functions are coordinated by 50 consolidated 9-1-1 centers and 15 secondary public safety answering points (PSAPs). There are 57 hospitals in Oregon; two are designated as Level 1 Trauma Centers; three are designated as Level 2 Trauma Centers. Oregon has two Urban Search and Rescue Task Forces, positioned to cover either the north or south portion of the State. There are 15 Regional Hazardous Materials Response Teams; Oregon's Civil Support Team is designated as the 102nd. Within certain counties, Explosives Disposal Units operate on a regional basis using mutual aid agreements. Amateur Radio Emergency Services (ARES/RACES and MARS) are a vital part of emergency communications with hundreds of volunteers coordinated under the umbrella of Oregon Emergency Management and the Oregon Military Department operating in six geographic districts. ARES volunteers provide backup and alternate emergency communications throughout Oregon. [30]

7. Information Technology. The Information Technology (IT) Sector is a key enabler for the State, National and global economies and cuts across all of the other critical infrastructure sectors. In Oregon, IT has been actively represented on all levels both on the SIEC and in several SIEC Committees. Interoperability efforts for public safety encompass voice and data. Unified information sharing /fusion centers for law enforcement are a part of the State Homeland Security Strategy.

8. Telecommunications. Voice and data services are vital for business operations and keeping citizens connected to government and each other. This sector affects every resident because of the complex interdependencies and magnitude of telecommunications and cyber systems within the State. Additionally, it was Oregon that first identified the source of interference between cell towers and public safety radio systems; a discovery that has led to nationwide changes in coordinating telecommunications and public safety wireless systems.

9. Postal and Shipping. The fundamental functions of postal and parcel shipping organizations in the State economy, moving items from point 'a' to point 'b', are similar to cargo operations in the Transportation sector. This sector is distinct from Transportation because of the unique activities, processes, and facilities, as well as the vastly different volumes of operation and customer base. In Oregon,

[30] Oregon Section ARES/RACES Operations Manual and Statewide Plan, draft Oct 2007.

the State has oversight for ensuring that agricultural commodities are shipped throughout the world, providing third party inspections, verifications and certifications.

10. Healthcare and Public Health. The State and local health departments, hospitals, clinics, mental health facilities, nursing homes, blood-supply facilities, and laboratories are key to sustaining our population. State statutes require that nursing homes have emergency plans in place. The Hospital Preparedness Planning Regions, along with Public Health entities, are undergoing an interoperability planning process that in many ways parallels that of the Oregon SIEC. Continuing to look for ways in which to bridge and combine these efforts will continue.

11. Transportation. The State transportation infrastructure includes aviation, maritime, rail, bridges, highways, trucking, pipelines, and mass transit systems. Starting with pioneer trails and toll roads, Oregon's roads and highways are a network extending 66,902 miles (2000 data). There are 435 airfields (103 public, 332 private); the State's busiest airport is Portland International. Oregon has 2,638 rail miles and is served by two major rail systems. Farm products and chemicals are the major commodities terminating in Oregon, primarily at the Port of Portland.

12. Water and Wastewater. Oregon has 1,780 lakes, 114,500 miles of rivers and streams, and 296 miles of coastline. Our water and wastewater infrastructure is made up of 705 water providers (water systems) and 382 waste water treatment facilities.

13. National Monuments & Icons. Crater Lake National Park is Oregon's only National Park. National monuments include: Fort Clatsop in Astoria, the Oregon Caves in Cave Junction, and John Day Fossil Beds in Kimberly. Astoria at the mouth of the Columbia River, was the first permanent settlement west of the Rockies. Oregon City was the end of the Oregon Trail. Nike and Intel are Oregon companies.

14. Commercial Assets. Protecting prominent commercial centers, office buildings, sports stadiums, theme parks, and other sites where large numbers of people congregate to pursue business activities, conduct personal commercial transactions, or enjoy recreational pastimes presents significant challenges.

15. Government Facilities. In Oregon, these include the buildings necessary to conduct business from the State Capital in Salem to city halls and county buildings. Chemical Weapons Storage in Umatilla and Morrow County and 29 State correctional and youth authority facilities pose special security challenges for the communities in which they are housed.

16. Dams and Levees. Some of our larger dams are major components of other critical infrastructure systems that provide water and electricity to large population areas, agricultural complexes, commercial and sport fishing activities, and recreation. There are approximately 3,733 State regulated dams in Oregon.

The Grand Coulee Dam in Washington State draws from the Columbia River. Portland has a series of levees along the Willamette River.

17. Commercial Nuclear Reactors, Materials, and Waste. Oregon falls under the Northwest Interstate Compact on Low-Level Radioactive Waste Management. Transportation of nuclear waste on state highways is a carefully managed concern.

2.1.13 Highways of Significance

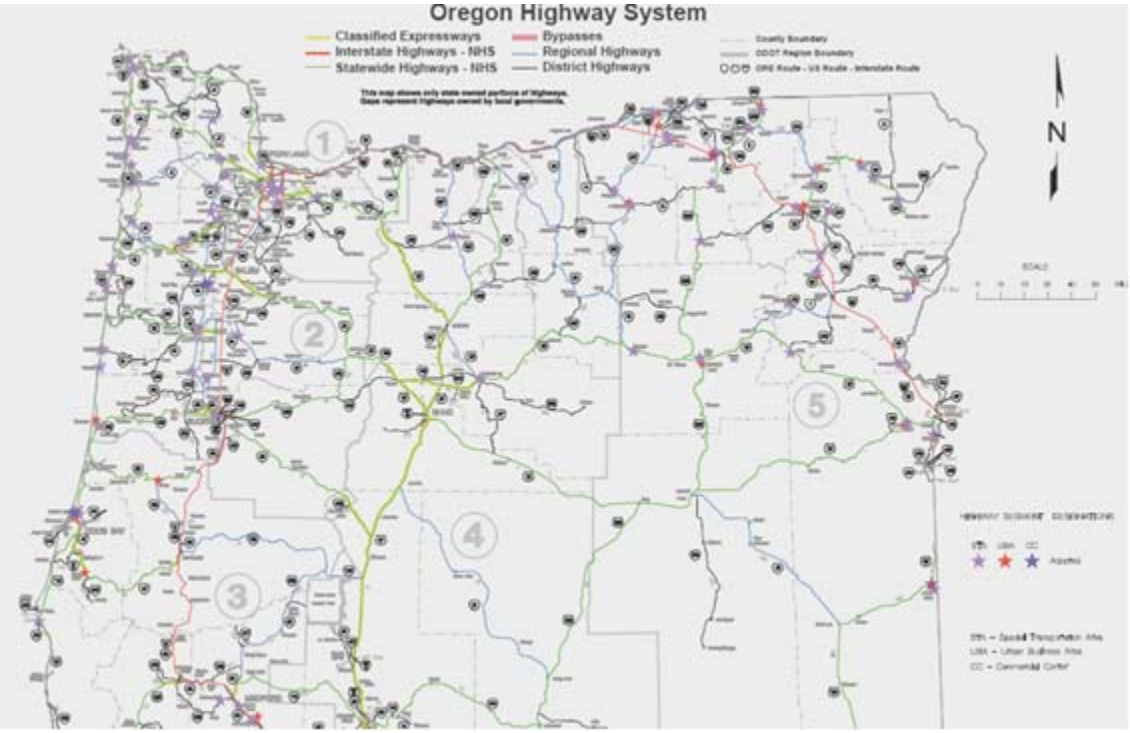

Figure 7 Major Oregon Highways[31]

2.1.14 Interoperability Initiatives

The following actions & initiatives have been enacted in Oregon.

- Establishment of Oregon State Interoperability Executive Council by Governor's Executive Order. 2002

[31] Oregon Department of Transportation's website for Oregon Transportation Plan: www.oregon.gov/odot/td/tp/ortransplanupdate.shtml

- Adoption of SIEC Strategic Plan outlining mission, goals and priorities. First adopted April 2003; updated September 2004; revised September 2005, updated again November 2007.
- SIEC contracted for a quantitative interoperability survey including an inventory and gap analysis within Oregon with Sparling. Assignments based on the findings were incorporated into the SIEC Strategic Plan. Report published January 2005.
- SIEC contracted for coordination support. Produced publications to assist with information and guidance for interoperability. 2004.
- SIEC sponsored State stakeholder summits in conjunction with wireless users' conferences to inform and update stakeholders on interoperability activities and progress. 2004 & 2005.
- SIEC prompted formation of the State Wireless Infrastructure Investment Group (SWIIG) to coordinate the four State agency-owned radio systems. Basis of the system-of-systems. Combined radio technical resources of State police and State transportation.
- Oregon State Legislature codified the SIEC into State statute. Directed SIEC to develop and implement a statewide interoperable communications plan by 2011; develop recommendations for financing of radio infrastructure to support consolidating State radio system users into a single system with options for interoperability for local users (OWIN). 2005
- OWIN staff worked with the Department of Justice Integrated Wireless Network (IWN) deployment, obtaining shared sites along the I-5 transportation corridor and getting agreement from DOJ that all IWN sites would also be shared with future OWIN sites. The site sharing agreement has served as a model for State/local agreements.
- Contracted with Federal Engineering to produce conceptual design recommendation and cost for statewide land/mobile/radio infrastructure. Completed 2006.
- SIEC passed nine policy actions including: establishment of "system-of-systems", goal of Level 4 Interoperability statewide (gateways and shared channels); supporting development of statewide, State constructed public safety communications platform; established policy ensuring access to the public safety communications virtual private network for non State public safety agencies; encouraged co-location of facilities; encouraged regional planning for interoperable communications; established intent for use at no cost by locals of statewide backbone for interoperability purposes; and finally, called out the issue of the need to coordinate use of nationally designated interoperability standards by requesting a voluntary moratorium by local agencies to not request licensing on nationally designated interoperable channels until the interference issue could be addressed.
- Published the Guide to Short Term Interoperability. Updated May 2007.
- Published Short Term Physical Plant Guidelines (Shared Radio Site Standards). 2007

- Established '555 Committee'; fire chiefs, police chiefs and sheriffs who would be available to testify at legislative hearings regarding OWIN priorities.
- Developed reference document for questions regarding infrastructure choices (What if/Why Not, 2007).
- Held OWIN Summit with policy makers to gather and share information about priorities for infrastructure development. 2007
- Oregon State Legislature provided $6.8 million to take Oregon Wireless Interoperability Network to next level of planning; specific deliverables include additional staff and proposal for phase plan for construction. 2007.
- Adopted this Oregon Statewide Communications Interoperability Plan. 2007

Obtaining wireless voice communications *operability* for Oregon public safety agencies is a top priority. Expanding wireless coverage and replacing aging radio infrastructure often older than its users is a priority at every level. The need for mobile data and data interoperability continues to grow. While local and regional jurisdictions have plans in place to facilitate mutual aid, interoperability in most areas within disciplines is still at a basic level and across disciplines; it most often reverts to swapping radios. Diverse geography, obsolete equipment, operational needs and FCC mandates make improving public safety wireless communications a complex and expensive process. This plan represents phased improvements at every level in order to improve our ability to provide critical public safety services to the citizens of Oregon.

2.2 NIMS/Multi-Agency Coordination System (MACS) Incorporation

Oregon's experience with wildland fires in the southern portion of the State in the early eighties served as early notice and motivation for changes that would facilitate multiple agencies working together on major public safety incidents.

The Oregon State Fire Marshal's office, in conjunction with the Oregon Fire Defense Board Chiefs, coordinates the updates and publication of an excellent example of how multi-agency coordination and communication will occur in the Oregon Fire Service Mobilization Plan.[32] This plan addresses incidents that exceed the capacity of local firefighting services and includes State, county, local and private responders. It also addresses the way in which assistance outside Oregon's borders will be incorporated. Authorizing statutes governing coordination include the Emergency Conflagration Act[33] among others listed in the document.

The State of Oregon has incorporated concepts and principles of NIMS Chapter II, Command and Management, including ICS characteristics through use of a Multi-Agency Coordination System (MACS) into the State Emergency Management Plan (EMP).

- Pre-designated incident facilities: Use of fixed EOC and other coordinated sites.

[32] On the website:http://www.oregon.gov/OSP/SFM/docs/Administration/MOB_Plan_Binder2007.pdf

[33] ORS 476.510-476.610 and 476.990(4)

- Facilities; pre-identified storage sites and points of resource distribution; identification of alternate sites. The EMP specifically references the implementation of a Multi-Agency Coordination System via the Emergency Control Center in Salem.
- Comprehensive resource management: Inventory of and types of resources, developing a resource inventory management system.
- Integrated communications: Establishing the capability to share voice and data information with other jurisdictions and levels of government. Current statewide voice capabilities are limited to a few shared frequencies (refer section 4.2). The existing statewide data sharing is via the Law Enforcement Data System (LEDS); among other things, a system that provides the ability to send and receive teletypes, and to track homeland security, tsunami and weather related critical information. Mobile gateway devices are available for deployment through State Police and the State Fire Marshal's office.
- Transfer of command: Conduct appropriate briefings between operational periods and officially transfer command between old/new crews.
- Unified command: Report to one leader.
- Personnel and resource accountability: Develop staffing patterns, assignment charts and track resources.

This system is further delineated as county emergency managers have the responsibility of funneling countywide requests and information into the ECC during major events. Countywide and local EOCs work cooperatively to inform and coordinate response. Both the counties and primary public safety answering points (9-1-1 Centers) have designated roles in disseminating information related to homeland security. ARES/RACES are incorporated into the State and many county, city, hospital and other NGOs plans – most commonly as a resource to connect EOCs and share information during disasters. The statewide plan for emergency amateur radio volunteers addresses NIMS compliance and training levels and frequency.[34]

Oregon Emergency Management (OEM), counties and some of the larger cities in the State have worked together to increase NIMS training and compliance statewide. Whether contracted separately or with distributed DHS grant funds, local jurisdictions have been completing NIMS compliant interoperable communications plans in the past two years. County managers are responsible for reporting on compliance for jurisdictions within their county to OEM.

In addressing Element 7 of the NIMS Command and Management Matrix, as the OWIN system planning continues, a placeholder has been identified to develop a talk group that would be tied to the State ECC in times of significant incidents

2.3 Region/Jurisdictions

Oregon is geographically organized into 36 counties. Per Oregon Revised Statute 401.305, each county shall and each city may, establish an emergency management agency which is directly responsible to the executive officer or governing body of the county or city. Where there is both

[34] Oregon Operations Manual and Statewide Communications Plan ARES/RACES Oct 2007 draft.

a county and city emergency manager, they are directed to jointly establish policies which provide direction and define the purpose, roles and responsibilities of each for an effective and efficient response to emergency conditions.

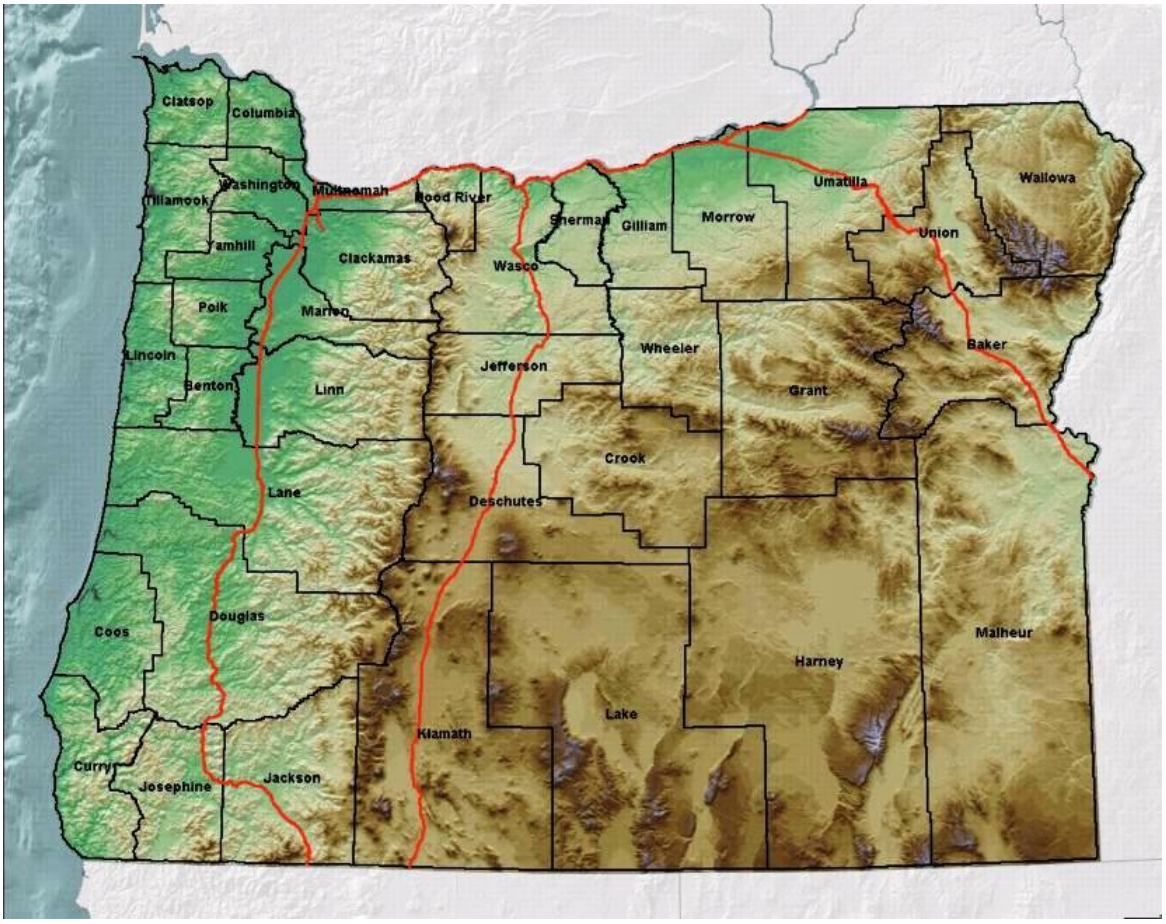

Figure 8 Map of Oregon Counties

2.3.1 Tribal/County/City Emergency Planning

Emergency managers at a minimum: coordinate planning activities necessary to prepare and maintain an emergency operations plan, management and maintenance of emergency operating facilities, establishment of an incident command structure for management of a coordinated response by all local emergency service agencies. They are responsible for coordination with Oregon Emergency Management to integrate effective practices in emergency preparedness and response as provided in the National Incident Management System (NIMS) as established by Presidential Directive 5[35].

[35] ORS 401.305

2.3.2 Oregon Emergency Managers and Jurisdictions

Table 4 below denotes the highest level of dedicated emergency management staff in each jurisdiction. In many cases (e.g. Portland metropolitan area, collectively referred to as 'Metro') there are regional entities comprised of staff across the area. Many jurisdictions have additional designated staff specifically for their emergency management unit. Oregon Emergency Management (OEM) is the umbrella organization for this function.

Oregon has designated emergency managers covering the following jurisdictions/levels:

Table 4 Oregon Emergency Managers and Jurisdictions

County/Tribe	Title	Municipal/Other	Title
Baker	County Manager		
Benton	**County Manager**		
Clackamas	**County Director**		
		Lake Oswego	**City Emergency Manager**
Clatsop	**County Manager**		
Columbia	**County Director**		
Coos	**County Manager**		
Crook	**County Coordinator**		
Curry	**County Coordinator**		
		Port Orford	**City Emergency Manager**
Deschutes	**County Manager**		
Douglas	**County Manager**		
Gilliam	**County Coordinator**		
Grant	**County Coordinator**		
Harney	**County Coordinator**		
Hood River	**County Director**		
Jackson	**County Manager**		
		Medford	**City Emergency Manager**
Jefferson	**County Coordinator**		
Josephine	**County Coordinator**		
Klamath	**County Manager**		
Lake	**County Coordinator**		
Lane	**County Coordinator**		
		Eugene	**City Emergency Manager**
Lincoln	**County Director**		
Linn	**County Coordinator**		
Malheur	**County Coordinator**		
Marion	**County Manager**		
		Keizer	**City Emergency Manager**
		Salem	**City Emergency Manager**
Morrow	**County Director**		
Multnomah	**County Director**		
		Gresham	**City Emergency Coordinator**
		Portland	**City Emergency Director**
Polk	**County Manager**		
Sherman	**County Director**		
Tillamook	**County Director**		

County/Tribe	Title	Municipal/Other	Title
Umatilla	County Manager		
Confederated Tribes of the Umatilla Indian Reservation	Emergency Coordinator		
Union	County Officer		
Wallowa	County Manager		
Warm Springs Indian Reservation	Emergency Manager		
Wasco	County Manager		
Washington	County Director		
		Tualatin Valley Fire & Rescue	Emergency Manager
		Beaverton	City Emergency Manager
		Hillsboro	City Emergency Manager
		Tigard	City Emergency Coordinator
		Tualatin	City Emergency Director
Wheeler	County Coordinator		
Yamhill	County Manager		

2.3.3 Regional Interoperable Communications Planning

The State Interoperability Executive Council (SIEC) supports and encourages regional efforts to plan, coordinate and implement interoperability solutions. To the extent this has not yet occurred in parts of the State, the SIEC recommends regions that are patterned after the Healthcare Preparedness Regions. (SIEC Policy Action 07-2006). There are seven of these regions in the State (note that regions 4 and 8 were consolidated into other existing regions). The SIEC is mindful that regional borders are "paper only" and should not act as a limitation to communications, coordination or service provision.

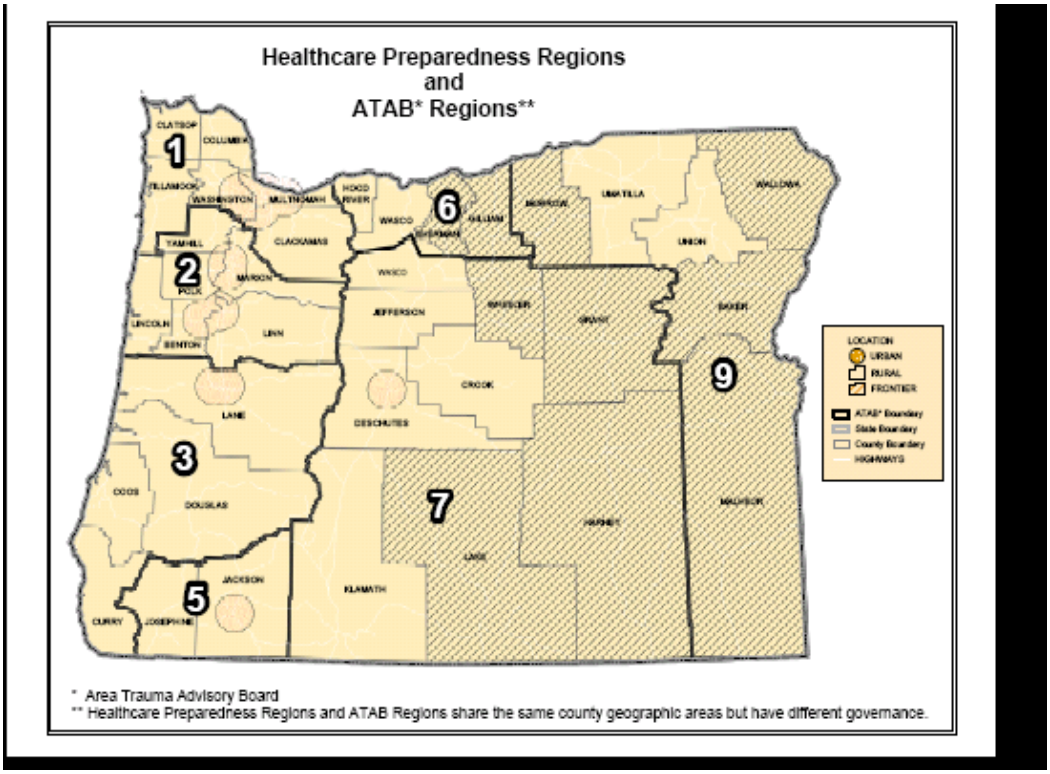

Figure 9 Healthcare Preparedness Regions and ATAB Regions[36]

Table 5 Oregon Regions

Region 1	**Region 2**	**Region 3**
Clackamas	Yamhill	Lane
Clatsop	Lincoln	Douglas
Columbia	Linn	Coos
Multnomah	Marion	Curry
Tillamook	Benton	
Washington	Polk	
Region 4	**Region 5**	**Region 6**
	Jackson	Hood River
	Josephine	Wasco
		Gilliam
		Sherman
Region 7	**Region 8**	**Region 9**
Klamath		Umatilla
Lake		Morrow
Deschutes		Union
Crook		Baker
Grant		Wallowa

[36] Healthcare Preparedness Regions are now alternately referred to as Hospital Preparedness Planning Regions.

Jefferson		Malheur
Wheeler		
Harney		

2.3.4 Homeland Security Regions

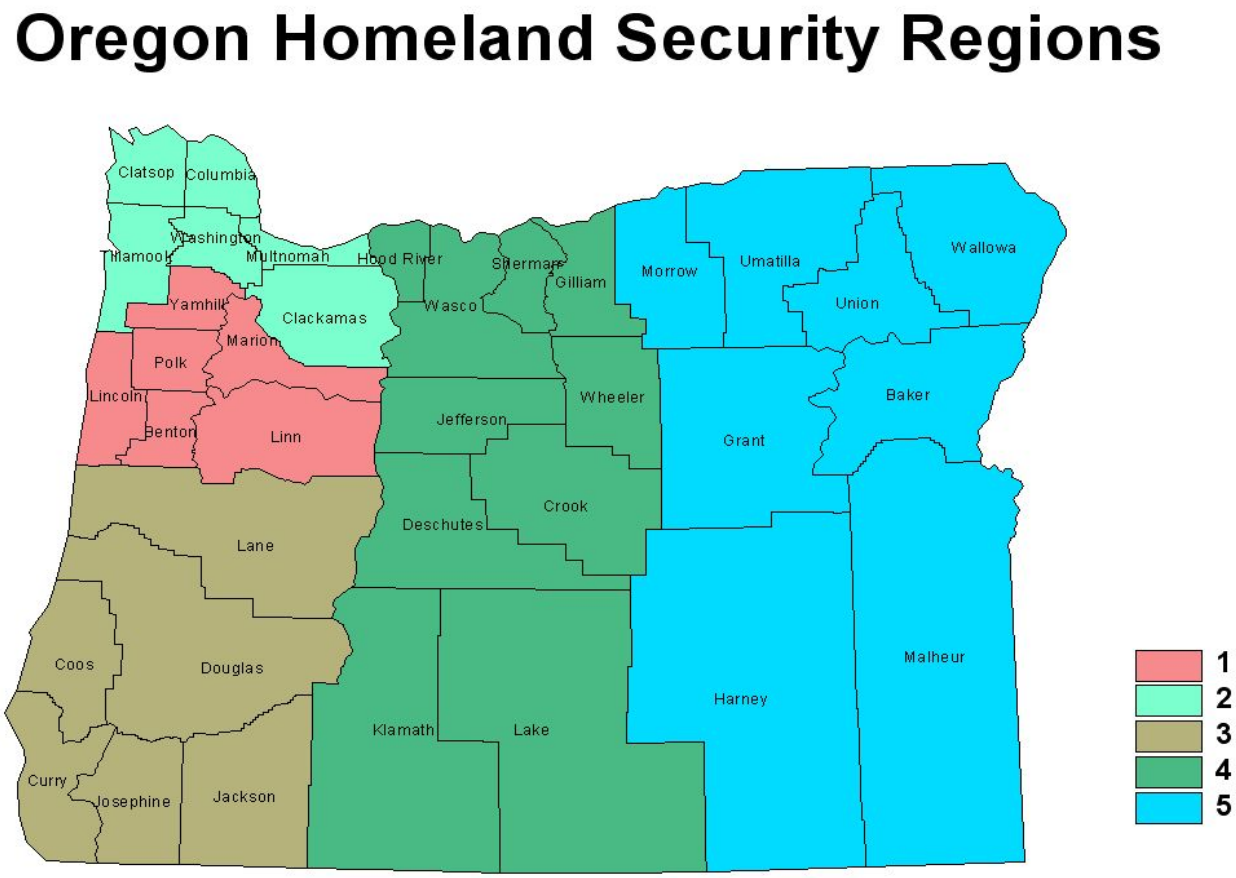

Figure 10 Oregon Homeland Security Regions

2.4 UASI Area/TIC Plans

Oregon has one UASI region that consists of the City of Portland, three Oregon counties and one county in the State of Washington. The Oregon Counties are: Clackamas, Columbia, Multnomah, and Washington. Clark County is the one county in the State of Washington that is connected to the Portland UASI group of counties. Together, these counties comprise the Portland-Vancouver metropolitan area. This TIC Plan was exercised in September 2006 and

again in October 2007 during TOPOFF 4. Performance reports/a scorecard for the TOPOFF exercise have not yet been reviewed by the SIEC.

2.4.1 Portland Tactical Interoperable Communications Plan

The points of contact (POC) for questions regarding the Portland TIC Plan are:

Primary:

Name	Lisa Turley
Title	Director, Bureau of Emergency Communications
Address	P.O. Box 1927 Portland, Oregon 97207
Phone	(503) 823-4621
E-Mail	lisa@ci.portland.or.us

Alternate:

Name	Paul Pedersen
Title	Director, Washington County Consolidated Communications Agency Dispatch Center
Address	P.O. Box 6375 Beaverton, OR 97007
Phone	(503) 466-3780
E-Mail	ppedersen@wccca.com

2.4.2 Future TIC Plans in Oregon

A second TIC Plan covering the Eugene-Springfield metro area in Lane County is scheduled to be complete by June 2008, in time for the 2008 Olympic Track & Field Trials. The Statewide TIC Plan will be developed between 2007 and 2009 and will include the resources of the major regional projects and systems. It is anticipated that this work will require outside contractual assistance.

In order to develop a statewide TIC Plan, a statewide assessment of resources must be completed[37].

2.5 Participating Agencies and Points of Contact

Members of the SIEC Strategic Planning Committee began their monthly meetings during 2006 with a goal of completing the first version of the statewide plan prior to December 2007. Following the SAFECOM workshop in February 2007, efforts and format shifted in order to address elements presented to participants at that workshop. Committee membership included a fairly equal representation of interests and expertise. Oregon military, State and local government comprised two thirds of the committee. Other active participants were contractors involved in both state and regional interoperability planning as well as manufacturers of

[37] Refer to Sections 4.11.3 and 5.4.

equipment and infrastructure. This inclusion was purposeful in order to ensure that the statewide and local plans were aligned and flowed in a complimentary manner.

2.5.1 SIEC Member & Interested Party Roles

Plan elements included incorporation of portions of the previously adopted SIEC Strategic Plan. The full SIEC and interested parties had opportunities to review and provide feedback via email and during Council meetings on mission, vision, strategic goals and initiatives. Several joint meetings with the SIEC Technical Committee were held to prioritize certain policy and logistics issues (the Strategic Planning Committee also includes members of the Technical Committee). Following SIEC approval of overall direction, the Strategic Planning Committee continued meeting to research and address the remaining portions of the plan. This process allowed specific questions and issues to be posed and answered by various interests, reinforcing multi-agency and multi-jurisdictional needs. The regional meetings and email distribution begun in the fall of 2007 allowed a broader range of comments as well as information sharing and planning for future exercise of the plan.

Strategic Planning Committee members represented local, state, private, commercial and non governmental interests in various phases of the process. Refer to Appendix E for the listing with names and contact information.

2.5.2 Regional Meetings/Discussions

Beginning in the fall of 2007, the draft plan was promulgated through the website, active review and solicitation of feedback by SIEC representatives to their membership organizations, in quarterly association meetings and in five regional meetings. Feedback was gathered through November 16, 2007 so that it could be incorporated into the final version of the plan. Due to resource limitations, outside assistance was contracted in order to conduct the regional meetings.

2.6 Statewide Plan Point of Contact

Primary Contact:

Michael Zanon, OWIN Program Coordinator
P.O. Box 14360
3225 State Street
Salem, OR 97309
503-378-3055 ext 55037
Michael.zanon@State.or.us

Secondary Contact:

Kristi Wilde, SIEC Vice Chair
Central Lane Communications
1735 W. Second Avenue
Eugene, OR 97402
541-682-2767
Kristi.j.wilde@ci.eugene.or.us

Neither point of contact is a full time interoperability coordinator. Oregon has not yet identified how a full time interoperability coordinator fits into the prioritization of critical areas to address around public safety communications. Resources are limited on all levels and the issue of replacing and upgrading our public safety communications network in order to address *operability*, let alone *interoperability*, is an overriding concern. For the short term, funding and support for interoperability coordination will be covered by the individual agencies represented on the SIEC and its committees.

2.7 Scope and Timeframe

This plan addresses the current statewide public safety interoperable communications capabilities and references the priorities for future development. As local, regional and statewide infrastructure expands, so will the plan elements. Collaboration along with regular training, exercise and usage will be vital in maximizing the use of the plan and interoperable resources in order to deliver key critical services.

The Oregon SIEC Strategic Planning Committee will be responsible for the oversight and maintenance of this plan. The plan shall be updated not less than every two years.

The scope of the Oregon SCIP is based upon:

- The planned technology enhancements included in the statewide backbone infrastructure referred to as the OWIN system.
- Strategic initiatives and policy actions approved by the SIEC during the 2007-2009 biennium. These deal with recommendations for standardized equipment purchases, infrastructure expansion, and use of the current mutual aid frequencies.[38] Expected access to the Council (NPSPC) interoperability channels will be addressed in both policy and procedure.
- Local requirements identified in regional discussions around interoperability capabilities.
- Continued preparation for FCC mandated narrow-banding to 12.5 kHz channels by 2013.
- The requirements of the Legislative Assembly to implement statewide communications interoperability plan by 2011. The SIEC is lead in all areas to ensure both progress and compliance with interoperability targets. Regular reports on this progress are being made to: the Governor's Office and Legislative Committees, both during and between regular sessions.

It is our intent to maximize opportunities by looking for:

- Continued expansion and coordination of interoperable communications planning efforts; assisting with local, county and regional efforts.

[38] Oregon SIEC Strategic Plan Policy Actions, Appendix C

- Resources to support multi-disciplinary, multi-jursidictional training and exercise to expand use of interoperable systems for public safety. NIMS training is a portion of this effort.
- Grant funding sources and proposals that promote multi-agency and/or regional, multi-jurisdictional cooperation for infrastructure build out.
- Partnership opportunities, both public and private, in order to expand capabilities.
- Planning for redundancy of systems. This includes identifying current Strategic Technology Reserves and ensuring that policies and procedures to access these resources are in place. Following that, we need to identify and assess key infrastructure and end user equipment for back up capabilities in all regions. We then will plan to strategically stage assets that will serve public safety purposes. Gaps in STR resources will be identified for future action. The existing resources will be cataloged for reference in a Statewide Tactical Interoperable Communications Plan (TIC PLAN). Standard Operating Procedures to gain access to and use those assets are needed.
- Pilot projects to test operational and/or construction design concepts for OWIN and local access and/or connectivity for interoperability (e.g. Federal Partnership Interoperable Communications in Marion County and the 7 County Project in the 4th congressional district). Results will be assessed so that future projects can be adjusted as needed.
- Provide a centralized reference for regional radio & wireless interoperability projects in the Oregon

Not in the scope of this Plan:

- Complete catalog of regional radio system projects that are working well today. The primary reason is limited resources required to interview and gain information. Instead, examples of these systems are referenced throughout the document.
- Complete inventory of interoperable communications systems in Oregon. Limited resources make it difficult to gather the information, both for locals and on a statewide basis. The initial inventory and gap analysis published in January 2005 captured enough to provide information on needed priorities for now. Updating and completing that inventory is a long term goal but not a priority. Making that inventory and points of contact for radio sites and projects readily available to those planning expansion of infrastructure has been called out as a future need as a result of recent regional stakeholder and SIEC sub-committee meetings.

2.8 Oregon SCIP Timeline for Goals, Objectives and Initiatives

This marks the progress and priorities towards meeting Oregon's statewide goals for interoperable communications adopted for the 2007-2009 biennium. Consistent feedback from the 2007 regional meetings to review the SCIP was that there is also a need to develop a business

model that allows us to maintain the systems (network infrastructure) over time. This discussion went beyond the OWIN system. This will be brought back to the SIEC for future action.

Table 6 Oregon SCIP Timeline for Goals, Objectives and Initiatives

2.8.1 Strategic Goal #1 – Create a common understanding of communications interoperability throughout Oregon.

SUPPORTING ACTION	*INITIATIVE*	*RESPONSIBLE PARTY*	*TIME LINE*	*STATUS /BENCHMARKS*
1.1 Meet State & federal legal requirements for public safety I/O		SIEC	Ongoing	
	1.1.1 Complete SCIP	SIEC Strategic Planning Committee	Dec 3, 2007	Draft submitted for review, 9/28; Regional meetings Oct 30-Nov 7; SCIP updated & adopted by SIEC, late Nov 2007;forwarded to DHS.
	1.1.2 Complete PSIC Investment Justifications	SIEC Executive Committee/OEM	Dec 3, 2007	Regional meetings Oct 30-Nov 7; ICTAP workshop Nov 7; regional project proposals forwarded to DHS, late Nov 2007
	1.2.3 Finalize PSIC Grant Projects for Oregon	SIEC/OEM	Nov 07-Mar 08	Proposal input Oct-Nov 07; Submissions in Feb 08
1.2 Maximize efficient use & sharing of public safety spectrum & resources		All	2007-2009	
	1.2.1 Identify current I/O resources by region.	SIEC+	2008-2009	Obtain funding for inventory; gap analysis 2008
	1.2.2 Plan for appropriate future integration of private/other sector users with roles in public safety response (e.g. hospitals,	SIEC+	Ongoing	

SUPPORTING ACTION	*INITIATIVE*	*RESPONSIBLE PARTY*	*TIME LINE*	*STATUS /BENCHMARKS*
	transportation, public broadcasting, Emergency Alerting System/EAS).			
1.3 Coordinate statewide policy formulation by local, county, tribal, private, state, and federal authorities & elected leaders		SIEC	Ongoing	
	1.3.1 Integrate the identified needs of local, tribal, State, federal & private emergency responder I/O communications via a system of systems approach	SIEC Technical Committee; OWIN; Regional project management Coordination	Ongoing	Local, regional, statewide infrastructure projects include future capacity & shared standards to allow connectivity
	1.3.2 Provide leadership & standards/models for development of public safety partnerships	SIEC Partnership Committee	Ongoing	Local agencies sign MOUs indicating intent to share infrastructure (e.g. collocation, base stations, towers, radio buildings or network; grant proposals reflect multi-agency/multi-disciplinary approach

2.8.2 Strategic Goal #2 – As appropriate, utilize common language, coordinated protocols and standards statewide.

SUPPORTING ACTION	*INITIATIVE*	*RESPONSIBLE PARTY*	*TIME LINE*	*STATUS/ BENCHMARKS*
2.1 Establish priority protocols for the use of statewide, regional and local system assets.		SIEC and appropriate multi-agency, multi-disciplinary groups	2007-2011	
	2.1.1 Complete inventory of assets	Last effort published January 2005.	2007-2008	
	2.1.2 Develop SOPs for use	Oregon APCO/NENA Lead	2008	SOPs are published, promulgated for easy

SUPPORTING ACTION	*INITIATIVE*	*RESPONSIBLE PARTY*	*TIME LINE*	*STATUS/ BENCHMARKS*
				access
2.2 Identify who will coordinate current resource requests (e.g. regionalized control point)		SIEC & Oregon APCO/NENA	2008	Agreement reached on centralized control points
	2.2.1 Regular training & exercise schedule established		2008, Ongoing	First exercise includes SCIP elements

2.8.3 Strategic Goal #3 – Integrate existing and future interoperable communications systems.

SUPPORTING ACTION	*INITIATIVE*	*RESPONSIBLE PARTY*	*TIME LINE*	*STATUS/ BENCHMARKS*
3.1 Effectively steward scarce public and private resources.		SIEC	Ongoing	
	3.1.1 Build OWIN to facilitate the development of a scalable core backbone system to be utilized by the State of Oregon for the integration of public safety systems.	SIEC, OWIN, Oregon Executive and Legislative Leadership	2007-2011	Technical standards for OWIN adopted. Authorization to proceed with RFP for test phase during 2008 Legislative Assembly.
3.2 Identify and meet the needs of local jurisdictions so that there will be significant/widespread integration of OWIN and other resources into local and regional operations.		SIEC+	2006-2011	OWIN conceptual design completed; regional meetings held to explore integration opportunities.
	3.2.1 Facilitate local community buy in with standards based design that includes open architecture in order to provide for statewide	SIEC, Technical & Partnership Committees	Ongoing	Technical standards adopted; survey of local jurisdictions with regards to OWIN partnership levels completed;

SUPPORTING ACTION	*INITIATIVE*	*RESPONSIBLE PARTY*	*TIME LINE*	*STATUS/ BENCHMARKS*
	interoperability and access to voice & data communications			partnerships with local/regional radio projects identified.
	3.2.2 Promote unencumbered access and use of pre-coordinated resources	SIEC	Ongoing	Policy actions passed stating intent
	3.2.3 Document progress	OWIN, SIEC	Ongoing	
3.3 Integrate local emergency provider resources for interoperability into an established protocol for use		SIEC	Ongoing	
	3.3.1 Complete inventory and document SOPs for use			
	3.3.2 Establish protocols for use with border States	SIEC, OWIN	2008, ongoing	Joint meetings with border States scheduled to begin discussion.
3.4 Manage the statewide interoperable network through the integration of research and orderly transition to advanced technologies.		SIEC, Technical Committee, OWIN	Ongoing	
3.5 Establish a disaster recovery plan for interoperable communications.		SIEC, Technical and Strategic Planning Committees	2008-09	
	3.5.1 Identify & prioritize key critical components of the system.		2007-2011	Complete inventory
	3.5.2 Identify a backup strategy for each critical component.		2007-2011	Inventory of STRs conducted; gaps identified; implementation plan to address gaps adopted; protocols for use documented.

2.8.4 Strategic Goal #4 – Facilitate training to enhance effective use of communications systems.

SUPPORTING ACTION	*INITIATIVE*	*RESPONSIBLE PARTY*	*TIME LINE*	*STATUS/ BENCHMARKS*
4.1 Establish core objectives on interoperable communications for use in local training and exercises.		SIEC, Strategic Planning Committee, OEM	2007, ongoing	
4.2 Provide a template for statewide, regional, and local exercises of I/O resources		OEM & SIEC	2007, ongoing	Lessons learned from TOPOFF 4 incorporated into model

3 Methodology

In January 2007, key stakeholders from within Oregon gathered for a three day "Program and Capability Assessment Workshop" in Keizer Oregon. The focus on statewide needs was framed as a holistic, regional approach to sustaining, building and enhancing capabilities in order to maximize funding and institutionalize this planning effort. The enhancement plan for the State was the next phase of a similar exercise held in 2006, establishing priorities and creating a process that included performance measures that could be tracked and measured.

The number one capability priority identified out of this process was interoperable communications. Initiatives tied to this capability fell under the five categories of: governance, planning, infrastructure, training and exercise.

The Oregon SIEC, in crafting the Statewide Interoperable Communications Plan, set goals that affirmed and/or expanded upon the stakeholder input in Keizer. The SIEC used the framework first established by the Council in its own strategic plan to improve interoperable communications in Oregon – an effort initially launched in 2002 by Governor Kitzhaber's Executive Order, reaffirmed by Governor Kulongoski, and then in 2005, by Legislative directive in House Bill 2101. This work takes the SIEC Strategic Plan to the next level.

3.1 Proposed Feedback Process

Upon completion of the initial draft of this Statewide Interoperable Communications Plan in September 2007, a comment period commenced, which included: an email distribution to public safety system users, posting of the plan on the SIEC website, and five regional stakeholder and interested party meetings sponsored by the SIEC. That feedback has been incorporated into the plan submitted to DHS in November 2007. The regional meetings were also used as the forum for initial discussion and feedback on process and potential Investment Justifications for the Public Safety Interoperable Communications (PSIC) grant process.[39]

The positive feedback gained from these regional meetings and the goal of continuing to solicit feedback on the planning and partnerships for interoperable resources to maximize progress are articulated in Strategic Goal #3[40]. The SIEC committee forums[41] provide regular opportunities for broad discussion/ input towards priorities and the technology needed for interoperable communications in Oregon. SIEC members report back to associations and solicit feedback on direction during their quarterly meetings[42].

Both the Governor's staff and key members of the Oregon Legislature receive regular updates on the work of the SIEC. In 2007, a specific Legislative Forum (the OWIN Work Group) consisting of members of the Oregon Senate and House of Representatives was formed to meet monthly

[39] Refer Appendix K for rosters of the multi-discipline and multi-jurisdictional meetings for Oregon SCIP review.

[40] Refer to 2.8.3 Strategic Goal #3.

[41] Refer to Appendix E for both Council and Committee membership.

[42] Refer to Section 6 – Implementation for a list of quarterly forums.

with OWIN staff. The agenda focus for these meetings is to provide updates and answer questions on partnership opportunities and progress on infrastructure build out. Committee members give direction to OWIN on the priorities for phasing in of public safety interoperable infrastructure upgrades and build out. These same legislators meet with other elected officials and constituents to both educate and solicit additional feedback on the technology portion of this plan. That feedback and direction from the Legislature is directly tied to funding approval and authorization for phases of the OWIN project.

The Oregon Legislature has strongly encouraged partnerships in the construction of the OWIN system. OWIN has initiated an aggressive local outreach to identify and formalize partnerships and other cost sharing agreements related to the construction and support of the OWIN system. During these outreach meetings, the URL to the SCIP is provided to all attendees. Attendees are informed that the OWIN initiative includes the goal of facilitating federal, State, local, and tribal interoperability.

3.2 Regional Input

The SIEC first commissioned a large scale regional quantitative input effort through an inventory and analysis of public safety interoperability in 2004. That study surveyed Public Safety Answering Points (33), radio system owners (22), and end user agencies (74). A comprehensive survey conducted in the field was completed for seventeen of these. The Sparling study was published in January 2005. Support for a 'system of systems' approach to statewide interoperability was one of the initial observations in the report. Also included in the findings was broad support for statewide interoperability planning, a high ranking for regional planning and both regional and statewide frequency planning. Those surveyed consistently reported that: radio system coverage and capacity significantly impact interoperability, lack of in house technical support was an issue for planning, and demand for mobile data systems was reported to be growing fast and figured to be important in designing overall interoperability and capacity for law enforcement first responders. Overall, the most significant impediments to interoperability reported at that time were: funding limitations, coverage, disparate frequency bands, incompatibility of radio systems, and the lack of consolidated radio systems.[43]

In late October, early November 2007, the SIEC scheduled five half-day regional workshops around the State attended by approximately 250 local stakeholders. The purpose was to gather feedback on the draft SCIP and to discuss guidelines and funding requirements for the PSIC grants. Handouts included: the SCIP Executive Summary, Methodology, Strategic Goals and Initiatives, as well as the published PSIC grant requirements and Frequently Asked Questions document published by the Office of Emergency Communications. Each workshop began with introductions, overview of workshop objectives and the SCIP development process to date. In addition to feedback on the SCIP, a highlight of each workshop was a facilitated survey of multi-jurisdictional/multi-agency interoperable communications projects planned for or in progress by those stakeholders present. A common comment from those attending was that they learned new

[43] http://www.oregon.gov/SIEC/resource_info/surveys.shtml

information about their neighboring public safety stakeholders and that there should be more regular forums for regional discussions of public safety communications planning and projects. In a separate countywide forum discussion of the SCIP in mid November, Public Health and Health Preparedness Planning coordinators commented on the need to address the same areas as those in the SCIP. These comments reinforced the SIEC policy action around regional planning and the suggestion that the regional HPP's may provide a natural bridge/forum for expanding interoperability planning and discussions.

Attempts to garner feedback from tribal nations have been less than satisfactory to date. While regional projects in various parts of the State include tribal entities, specific invitations to attend regular SIEC forums, including council membership and committee participation have not resulted in regular participation. This continuing gap has been noted in the SIEC strategic goals and objectives for the next biennium.

3.3 Incorporation of Existing TIC Plan in Oregon

Contacts for the Portland TIC Plan are listed under section 2.4.1 of this SCIP. SIEC Strategic Planning Committee members included those involved in the Portland UASI TIC planning effort.[44] As the Statewide TIC Plan is developed, the references to that plan and any others completed for MSAs and other areas will be similarly referenced. Cross referencing of resources and SOPs will be incorporated.

3.4 Sustaining a Collaborative Process

The monthly SIEC meetings in Salem, along with associated committee meetings, will remain a core part of our collaboration strategy for interoperability planning and implementation in the State. Addressed in our strategic goals and initiatives, there will be a concerted effort to engage tribal representatives and establish relationships with our border states. During the 2007-2009 biennium, quarterly association meeting updates by SIEC members will continue, with efforts to share information in a consistent format and bring input back to the full SIEC[45]. The regular forum provided by the Oregon Telecommunications Coordinating Council at their video meetings has been appreciated and should be continued. Proposals for forums at the annual OEM facilitated State Program & Capabilities Workshop and requests for assistance in establishing regular dialogue with the health care and non governmental organizations will be proposed by the SIEC as part of our outreach efforts.

The SIEC Strategic Planning Committee tracks progress on strategic goals and initiatives and reports back to the full council monthly. NGOs and regional agencies are included as invitees to all SIEC meetings and to become members of sub-committees. The SIEC has always conducted open, public meetings with the sole purpose of increasing participation from all interested parties, state, local, tribal and non-governmental entities including transit. All entities will be encouraged to continue their participation in these open meetings.

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[44] This planning process also included members contracted for other State planning efforts: Federal Engineering, RCC and at times, HRSA/Touchstone. The goal was to tie planning efforts together consistently by sharing information as all progressed.

[45] Refer to Section 6, Implementation, for a list of quarterly meetings currently scheduled for continuing reports.

The SIEC will sponsor, at a minimum, annual regional forums[46] to:

- Get updates on regional interoperability projects
- Solicit input on new opportunities and partnerships
- Review and update the Oregon SCIP as needed
- Obtain updates from OWIN on interoperability projects and plans

Input gathered from all sources is collected, considered and incorporated into the planning process following approval by the SIEC. The SCIP itself will be formally updated to reflect activity and actions not less than every two years[47]. Midterm progress and intent continues to be posted via approved minutes and policy actions on the SIEC website.

3.5 PSIC Grant Requirements

The published requirements for the PSIC grant are laid out below for reference. Discussion from various fall 2007 workshops and presentations on the federal requirements is included.

Requirement #1: Interoperability.

1) Use of reallocated public safety spectrum in the 700 MHz frequency band.

The Region 35 700 MHz Regional Planning Committee[48] is the designated planning and coordination body in Oregon to deal with the general and interoperability portions of the 700 MHz frequency band. The State of Oregon holds the State use license for the State use portion of the 700 MHz band. The OWIN conceptual design[49] includes use of 700 MHz band in the I-5 corridor for voice and statewide for mobile data. The relationship of the design of this and local, regional and or tribal systems will be explored and promoted in those areas in which it makes sense. Collaboration and cost efficiency in infrastructure build out is a long stated priority for Oregon. As the Sparling report (January 2005) stated, the need for mobile data and data interoperability is growing quickly. A Community Oriented Policing grant (COPS) proposal to build a phase in this spectrum connecting OWIN, IWN and the CRITFC projects was approved in 2007. More phased project proposals to build out infrastructure in this spectrum will be pursued.

2) Enable interoperability with communications systems that can utilize reallocated public safety spectrum for radio communications.

[46] Refer Section 2.3.3 and Figure 5. The Oregon SIEC supports regional efforts and where none already exist, recommends regions patterned after the Healthcare Preparedness Region (SIEC Policy Action 07-2006)

[47] Refer to Section 2.4.

[48] Region 35 is the FCC designation for Oregon

[49] Federal Engineering, OWIN Business Case. Http://www.oregon.gov/siec/docs/owin business case final.pdf

As stated above, system design, including OWIN, and grant proposals (e.g. COPS) already exist that will tie into the reallocated bandwidth. They do provide for use of 700 MHz.

3) or otherwise improve or advance the interoperability of public safety communications systems that utilize other public safety spectrum bands.

The SIEC considers multi-agency and multi-jurisdictional projects which enhance regional operability and interoperability in other public safety spectrum bands to be appropriate. The Oregon SIEC is promoting access to nationally identified interoperability frequencies through OWIN infrastructure and/or access to Strategic Technology Reserves such as gateway devices. As we continue to establish technology standards that will enhance our ability to be a 'system-of-systems', we need to take advantage of funding opportunities. Partnerships on regional projects are crucial. The OWIN conceptual design presented by Federal Engineering proposed a combined 700 MHz and VHF system for State users that takes advantage of available public safety spectrum. Examples of public safety systems utilizing other public safety bands are found in the Portland Metro Area, Marion and Deschutes counties (800 MHz) and Umatilla and Morrow counties (450 MHz).

Requirement #2: *Strategic Technology Reserves (STRs). Statewide Plans must describe how a STR will be established and implemented to pre-position or secure interoperable communications in advance for immediate deployment in an emergency or major disaster.*

Oregon has not yet done a complete inventory and gap analysis of available Strategic Technology Reserves (STRs). This step must be completed prior to an implementation or augmentation of a statewide plan for placement and use of available shared resources.

Oregon has some deployable STR's that can be accessed for localized events. The Portland UASI region has a Washington County Consolidated Communications Agency Tactical Interoperable Communications Unit. The value of this asset is approximately $500,000. Tillamook County has a mobile STR in their coastal county valued at $250,000. The Oregon State Fire Marshal's Office has a similar resource valued at $250,000. State Police have a trailer with a gateway device that can be deployed valued at approximately $80,000. Hospitals in the State will soon have access to mobile satellite trailer network providing both internet connectivity and voice over IP that will be staged at six different hospitals. The total value of these assets is approximately $120,000. Seven more will be ready for five other hospitals and two tribes, the Siletz and Grand Ronde at a value of $140,000. The Oregon Department of Forestry has three self-contained mobile communication systems operating on VHF valued at approximately $450,000.

The 102nd Civil Support Team, stationed in Salem, has a Unified Command Vehicle that is staffed, available and has been deployed outside of Marion County in training exercises. The value of this staged asset is $1.5 million. By federal law, this resource cannot be deployed overseas, assuring its availability to state and local agencies. The National Interagency Fire Center has a P25 cache based in Redmond Oregon which provides a starter kit for all hazard incident communications.

There are gateway devices and radio caches elsewhere that will be catalogued as part of the Statewide TIC Plan. As we develop the TIC Plan, they will be accounted for and cross referenced. Procedures to access the resources will be developed and exercised in 2008. For the

short term, Oregon will prioritize the planning aspect for STRs via an inventory and gap analysis, and look at development of SOPs regarding use of these assets, along with training and exercise. Until Oregon has an STR plan the higher priority will be to use funds for infrastructure and to further advance other parts of Oregon's planning efforts.

Requirement #3: *Local and Tribal Government Coordination. Statewide Plans must describe how local and Tribal government entities' interoperable communications needs have been included in the planning process and how their needs are being addressed, if applicable.*

Fifty percent of SIEC members represent local interests. Those local council members and other local stakeholders are active on SIEC committees, thus ensuring that local needs are incorporated into statewide goals and projects. Council members also report back to their respective associations on SIEC led planning efforts, encouraging two way conversations and bringing feedback to the larger council. SIEC representatives and committee members are the link to local interoperability planning efforts - especially noted in the SIEC Strategic Planning, Partnership and Technology Committees. The SIEC posted this plan on its website www.oregon.gov/siec in early October 2007 and conducted regional forums to gather input prior to finalizing the plan in late November 2007. Tribal involvement is an identified gap in all of these processes and a priority for the next biennium will be to find an effective way to involve and engage tribal members. A variety of tribal members are associated with regional work groups. The SIEC will continue to seek to fill the designated position on the council for a tribal member. The State entered into an agreement with the Columbia River Intertribal Fisheries Council (CRITFC) for a shared infrastructure along the Columbia River. The OWIN infrastructure will be available for tribal use if they choose to participate. (for additional information, see Section 4.2). In an on-going partnership, the Confederated Tribes of the Grand Ronde and Siletz are both receiving assets/STRs in the form of mobile satellite communications trailers as part of the Region 2 Hospital Preparedness Program (HPP). Western Lane county is currently involved in development of a radio site on Herman Peak that includes Tribal partners from Coos, Lower Umpqua and Siuslaw.

Requirement #4: *Nongovernmental Organization Coordination. Statewide plans must describe how authorized nongovernmental organizations' interoperable communications needs have been included in the planning process and how their needs are being addressed, if applicable.*

On a statewide basis, the OWIN system is designed for capacity to include other authorized users. The SIEC promotes the concept that regional planning and infrastructure projects are designed to enable connection or capacity for other users. Prioritization has begun by addressing the first level of public safety response regionally, and the four State radio user agencies statewide. Partnerships, both public and private, are encouraged as a regular strategy in funding the high costs of these projects.

Close coordination with the American Red Cross occurs with Emergency Managers and Public Safety Answering Points (PSAPs) at the local, regional, and State levels. Although often grouped with the general mention of emergency services, Oregon's public safety needs are also served by private and volunteer fire service, amateur radio operators, and others also considered to be NGO's. Presentations by the Healthcare Regions, the Health Alert Network and Oregon

Telecommunications Coordinating Council have been past examples of information sharing that can lead to future inclusion and collaboration, and assist OWIN in identifying NGO needs. We have only begun to explore the partnering opportunities with healthcare professionals. HPP coordinators will be specifically invited to become involved in this public safety planning process with the SIEC as we ask for assistance in broadening scope and involvement through regional meetings. Nonprofit and private pre-hospital EMS providers have been linked through the SIEC strategic planning process. Regional projects are working to tie public works into their system – vital in response to weather related incidents as well as natural disaster.

Commercial Broadcasting is currently a systems component of Oregon's communications capability, collaborating with public safety and Oregon Public Broadcasting (OPB) to deliver the Emergency Alerting System (EAS). Partnership opportunities between OPB and OWIN are being pursued.

Transportation and Utilities are beyond current staff capacity but are included in the future scope of work. An example of regional planning with utilities can be found in Lane County where Eugene Water and Electric Board is an active partner in a countywide communications infrastructure project. Another example is present in Klamath County where the design phase is underway with multiple public safety disciplines partnering with a railroad to build a five site, P25 compliant radio system built to standards set out by the SIEC. Maritime and Coast Guard have been past participants at SIEC monthly meetings. Forest Protective Associations have been briefed on overall SIEC activities and specific OWIN planning. Pacific Power and QWEST participated in the 2007 Planning Retreat.

4 Current Statewide Assessment

The establishment of the Oregon State Interoperability Executive Council in 2002 was a giant step in providing leadership towards a coordinated effort for improving public safety interoperability statewide. Through that body, representatives from key organizations and departments have prioritized policy, been educated about technical options, have joined with other states to discuss planning efforts and challenges, provided technical information and guidance for grant applications, and worked to assess the existing levels of interoperable communications at all levels. The first SIEC Strategic Plan was adopted in 2003 and updated annually through 2005[50]. At that point, Legislative direction changed the priority to developing and implementing a statewide interoperable communications plan by 2011.

The initial interoperability assessment and inventory effort was completed in 2004. The first Short Term Guide for Interoperability was published that same year to assist in grant proposals and recently updated in 2007. In 2005, Oregon Emergency Management coordinated the DHS grant process to gain consistency between county interoperable plans by awarding the contract to a single vendor who was directed to ensure key comparable elements were included. The plans for fifteen counties were completed in 2006/2007.

The statewide assessment and gap analysis revealed that it was the inability to finance failing infrastructure that was the biggest barrier to improving interoperability across the State. Dispatch relay, swapping radios and mutual aid channels remain the primary methods of facilitating interoperability at all levels. There is widespread recognition that the need to meet FCC narrow-banding requirements as well as the price of replacing and/or upgrading infrastructure can best be met through cooperative efforts. A summary of local, regional, tribal, state and federal projects underway (or proposed) is included as Appendix F of this plan. The information gathering is still in progress. The regional workshops held to review the SCIP provided additional, although not comprehensive, information on interoperability projects for voice and data.

Using the SAFECOM Interoperability Continuum, the SIEC assesses statewide interoperability levels as follows:

- Governance: Moderately high. The Oregon SIEC was established in 2002 and meets monthly with a diverse group of stakeholders engaged in improving communications, coordination and cooperation across disciplines and jurisdictions. While regional radio committees exist in various parts of the State, they are not statewide. Efforts to communicate between the existing regional groups and the SIEC are largely informal. The SIEC Partnership Committee is working on formalizing a connection with statewide technology efforts through a non binding survey in September 2007. Planning for use of 800 MHz and 700 MHz spectrum has long been in the hands of the Region 35 RCC/RPC. Members of this committee are actively involved in related statewide conversations through SIEC membership and SIEC Technical Committee participation. Oregon's

[50] Policy Actions 6-9 were added into the plan in 2007.

efforts and coordination with the newly available 700 MHz channels coming from the FCC rulings should continue in this vein.

- Standard Operating Procedures: Moderate. This issue has been called out for action by the SIEC[51]. Coordination of a set of statewide SOPs is primarily limited to large scale fire service incidents and VHF frequency 154.280. Documentation on long standing practices is difficult to locate – a concern that must be addressed as a short term goal. Individual agencies and some regions in the State have joint SOPs and regularly use them over mutual aid frequencies. The sole UASI region currently has a Tactical Interoperable Communications Plan in place. In Morrow and Umatilla counties where the chemical weapons depot is located, much work has been done with federal assistance. As an interoperable communications network and/or short term interoperability solutions become available, SOPs will need to be established to promote smooth operations and minimize interference.

- Technology: Moderately low. The Portland metropolitan area, Marion and Deschutes counties and CSEPP in Morrow and Umatilla counties are examples of exceptions to this rating. This varies by region but on a State level, the four State radio system users operate on separate systems and have no state provided access to mobile data. Shared systems exist now or will soon exist in some of the more highly populated areas in the State and have led to some significant technological advances. Those systems will be leveraged by the State to increase operability and interoperability exponentially. Mobile data for non State users is generally tied to more metropolitan parts of the State where infrastructure and coverage sufficient to effectively support it exist. Today, swapping radios remains a simple and universal standard for interoperability. As the Oregon Wireless Interoperability Network (OWIN) system continues forward, a technology solution to tie state radio users with regional and local system users together will be an option.

- Training and Exercise: Moderate. Oregon Emergency Management conducts regular earthquake exercises and coordinates state grant awards to promote both regional and local training and exercise. Training and exercise have been a high priority for grant awards in the past few years. The SIEC has a goal of developing a twice yearly plan for statewide exercises coming in the 2007-09 biennium. TOPOFF 4, a major disaster exercise effort, was conducted in the Portland metropolitan area in October 2007. Another national level exercise is scheduled to include Oregon in 2008 (NLE 2-08).

- Usage: Moderately high. Although the technology is at the low end of the scale, interoperability is required on a regular basis for day-to-day public safety operations. Often this is accomplished through dispatch relay, swapping radios or use of mutual aid channels. In addition to the shared proprietary system in the Portland metropolitan region, radio caches are in place for those coming into the metro area to assist.

[51] source: policy action 09-2007

4.1 Status of 700 MHz Planning and 800 Re-banding

Currently, use of the 800 MHz band is limited to the greater Portland metropolitan area (five county UASI region), Marion County and Deschutes County. The conceptual design for OWIN proposes a mixed 700 MHz/VHF P25 trunked system that would expand 700 MHz for both data and voice along the I-5 corridor south to the California border. The Region 35 Radio Planning Committee (RPC) has the delegated responsibility to address 700 MHz in Oregon. SIEC council membership includes a representative from the Region 35 RPC to ensure effective communications.

The Region 35 Committee covers the entire State of Oregon. They elect a yearly Chairperson and recommend Region 35 plan changes to the FCC. The Region 35 Frequency Advisor Committee reviews and coordinates FCC applications in the 821-824/866-869 spectrum. Meetings are held at least once a year and as required to handle pending applications.

700 MHz - In the Balanced Budget Act of 1997, Congress directed the FCC to reallocate spectrum in the 700 MHz band to commercial and public safety services from its previous exclusive use for television broadcasting service on channels 60-69. The Regional Planning Committee (RPC) held its first planning meeting on January 16, 2002. The RPC's job is to develop a "plan" for the new 700 MHz frequencies.

800 MHz - In 1987, the FCC developed a National Plan for Public Safety Radio Services that set national guidelines for use of the 800 MHz spectrum while allowing regional public safety planning committees to develop regional plans tailored to their areas own particular communications needs. Oregon has a plan available for review on its website and has shared that plan with neighboring regions in Northern California, Nevada and Washington State.

4.2 How interoperable are agencies and jurisdictions?

The Portland-Vancouver metropolitan area is highly interoperable with a shared, proprietary, common 800 MHz system. In the CSEPP regional encompassing Morrow and Umatilla counties, a shared 450 MHz system provides interoperability for federal and local public safety users. While Deschutes County has a countywide 800 MHz system, not all public safety users are connected. For most of the rest of the State, through the lower level technology solutions of dispatch relay, radio swapping and use of mutual aid channels, agencies and jurisdictions are communicating with one another on a daily basis, resulting in a rating of moderately high on the Interoperability Continuum. These methods are generally inefficient and with FCC mandates coming, require change. The consequences of unacceptable delays in getting critical information to incident commanders and responders were incredibly apparent during the collapse of the Twin Towers in New York in September of 2001. Closer to home, coordinating response daily to traffic accidents and seasonally to flooding and other natural hazards provide regular motivation for change.

4.3 Accomplishments in interoperability

Establishment of the SIEC was a major step in ensuring that interoperability would advance in Oregon. This forum for prioritizing, outreach and promoting change has had impacts in a number of areas.

- Diverse participation on SIEC standing committees has brought a variety of perspectives and expertise together for planning and technology conversations. Outcomes were prioritized statewide goals and recommendations for technical standards and scalable systems. Included physical requirements for shared radio site facilities.
- Inventory and gap analysis of communications equipment and issues in the State completed. Published January 2005.
- Oregon Emergency Management coordinated interoperable communications planning via DHS grant awards in fifteen counties. 2005-2007
- Provided information resources and referral for interoperable communications technology, including recommended standards and grant guidance. Ready reference resources published and/or available through SIEC website and contacts. Statewide SIEC Summits held in conjunction with the Wireless conferences in 2005 & 2006 to inform and update stakeholders.
- Raised awareness of interoperable communications issues resulted in designation as top priority for State Program Capabilities & Assessment Workshop in 2007.
- Promoting partnerships by direct participation and informing others in the State of completed, ongoing and proposed communications projects.
- Addressing the need to update and replace the radio systems for state users by consolidating into a single system; ensuring that this infrastructure would be available to local users for interoperability, with capacity to participate on a variety of levels in the system. OWIN was established. 2005
- Continuing to inform elected officials of interoperability issues so that priorities for financing and planning were formalized.
- Budget approval to proceed in next phases of planning and purchasing the OWIN system, technical backbone for statewide interoperability. 2007

4.4 Sampling of Other Initiatives and Coordinated Efforts

A number of jurisdictions around the State have organized themselves into consortiums for interoperability purposes. Examples include:

- Chemical Stockpile Emergency Preparedness Program (CSEPP) in Eastern Oregon. This is a robustly interoperable system that includes a 450 MHz trunked radio system to support Umatilla and Morrow counties; provides voice and data support to public safety officials and the community with an alert system notification – connected via microwave network; connects Emergency Operations Centers easily. The WiFi setup that is part of this plan was installed by the

Military and is available for anyone in the community to use; using portions of the State digital microwave system that is in place for CSEPP. The entire system is exercised annually, funded by federal dollars. Contact: Chris Brown at chris.brown@state.or.us, 541-966-9640.

- The 7 County Microwave Project in the 4th Congressional District. This federally funded project is connected to the Lane County COPS project, the IWN project and will be connected to the proposed OWIN system. Includes: Lane, Linn, Benton, Douglas, Josephine, Coos and Curry counties. Contact: Bill Thompson, 541-682-6527.
- The Portland-Vancouver UASI region is a shared proprietary 800 MHz analog trunked system. This five county collection (Clackamas, Columbia, Clark (Washington State), Multnomah and Washington) of systems has a high degree of interoperability that has been developed over years of meeting together and in cooperative trunking system "talk group" sharing. The Coalition consists of the following systems:
  - The City of Portland / Multnomah County, OR system is owned, managed and maintained by the City of Portland.
  - The Washington County, OR system is owned, managed, and maintained by a partnership (Washington County Consolidated Communications Agency – WCCCA - an ORS 190 organization) of the public safety agencies serving the county.
  - The Clark County, WA system is owned, managed, and maintained by a partnership (Clark Regional Emergency Services Agency – CRESA – an RCW 39.34 interlocal agreement) of the public safety agencies serving the county.
  - The Clackamas County, OR system is owned by a partnership (Clackamas County 800 Radio Group – C800 - an ORS 190 organization) of the public safety agencies serving the county and is managed and maintained by WCCCA via an inter governmental agreement (IGA).
  - The Coalition is contemplating a project to collectively upgrade and/or replace the region's radio systems with a digital 700/800 MHz system. It is anticipated that the voice system would be a trunked radio system and would adhere to the current national ANSI/TIA 102 series digital Project 25 (P25) standards for trunked operation and for the P25 Intersubsystem Interface (ISSI). The ISSI will assure that the system will be capable of seamless interconnection to all other P25 compliant trunked radio systems that may be established in Oregon and/or Washington, Idaho, California. Contact: Paul Pedersen: 503-690-4911, ext. 209.

- Eugene-Springfield Metro Area Simulcast Project. Funded by COPS, the project's four partners are the cities of Eugene, Springfield, Lane County and Eugene Water & Electric Board, Oregon's largest public utility. In addition to infrastructure, this project provides for connectivity between four dispatch centers and 'hot back up' for Central Lane PSAP and an expanded Interoperable Communications Plan for the metro area. This project is connected to the 7 County Microwave listed above and

includes both IWN and proposed OWIN shared radio sites. Contact Chuck Tilby, 541-682-5114.

- Lane County Fire Defense Board Radio Planning Effort. Twenty-four fire agencies are pooling frequencies in order to establish a model for dispatch, control and command and tactical frequencies. Infrastructure improvement and replacement engineering is included. Project manager: Byron Vanderpool, 541-682-7407.
- The OWIN project is currently funded at the planning level and crosses four disciplines: law enforcement, State forestry, transportation and corrections. Scalability for future technology and other users has been a consistent theme in design.
- Tillamook County Radio Communications Project. Eight fire departments, one ambulance service, three police departments, one sheriff's office, two federal law enforcement agencies, one hospital, emergency management office and public works are collaborating on a DHS grant for a public safety microwave backbone in the county[52]. Contact: Eric Swanson, 503-842-3446.

4.5 Multi-Disciplinary Planning

Planning and coordination across disciplines is growing across the State. A few examples:

- Since 2002, the make up of SIEC representation has ensured planning and outreach efforts address priorities across disciplines and jurisdictions.
- The Portland-Vancouver UASI region is a strong example of planning and coordination across five counties. The 'Metro Coalition' has established a shared proprietary 800 MHz analog trunked system with established shared talk groups. Using federal funding, they are working on a mechanism to connect the disparate computer aided dispatch systems (CAD) in the 9-1-1 centers to provide for smoother transfer of information (data interoperability) between jurisdictions – a constant challenge in this densely populated area. The Coalition is contemplating a project to collectively upgrade and/or replace the region's radio systems with a digital 700/800 MHz system. The system will be capable of seamless interconnection to all other P25 compliant trunked radio systems that may be established in Oregon and/or Washington, Idaho, California. There are also non-public safety public service government agencies utilizing the systems which include schools, public works agencies, ODOT, Tri-Met, Bonneville Power Administration, and the Port of Portland, including the Portland Airport. All of the agencies served are highly dependant on continued robust voice and data radio communication systems.
- In Lane County, planning efforts and infrastructure design have been geared towards including law enforcement, fire/EMS, public utilities and public works

[52] Review of Current Public Safety Radio Development, Lane Council of Governments, Jan 2007, contact Galen Howard. GHoward@lcog.org

both in infrastructure and operational coordination. The current metro interoperable communications plan includes standard operating procedures for command and control channels for fire and law enforcement. A second COPS grant proposal has been submitted to add the fire/EMS layer to the UHF trunked metro system. This will expand the frequency pooling plan and capabilities efforts being pursued by the Lane Fire Defense Board.

- As mentioned earlier, OEM coordinated a fifteen county project to complete consistent interoperable communications plans through the DHS grant process.

4.6 Interoperability Challenges

Resources are limited on all levels. The SIEC is essentially an "all volunteer army" operating without the benefit of budgeted staff support. While this slows down progress on strategic goals and initiatives, it does not impact the priorities.

Communications infrastructure is costly and many jurisdictions in Oregon still need to address basic operability – the ability to communicate within their own jurisdiction. Geography and aging equipment are complicating factors across the State. In the gap analysis sponsored by the SIEC in 2004, lack of funding was the number one factor attributing to lack of interoperable communications. Jurisdictions have demonstrated a willingness to cooperate and collaborate with one another.

The aging equipment for State and local agencies, along with FCC mandates to move to narrow-banding, remove the choice for infrastructure replacement. Funding this vital function is a huge challenge. Oregon does not rate among top regions for Homeland Security Risks and until an All Hazards approach is combined in the consideration for federal grant dollars, we will not have priority access to funds allocated for communications equipment.

4.7 Narrow-banding below 512 MHz

In the absence of a transition plan for narrow-banding, interference with existing wideband frequencies is predictable and currently beginning to show up in Oregon. This is an issue that ultimately needs to be addressed on a national level. There is no coordinated progression for Oregon and this issue will be included in the SIEC's Technical Committee discussions in the 2007-09 biennium. It has been raised as a formal issue by the SIEC and was brought forward to SAFECOM in Denver by our State in 2007. We believe that SAFECOM can be a strong advocate for direction on this front.

As this discussion continues, priorities for grant funding equipment awards in Oregon continue to be for narrowband capable infrastructure and subscriber units.

4.8 Governance Structure

The State Interoperability Executive Council (SIEC)[53] is the formal interoperability governance structure created first by Governor's Executive Order (Appendix D) and then codified into State

[53] Refer to Appendix E for list of all SIEC, OWIN, Region 35 RPC, SWIGG and SIEC committee members.

statute through a Legislative Act (HB 2101-B). Oversight of the Oregon Statewide Interoperable Communications Plan is delegated to the SIEC. The SIEC falls organizationally under the Office of Emergency Management (OEM), a section of the Oregon Military Department. While the statutory language related to the SIEC supersedes the original Council charter, that charter, along with those of each of the SIEC committees, can be found on the SIEC website. Processes used by the SIEC and its committees described in the SCIP are summarized in the charters.

Current SIEC membership is included in Appendix E of this SCIP. Operating principles and decision making procedures are laid out in the SIEC's Strategic Plan (Appendix C) and standing committees are formally chartered (Executive, Strategic Planning, Technical, Partnership and Finance). Regular meetings of the SIEC are held the second Tuesday of each month from 1-3 p.m. in Salem at the Anderson Readiness Center, 3225 State Street. Interested parties are invited to attend. The SIEC has a website with information including meeting locations, minutes and interoperability resources at: **www.oregon.gov/siec**.

The Legislature codified the SIEC into statute during their 2005 session under HB 2101-B. In the course of developing the statewide plan, the Legislative Act stated that the SIEC should:

- Recommend strategies to improve wireless interoperability among state and local public safety agencies;
- Develop standards to promote consistent development of existing and future wireless communications infrastructures;
- Identify immediate short-term technological and policy solutions to tie existing wireless communications infrastructures together into an interoperable communications system;
- Develop long term technological and policy recommendations to establish a statewide public safety radio system to improve emergency response and day-to-day public safety operations; and
- Develop recommendations for legislation and for the development of state and local policies to promote wireless interoperability in Oregon.

The Legislature also specifically directed the SIEC to work with public safety agencies in the State to develop a Public Safety Wireless Infrastructure Replacement Plan and to approve investments by the State of Oregon in public safety communications systems, subject to approval by the director of the Office of Emergency Management.

Formalized by legislative direction, additional responsibilities of the SIEC are to:

- Coordinate state and local activities related to obtaining federal grants for support of interoperability.
- Develop and provide technical assistance, training and, if requested, appropriate dispute resolution services to state and local agencies responsible for implementation of the Oregon Statewide Interoperable Communications Plan.
- Report, as required by ORS 192.245, to the Legislative Assembly on or before February 1 of each odd-numbered year on plan development and other Council activities.

- Adopt rules as necessary to carry out its duties and powers.

The SIEC is representative of all emergency response disciplines and regions in the State. Designated council membership:

- Two members from the Legislative Assembly, one being appointed from the Senate by the President of the Senate, and one being appointed from the House of Representatives by the Speaker of the House, both with an interest in public safety and wireless communications infrastructure. These members are nonvoting and may act in an advisory capacity only.

The Governor has appointed a member each from:

- Department of State Police
- Office of Emergency Management
- State Forestry Department
- Department of Corrections
- Department of Transportation
- Oregon Department of Administrative Services
- Department of Human Services(includes EMS)
- Oregon Military Department
- Department of Public Safety Standards and Training
- An Indian tribe as defined in ORS 97.740;
- Oregon Association of Public Safety Communications Officials/National Emergency Number Association, defined as the nonprofit professional organization devoted to the enhancement of public safety communications systems
- A member of the public (currently vacant).

Appointed by the Governor with the concurrence of the Senate President and the Speaker of the House; one member each from:

- Oregon Fire Chiefs' Association
- Oregon Association of Chiefs of Police
- Oregon State Sheriffs' Association
- Association of Oregon Counties
- League of Oregon Cities
- Special Districts Association of Oregon

In most cases above, the identified agency or organization recommends a person from their ranks as a representative on the council.

4.9 Governance for OWIN

OWIN currently falls under the management of Oregon State Police with oversight provided by the SIEC. During the 2007 session, legislation was proposed for an alternate governance structure as an independent department with oversight by a subset of the representation on the SIEC. For a multi-disciplinary and potentially multi-jurisdictional system, there are some clear

advantages to a change in the status quo, especially in that it would promote a greater sense of neutrality for a system crossing various user boundaries and/or disciplines.

4.10 Authorization Model for use of Interoperable or Other Agency Frequencies

To be developed in 2007-09 biennium as part of the SOPs.

The SIEC has noted that some type of centralized coordination will be necessary in order to facilitate use of interoperable frequencies so that emergency response is optimized rather than stymied by interference from neighboring jurisdictions. This has been called out in the statewide strategic goals as well as the SIEC policy actions.

4.11 Technology

4.11.1 Current Statewide Radio System

Historically, there have been three separate and distinct, State of Oregon radio systems. The State departments of Forestry, Police, and Transportation each own and operate their own conventional (non-trunked) radio system. These systems provide an estimated 44%, 75%, and 65% coverage of the entire state respectively. In addition, the Department of Corrections operates a fourth system that is mostly limited in coverage to individual institutions. All of these systems are included in the Federal Communications Commission (FCC) rules to narrowband by January 1, 2013[54]

OWIN technical and planning staff will continue to meet with local and regional radio groups to further partnership opportunities for infrastructure and interoperability. Information gathered regarding those systems will be used to update resources such as the survey included in this document as Appendix F. The SIEC will continue to pursue a secure, confidential data base for radio system inventory that expands the work of the Sparling Report. Capacity to populate and then manage a statewide database such as CASM does not currently exist in Oregon due to staffing constraints. (The Portland UASI region does use CASM.)

A quantitative survey of communications interoperability and equipment in Oregon was completed and published in January 2005. The Sparling Report[55] is available on the SIEC website and has been used in SIEC planning and prioritization efforts since. Feedback during the five regional meetings in October and November of 2007 was that an improvement for regional planning in the future would be to make the data obtained during that study available on the website to authorized users. Although the data set is incomplete due to lack of resources by agencies to provide all requested information to the contractors, the data includes coverage maps and interoperable frequencies. A joint meeting of the SIEC Technical and Partnership Committees in November 2007 reinforced the need for connecting planners to information already gathered. An outcome of that joint meeting was the expectation that the SIEC Technical

[54] See local initiatives in Appendix E – Federal Engineering Conceptual Design Document.

[55] Public Safety Communications Interoperability: Inventory and Analysis for the State of Oregon, Sparling, January 2005.

committee will continue to work on an accessible list of contacts for all established radio sites in the State to assist those working on infrastructure proposals/projects. Those who contact key individuals listed will be able to gain all relevant information regarding existing equipment, frequencies, manufacturers, etc. as well as any projects already in the works for the site. A concept of a standard radio site survey with a contact person for each across the State was proposed as a short term compromise and will be followed up by the SIEC in the next two years.

4.11.2 Current Statewide Shared Infrastructure

IWN. The State entered into an agreement with U.S. Department of Justice to provide services to the Integrated Wireless Network (IWN). IWN is a consortium of Justice, Treasury, and Homeland Security. The State is about 50% completed with a system of twelve shared buildings and towers and a digital microwave system to carry state and IWN traffic. By February of 2008, this system will be completed from Salem to Eugene. By the end of calendar 2008, the system will be complete from Salem to Medford. This system covers 250 miles of Interstate 5.

CRITFC. The State entered into an agreement with the Columbia River Intertribal Fishery Council (CRITFC) for a shared infrastructure along the Columbia River. This system will be complete by mid 2008. The buildings and towers will be divided between the two partners. The digital microwave system will be owned by CRITFC and operated and maintained by the State. In the near future, ownership of the system will be transferred to the State. This system covers about 200 miles of the Columbia River between Portland and Umatilla.

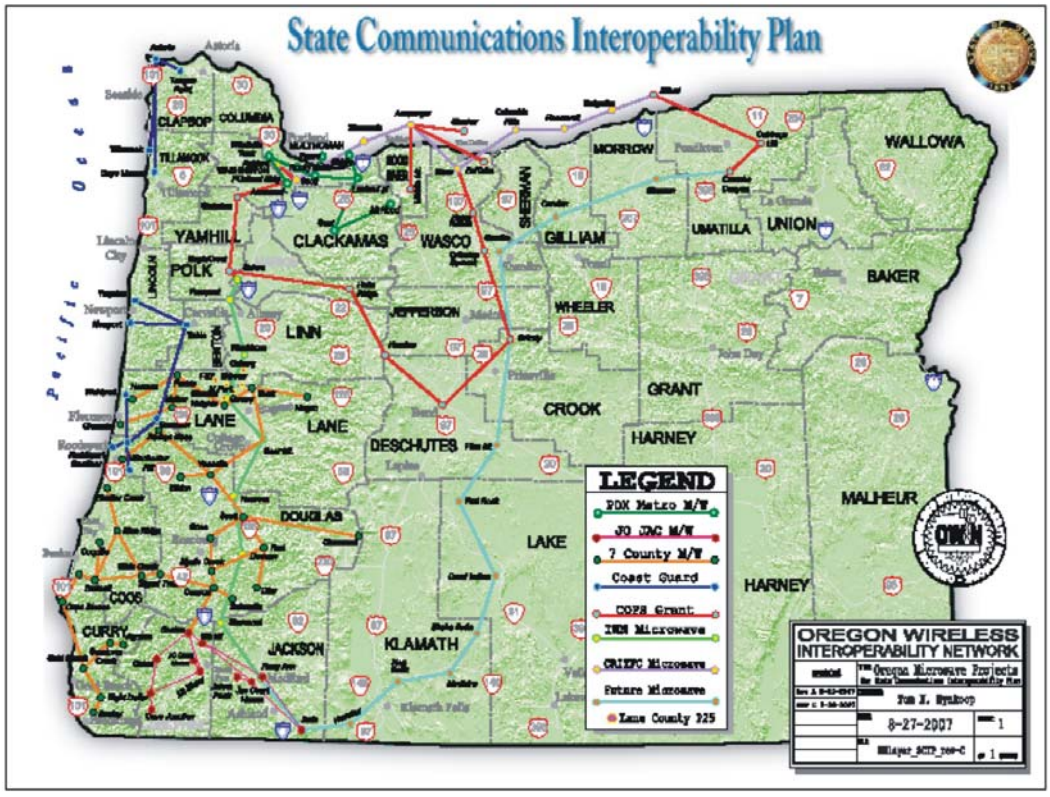

Figure 11 Shared System Map

4.11.3 Current Statewide Shared Channels

Table 7 provides the frequencies for the following statewide shared channels.

O.P.E.N.: Primarily used by First Responders for interagency coordination efforts. This network was established to manage the National Law Enforcement Channel (NLEC) which established an interagency law enforcement frequency for use during disasters or emergency situations.

SAR: Primarily used by Search and Rescue operations for coordinating events between SAR units. It is typically used in the simplex mode of operations. Use of this channel is coordinated by the local Sheriff Office in charge of the operation and through coordination of the Oregon State Office of Emergency Management.

FireNET: This system was developed by the Oregon State Fire Marshal to coordinate operations for fire units throughout the state. A series of VHF base stations are strategically positioned in key fire zones statewide. In conjunction with the Fire Marshal use of this system the Office of Oregon Emergency Management uses the same radio system to help facilitate emergency preparedness state wide. All 23 FireNET sites are capable of communications in the narrowband mode.

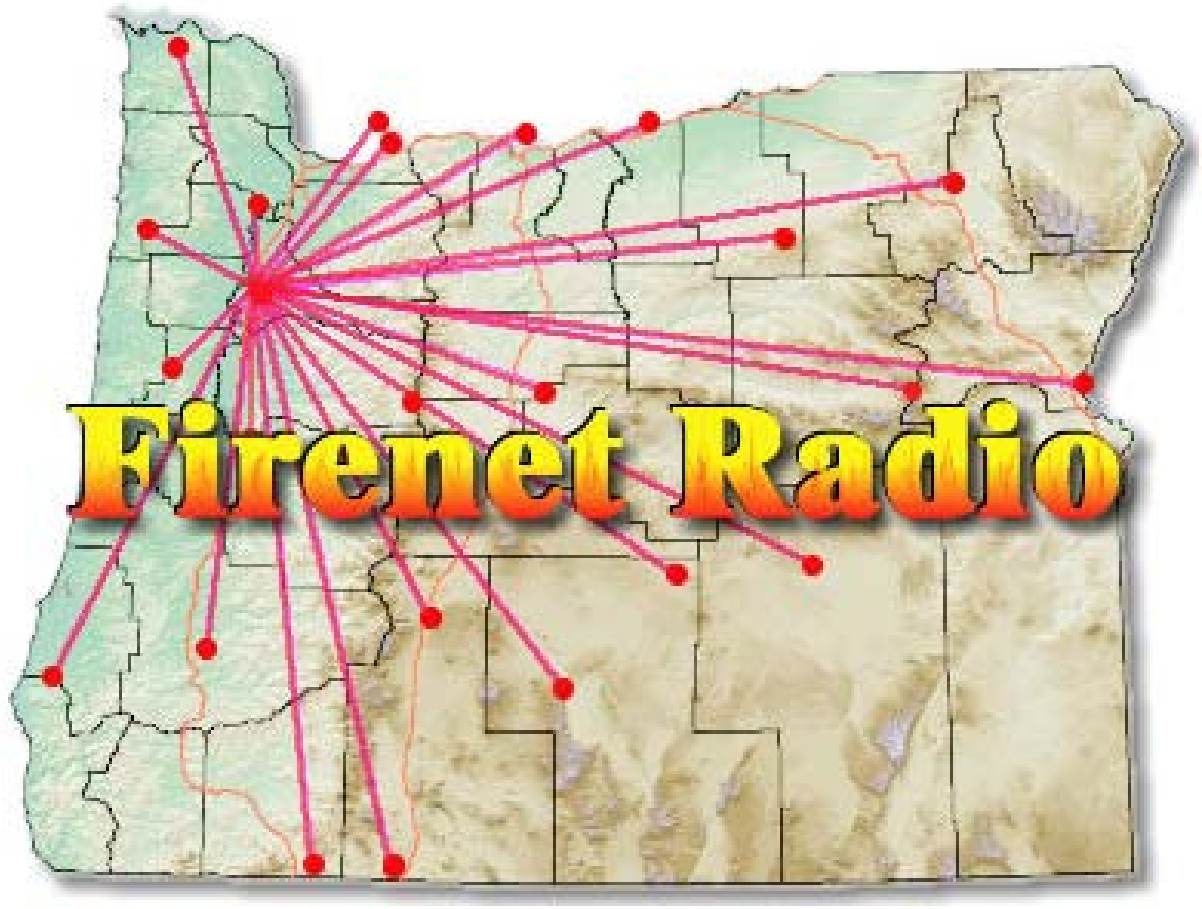

Figure 12 Fire Net Range

RedNET & WhiteNET: These networks are established by the Oregon Department of Forestry (ODF) to aid in the direct coordination of wildfires throughout the state. All ODF radio systems are narrowband capable with the exception of the RedNET and WhiteNET.

HEAR: This network is used by ambulance services for administrative communications with hospitals.

MEDNET: This network is used by medical service technicians for communicating with hospitals while en route with patients or facilitating other emergency medical situations.

TACTICAL: This radio channel primary use is in support of State Forestry operations – State Police uses this channel for emergency operations and a backup tactical channel secondary to Forestry usage.

Table 7 Statewide Frequencies

Statewide Frequencies Available for Use		
USE	**FREQUENCY**	**APPROVAL/AUTHORIZATION**
Oregon Police Emergency Network (O.P.E.N.)	155.475 MHz	Operates on a board of directors in close coordination with the State of Oregon.
Search and Rescue (SAR)	155.160 MHz	Oregon Emergency Management Division (OEM)
State Fire Control Channel FireNET	154.280 MHz	Oregon State Fire Marshal Office/ Oregon Emergency Management (OEM)
State Forestry Fire Channels RedNET WhiteNET	151.340MHz and 151.310 MHz	Oregon State Forestry Department (ODF)
Hospital Emergency Administrative Radio (HEAR)	155.340 MHz	Federal Communications Commission (FCC)
Medical Emergency Delivery Network (MEDNET)	462.950 MHz and 468.175 MHz	Federal Communications Commission (FCC)
State Tactical Channel TACTICAL	158.895 MHz	Oregon State Forestry Department (ODF)

4.11.4 Statewide Capabilities Assessment

A catalog of local-state-federal systems is being compiled and updated in a document entitled: Review of Public Safety Radio System Development, National-Oregon-Regional-Local. Contact: Galen Howard, Lane Council of Governments, 541-682-4383.

The OWIN implementation and design process includes gathering comprehensive frequency, site, and system use information by county. As of February 2008, OWIN has completed this frequency, site and system list for seven, northwest Oregon counties[56]. When complete, this information will be added to the SCIP as an Appendix. Furthermore, as of April, 2008, OWIN is working with consultants to gather this information for the seven southwest Oregon counties. This information is scheduled for completion by August, 2008. OWIN's plan is to complete the third phase of this process in the northeast Oregon counties by January 2009. The last phase for all remaining counties in southeast Oregon is scheduled for completion by July 2009. As the OWIN gathered information is completed, it will be added to the appropriate appendix in the SCIP.

The plan for completing an inventory of Strategic Technology Reserve (STR) assets is contained in Section 5.4.

4.11.5 Maintenance and Service of Systems

Responsibility for maintenance and service of the various systems lies generally with the primary 'owner' of the site and/or subscriber units. The Portland UASI region has a plan in place documenting how their shared propriety system elements are managed and maintained. The UASI region uses the Communications Asset Survey and Mapping (CASM) tool in managing these resources. Model agreements in draft form in Lane County detail a system in which:

- System partners have defined which parts of the system are shared.
- Radio technicians for all partners in shared systems receive standard minimum levels of training. This can potentially provide back up resources for trouble shooting and call outs in the future.
- System partners agree on minimum levels of preventative maintenance and trouble shooting response for shared system components to ensure system stability.

4.11.6 Frequency Band Usage

FCC licenses are no longer issued exclusively by service. It is very difficult to tell how many fire and police units are in use. What we can say is that FCC public safety conventional (non-trunked) licenses include: 1) 54 separate EMS agencies that collectively hold 71 licenses. 2) 148 separate FIRE agencies that collectively hold 224 FCC licenses. 3) 247 separate jurisdictions that collectively hold 1,739 FCC licenses. 4) 58 separate other entities that hold licenses. Some of these are school districts, Search and Rescue, Red Cross, etc.

[56] Additional information is included in Appendices F and H.

4.11.7 Advancing Technology

The varying bands in use for emergency services and the reality of aging systems necessitate a major upgrade in technology to meet the needs of public safety today. As land/mobile radio infrastructure is replaced, we remain cognizant of other technology solutions that can be considered for additional phases and purposes for this statewide system. The solution built for CSEPP in Umatilla and Morrow counties is an example of integrating layers for interoperability and includes the 450 MHz shared system and WiFi for voice and data as well as radio receivers installed in residences to serve as swift community notification for evacuation. Likewise, we must incorporate disaster recovery and surge capacity resources into our resources and standard operating procedures for stable emergency communications systems.

4.11.8 Coverage Issues

While much of the Oregon SCIP addresses interoperability, it is important to keep in mind that *operability* remains a crucial issue to be addressed first by both statewide and local public safety responders. Aging equipment, costs and geography are all reasons why infrastructure development and technology must include improved coverage as a top priority.

4.11.9 Technology Initiative Plan

In 2005, the Oregon Legislature passed HB 2101 to combine these four state systems into a single system. This house bill also added the responsibility of the State of Oregon to come up with a method of assuring interoperability between federal, State, local, and tribal agencies. In response to these legislative requirements, the Oregon Wireless Interoperability Network (OWIN) was established. OWIN is a function within Oregon State Police until the Legislature designates an alternative functional structure. The Legislature will consider making OWIN a standalone agency with a broadly based policy board in February of 2008.

OWIN managed a year long consulting contract from a nationally recognized telecommunications firm, Federal Engineering[57]. This contract resulted in a conceptual design and an estimated cost of a statewide public safety grade wireless voice and data system. Because Oregon has not upgraded its communications infrastructure for decades, the current cost includes virtual replacement of the State's public safety system assets. As the scope of the study focused on state radio sites, follow up work is underway to identify local, regional and tribal partners using alternative acceptable sites. The SIEC Technology Committee and OWIN staff are lead in this effort.

4.11.10 Statewide Radio System Elements

The total project involves replacement of most of:

[57] Oregon Wireless Interoperability Network (OWIN) Project, Business Case: A Statewide Public Safety Radio Network, Federal Engineering Inc. January 2007.

- Buildings and towers located throughout the State.
- The existing analog microwave system with a modern digital microwave system.
- A State agency radio system that provides voice and low speed mobile data services for all state agencies. In addition, the project anticipates new systems to address interoperability and the contemporary need for field (wireless) data services for public safety and government operations.

These additional systems are:

- An Internet Protocol (IP) network, distribution of transmitters and receivers on nationwide interoperability radio channels spread throughout the State.
- A high speed wireless data system throughout the major population centers and transportation corridors across the State.

The design goal for replacement of buildings and towers is to result in placement of secure and reliable unattended communications facilities throughout the State. Katrina and Rita both pointed out that much attention must be paid to the housing of critical infrastructure communications equipment or that equipment will not operate when it is needed most. In addition, the design goal is to both anticipate and welcome co-location of other public safety users into these sites. This requires providing a reasonable of expansion room inside of the buildings, a reasonable amount of additional land space on the site for more facilities, and towers designed to accommodate additional antennas as growth and collocation occur.

The goal for the digital microwave system is to be able to reliably and securely carry modern digital signals to connect individual equipment in these disbursed sites. An example is found with Oregon State Police in that they operate only two dispatch centers to control over 100 remote radios throughout the State. Each remote site must be connected back to each of the two centers. These connections must have the highest level of reliability, because complete communication with field personnel can be lost with a control line failure. These circuits must work when everything else is not working. Protection of life and property are most difficult when external conditions are at their worst.

By placing all State agencies onto a common radio system, there is the inherent advantage of extending radio coverage (just access by all agencies of the current State sites by itself increases statewide coverage for all agencies from a high of 75% for OSP to 82% for all State agencies) for all agencies and for greatly increasing the capacity available to all agencies. The coverage design goal of this system is to do two things. First is to deal with known coverage problems. Second is to recognize the ubiquitous use by public safety personnel of handheld radios and to increase signal levels in the most highly vulnerable locations. The prime example is on major roads and highways through the State.

4.11.11 Proposal for Migration to New System

The Oregon Legislature considered a proposal for the phased build out of the OWIN system in February 2008. As federal grant opportunities arise, regional radio groups are being encouraged to partner with OWIN, as well as others, to provide capacity for co-location and/or shared systems. These regional projects primarily involving law enforcement, fire, EMS, PSAPS and public works are proceeding efficiently in as much as federal funding is being secured. Local

matching funds have come from partners outside of but not unrelated to the 'standard' public safety (e.g. public utilities and the federal government and military). Each of these active regional projects should address a migration plan for their system users as part of their 'cutover'.

The Oregon Legislature has stated that Oregon's statewide communications interoperability plan will be implemented by 2011. Questions about how best to build and fund a major technical element – the OWIN system, make the timeline for that particular piece less clear right now. We do know that the State radio system users, along with public safety radio system users across the State, need to work to complete narrow-banding by 2013, per direction of the FCC. Opportunities to train and exercise on new SOPs developed as a result of this SCIP will be pursued annually beginning in 2008.

What has become increasingly clear and is referred to elsewhere in this document is the problem of interference caused by migration to narrowband while wideband systems are still operational. The Oregon SIEC and our stakeholders see this as a problem that requires some national coordination. While the FCC mandate for narrow-banding to 12.5 MHz does set a timetable for equipment manufacturing and transition and sets a deadline for completion of narrow-banding, the many variables of which agencies and jurisdictions will be making that transition and when it will exactly occur falls largely to one of resource availability and management. Those with access to planning and staff resources are likely to be able to complete plans and make purchases ahead of those who must depend solely on outside funding. We have already been experiencing this predictable interim frequency interference in Oregon.

Along with the lack of a purposeful transition plan to narrow-banding, there needs to be SOPs in place to coordinate use of shared frequencies. Designating which frequencies will be used for what purposes is one step. Designating how they will be used in some priority order and who will coordinate them is another important step in SOP development.

The Oregon SIEC has anticipated these issues and adopted policy actions during 2005-2007[58] meant to address a part of the transition to greater interoperability. We have asked SAFECOM to assist us in getting a national discussion going about the narrow-banding transition, and designated Oregon Association of Public Safety Communication Officials/National Emergency Number Association (APCO/NENA) as the lead organization to work through SOPs for coordination of shared interoperability resources such as STRs in this State.

4.11.12 New Purchase Compliance

In 2003, the SIEC adopted grant review criteria (contained in SIEC-CJSD Prioritization Scoring, December 2003) that assigned weighted values to standardized and prioritized interoperable communications equipment and systems. These grant award incentives are tied to improving interoperability. Interoperable communications plans must be present in order to apply for equipment; extra points are granted for purchase of equipment that will integrate into other communications systems. This grant review criteria document is available on the SIEC website.

The SIEC Technical committee is included in the review of purchase requests from local, State and tribal agencies to ensure their compliance with the goals and objectives of the SCIP. The

[58] SIEC Strategic Plan, Appendix C, Pages 104-108

full SIEC will consider recommendations from the Technical committee in their full evaluation of the grant request. Those requests in compliance with the goals and objectives of the SCIP will be approved before requests that are not in compliance.

4.11.13 Expansion for Statewide Interoperability

Placement of all State agencies onto a single system assures that the highest and most effective amount of interoperability between those agencies results. In order to effect this system change, OWIN's goal is to implement a statewide, digital, trunked radio system for use by all State agencies. OWIN is completely open to extending use of this radio system to local, tribal and federal agencies – at their option. Any agencies opting to use this system will also have the highest and most effective level of interoperability with other cooperating agencies. Likewise, we look to local and regional planning efforts to include capacity for OWIN where it makes sense and gains efficiencies.

Because of the presence of so many disparate jurisdictional systems throughout the State, it is impractical to think that even the majority of Oregon's public subdivisions will ever be on a single system. Therefore, the plan for interoperability has been to develop a "system-of-systems". That is, to recognize that disparate systems will continue to be used, but to develop a way to connect users of those systems to each other for interoperability. The best way to do this is through use of a network that allows connection of radios to each other. Several manufacturers presently supply Internet Protocol networks and interface devices that can ride on a digital microwave system. The function of these networks is to allow connection of different systems/ different radios and data to each other. The statewide plan includes the intent to establish a statewide IP network that rides on the State's digital microwave system that supports statewide, all-agency interoperability.

4.11.14 Access to Nationally Designated Interoperability Channels

The second part of the interoperability technical plan is to install base station radio equipment in the VHF (150-169 MHz) band, in the low UHF (450-460 MHz) band, and in the 800 MHz NPSPAC band at sites located throughout the State. Some of these will be installed on the schedule of OWIN, and others will be installed by local agencies as their needs dictate. Placement of these radios is in response to the fact that gateway systems (those that connect systems to each other in a cross patch configuration) only work when field units are in the overlap area between connected systems. For example, if a user with a UHF radio roams out of the home service area into another user area that uses some other band, the UHF radio has no local infrastructure to allow entry into a gateway. By deploying interoperability radios throughout the State (tied to the IP network) users have a method of entry into the interoperability system regardless of what frequency band the user's radio is on.

Standardized, public safety radio systems of today are able to support both secure voice communications and low speed (9.6 kbps) data. This type of data transmission today is the primary technology for agencies that own and operate their own mobile data system. It is suitable for text-based uses where large file transfer is not possible. It is perfectly suitable for applications where forms are resident in the system, and only the data that fills fields in the forms is sent. Its overriding utility is that it can have the same coverage area as the voice system has.

Where there is no other alternative, it still allows provision of mobile data services where none existed before.

4.11.15 Mobile Data

The gap in mobile data applications can be serviced by a 9.6 kbps data system. The Oregon plan is to initially implement such a system in the population centers of Oregon and along the major transportation corridors. Over an extended period of time, the coverage of this system can then be expanded to extend more mobile data applications to Oregon's public safety agencies. The intent of this system is to make it able to pass open applications. In essence, the State's intent is to furnish the pipeline that anyone can connect to in order to extract mobile data services. A COPS Technology Grant was awarded to Oregon State Police enhance the digital microwave infrastructure and to establish mobile data on portions of I-5, I-84, and US 97. This will serve multiple jurisdictions and disciplines (see Figure 11, Shared System Map).

4.12 Standard Operating Procedures

While SOPs have been adopted in various jurisdictions, the need to document current practices and procedures became glaringly apparent in drafting this plan. This will be a priority for planning efforts in the 2007 to 2009 biennium. As locals are encouraged to put theirs to paper, the SIEC will assume the lead in covering SOPs and a Tactical Interoperable Communications Plan for statewide resources. These SOPs will first focus on delivery of law enforcement, fire and EMS services while tying coordination through the PSAPs and emergency managers together. The SIEC has also made a commitment to work with Oregon Emergency Management in order to train and exercise this SCIP in 2008. OEM continues to prioritize training and exercise in federal grant awards to jurisdictions. Large scale exercises are coordinated by OEM to maximize planning contractor resources, as well as document multi jurisdiction and multi agency efforts. The full scale homeland security disaster exercise in the City of Salem, Oregon's State capital provided important feedback for that area in 2006. The TOPOFF 4 exercise held in the Portland metropolitan area in October 2007 provided a solid testing ground and model for similar SOP development, training and exercise elsewhere in the State.

As discussed earlier, Oregon is a diverse state geographically and demographically and the communications requirements vary widely across the state. There is presently no state communications SOP. In fact, there are many areas that do not have SOPs at all. In calendar year 2008, the SIEC will collect SOPs from those areas that have SOPs. After collecting the existing SOPs, an inventory will be made of the entire state. Those areas without SOPs will be encouraged to develop local or regional SOPs. Once local agencies have developed SOPs, the SIEC will assume the lead in developing an SOP and a Tactical Interoperable Communications Plan for statewide resources. The SOP will focus on delivery of law enforcement, fire and EMS services while tying coordination through PSAPs and emergency managers. APCO/NENA will determine which SOPS will be posted to the SIEC website and which SOPs will be referenced by contact information based upon security considerations.

While local SOPs are the responsibility of and owned by local agencies, the SIEC will serve as a collection point and resource. The SIEC will utilize local SOPs in the development of the state SOP.

The SIEC has made a commitment to work with Oregon Emergency Management in order to train and exercise this SCIP in 2008. OEM continues to prioritize training and exercise in federal grant awards to jurisdictions. After conducting an inventory of communication plans statewide, the SIEC will work with OEM to obtain grant funding for those local agencies needing assistance in developing plans. Such grants could also be used to tie together local plans into regional plans. The SIEC will enlist the assistance of the Oregon Chapter of the Association of Public Safety Communications Officials (APCO)/National Number Association (NENA) to reach out to local agencies to obtain existing SOPs as well as provide assistance to develop SOPs. Oregon APCO/NENA is a very active organization whose membership consists of state and local public safety, commercial telecommunications and general public representatives throughout the state.

Large scale exercises are coordinated by OEM to maximize planning contractor resources, as well as document multi jurisdiction and multi agency efforts. The full scale homeland security disaster exercise in the City of Salem, Oregon's State Capitol provided important feedback for that area in 2006. The TOPOFF 4 exercise held in the Portland metropolitan area in September 2006 provided a solid testing ground and model for similar SOP development, training and exercise elsewhere in the state.

4.12.1 SOP Development and Compliance

As information is gathered regarding existing SOPs for interoperability, historical information will be included explaining the genesis of these procedures as well as which disciplines are involved. New SOPs will be incorporated into training coordinated by OEM and DPSST with an emphasis on scenario based learning and exercises. Between those two agencies, certification and training are tracked so that compliance with NIMS and the Incident Command System can be included and documented.

4.12.1.1 Local

Local SOPs are developed by all public safety agencies that will be affected by the SOP. Once SOP guidelines have been developed by the State, these local SOPs will have to meet these requirements. Signatories are expected to comply with each SOP. Although local SOPs not effecting state owned systems remain within the purview of local agencies, these SOPs may be used by the State to help determine best practices in SOP development.

4.12.1.2 State

Oregon APCO/NENA representatives will develop State SOPs in accordance with the following proposed process plan and timeline[59]:

- Define the SOP process to include development, management, maintenance and upgrades
- Collect a sampling of local SOPs – Calendar Year 2008
- Inventory/review SOPs - first quarter 2009

[59] Refer to Table 6 for more on goals, objectives and initiatives timeline.

- Develop suggested best practices template for SOPs
- Develop SOPs and TIC Plan for statewide resources

Once developed, signatories are expected to comply with the statewide SOPs.

4.12.2 Statewide Mutual Aid Agreement

In addition to local mutual aid agreements in place, during the 2007 Oregon Legislative Session, Senate Bill 330 was passed "…in order to minimize the impact of an event that overwhelms the resources of a local government, one local government should be able to make resources available to another local government as quickly as possible" and further established "…an efficient and permissive intrastate mutual assistance compact among local governments that will allow local governments maximum flexibility to protect life and property within their jurisdictions." This bill ensured that all jurisdictions were covered and would include prioritized requests for communications resources. It does not require jurisdictions to comply with the request, nor does it supersede agreements already in place. It does include allowing jurisdictions to temporarily acquire resources for training, drills or exercises.

4.12.3 Current Access to Statewide Resources

OEM is responsible for coordinating requests (communications and otherwise) for resources from counties until such time as the SIEC develops these SOPs. The Oregon Emergency Response System (OERS) is staffed 24/7 and accessed by a single phone call: 503-378-6377.

4.12.4 NPSTC Channel Naming Standards

Oregon is intent on adopting the National Public Safety Telecommunications Council's recommendations published June 2007 in the 'Channel Naming Report'. Additionally, in the next two years, Oregon will consider the recommendations for changes in the NIMS structure incorporating the Communications Unit Leader (COML) and Communications Officers into branches other than Logistics in the Incident Command System. The SIEC will ensure that developing SOPs are NIMS Compliant.

As system inventory is gathered from the various planning processes conducted since 2003, a Statewide Tactical Interoperable Communications (TIC) plan will be completed by the SIEC Strategic Planning Committee no later than December 2008. Both the Statewide TIC plan and statewide interoperability standard operating procedures will address the areas outlined below. The group assigned to complete the recommended statewide SOPs will include representatives from Oregon APCO/NENA and OWIN Technical staff; reporting to the SIEC Strategic Planning Committee. A crucial task for this group will be to identify how Oregon will handle centralized coordination of policies and procedures. Upon completion, the SCIP will be expanded to include the following sections:

- Statewide TIC Plan (contact info)
- Communications Unit Leader
- Minimum Training Requirements/Recommendations
- Incorporation into ICS structure Appendix for qualified Communications Unit Leaders by county & jurisdiction

- Channel Naming and Numbering Standards
- Subscriber Unit Identification
- Assignment of Interoperable Frequencies
- Protocols for Use
- Recommendations for Installation of Interoperable Frequencies
- Encryption Issues
- Tactical Communications/Day to day through Disaster Recovery Mode

4.13 Training and Exercise Plan

Coordinated by Oregon Emergency Management, the State has identifiable and varied resources for planning and exercising using FEMA courses. Templates are available on the OEM website to use when applying for grant funds for these activities. OEM, in conjunction with the Oregon Emergency Managers Association, works cooperatively to identify training needs in various counties and regions and schedules them proactively throughout the year. Coursework is completed through a combination of means: on line training, classroom, train the trainer regional classes, and the entire range of table top to full scale exercises. In the Oregon Homeland Security State Strategy, OEM has stated objectives that cover among other things, ensuring interoperable communications capabilities are exercised and evaluated in state, local and regional multi-disciplinary exercises, and conducting CBRNE/WMD exercises for at least twelve counties annually for all disciplines, with an emphasis on regional response as described in Oregon's three-year exercise plan. In an effort to maximize benefit from contracted planning sources, OEM has begun using a template for exercise design. Information regarding training, exercising and available funds is easily accessed on the website:

http://egov.oregon.gov/OOHS/OEM/

Communications is usually one of the top issues of any exercise After Action Report and Improvement Plan. All full-scale exercises are required to have a communications element that will be evaluated in accordance with the State Multi-year Training and Exercise plan. Oregon Emergency Management requires all exercises conducted within the state using federal funds to be cross-disciplinary and cross-jurisdictional with the exception of operationally focused training, i.e. HAZMAT.

4.13.1 Needs Analysis

As part of the 2003 DHS grant process, an assessment was conducted in each county to determine emergency management training needs. Classroom training is delivered by certified instructors on a regional basis. Oregon has not completed a study to determine what type of communications interoperability training is required for each discipline, although the path for incident commanders is fairly straightforward.

4.13.2 Department of Public Safety Standards and Training

Oregon's Department of Public Safety Standards and Training (DPSST) is the centralized body for coordinating and tracking training for public safety employees. DPSST has conducted job task analyses and needs assessments to establish basic academy and continuing education

requirements for each discipline. DPSST handles statutory certification for public safety disciplines, establishes, provides training for, and then tracks instructor requirements and certifications. The same roles and responsibilities are carried out for training staff in the various disciplines.

It is a normal business practice for DPSST to assess regional training needs and develop standardized courses to meet those needs. Whether on its main campus outside of Salem or in partnership with other agencies for use of facilities around the regions, this department has vast experience in meeting the training needs of public safety employees and will be lead in identifying new requirements and course of study for interoperable communications training in Oregon. As an example, a Tactical Dispatch Team course was established in 2005. This training has led to expansion of critical communications resources as teams are established locally to deal with the most critical of incidents.

In the 2007-09 biennium, DPSST will be asked to take the lead on identifying requirements and establishing a course of study that will meet both DHS and Oregon's need for Communications Unit Leader training. A request to matrix and make widely available other DHS core competencies will also be made.

4.13.3 Incentives for Compliance

Since 2003, the SIEC has worked with OEM to establish grant award incentives tied to improving interoperability. Interoperable communications plans must be present in order to apply for equipment; extra points are granted for purchase of equipment that will integrate into other communications systems. Training and exercise applications are emphasized. The results of the OEM State Program and Capabilities Workshop are a key part of evaluating progress and gaining input from a variety of public safety users.

4.13.4 Evaluation of Effectiveness

As part of its mission, Oregon Emergency Management will continue to be the driver for overall evaluation of exercise and training effectiveness. Delegated responsibility and reporting by county emergency managers spreads this function across the State making execution more manageable. OEM maintains responsibility for ensuring that local, tribal, state and federal agencies are working together; including interoperable communications objectives in exercises, identifying gaps and providing both resources and incentives to improve the readiness of public safety responders in the future.

4.14 Usage

Interoperable communications are required on a daily basis in order to deliver critical communications services in Oregon. Whether it is a regularly occurring injury motor vehicle accident on a highway or a major search and rescue operation gaining national media attention such as the one involving the Kim family in Douglas County in 2006, the gaps are easily identified. Multiple agencies involving multiple disciplines regularly have to work together in critical situations.

The OWIN system will provide a technical solution for interoperability available statewide on a daily basis, at no cost to the users, as the infrastructure is built out. Through OWIN, the nationally identified interoperability frequencies for VHF, UHF and 800 MHz will be accessible. Gateway devices that have been installed at four locations along the I-5 corridor, as well as numerous mobile gateways, that will expand mutual aid capacity for locals through pre-planned radio connectivity once OWIN is complete. Currently, these gateways are available to enable interoperable communications among and between public safety communication systems throughout the State. SOPs for accessing OWIN resources and other interoperable communication assets will be developed simultaneously with each phase of the project, coordinated through a core group of Oregon APCO/NENA members and State radio system users[60].

The SCIP will ensure regular usage of the equipment and SOPs needed for statewide interoperability at a minimum, through planning for annual exercises. SIEC encourages ongoing local, regional and tribal functional communications exercises to ensure proper knowledge and deployment of interoperable communications.

As evidenced by the December 2007 storms in Oregon, partnership agreements for shared radio infrastructure must include reliable minimum maintenance standards in order to ensure system integrity. Both the OWIN group and SIEC Partnership Committee are working on putting these to paper beginning in 2008 with key input from the SIEC Technical Committee.

4.14.1 Local Coordination & Use

With the possible exception of the Portland metropolitan area, dispatchers in communications centers across the State serve in the primary role of relaying information between agencies either responding to or on scene with one another, balancing that with their need to coordinate agency specific resource deployment and communications along with multiple requests for emergency services from the public. In the case of time sensitive communications and competing priorities, this can become inherently inefficient. Swapping, or carrying other local agency portable radios are common interoperability solutions in Oregon. Law enforcement, fire and medics daily coordinate incidents. Examples beyond the ever present motor vehicle accidents include domestic disputes involving injury, hazardous materials incidents and fires involving a need for traffic direction or evacuation. Use of unified command in major incidents has resolved some interoperability issues not yet addressed through technology. Heavy reliance on cell phones in the field for vital information relay can be precarious as cellular service can become quickly overwhelmed and inaccessible during a major event. Wireless Priority Service (WPS) can strengthen that capability as long as local jurisdictions have taken advantage of subscribing to the service in advance. While these strategies should remain a part of the interoperability toolbox, the inefficiencies and ineffectiveness of low tech solutions need to be addressed through improved communications resources and standard operating procedures tested and reinforced during regular drills and exercises.

[60] Refer to Sections 4.3 and 5.4 for additional information on SOP development for both daily use and STRs.

4.14.2 Fire Service

When local fire protection resources are exhausted, escalation in Oregon goes first to requests for assistance and deployment from nearby agencies based on written mutual and automatic aid agreements. Upon reaching a specified threshold, the county fire defense board chief steps in for coordination and is the authorized agent to manage fire protection resources countywide. Once exhausted, next steps are directly to the Oregon State Fire Marshal's office for broader assistance requests towards conflagration declaration. The usage plan for fire resources is documented in the *Oregon Fire Service Mobilization Plan*, website address:

http://www.oregon.gov/OSP/SFM/docs/Administration/MOB_Plan_Binder2007.pdf.

The Oregon State Mobilization plan is used regularly for wildland fire incidents (predictably occurring each fire season) and during annual multi-jurisdictional wildland fire exercises.

4.14.3 Law Enforcement

Local law enforcement may have formal or informal mutual aid agreements with neighboring jurisdictions. For resources beyond neighboring jurisdiction and county capacity, Oregon State Police (OSP) may be contacted for additional response or specialized assistance such as the Major Response Team (tactical operations). Communications are often facilitated by the fact that OSP troopers carry additional portable radios for the jurisdictions in their region. Due to coverage issues, it is not uncommon for troopers to communicate directly to a local dispatch center over these extra radios as they are unable to reach their regionalized dispatch center and have a need to coordinate response with local law enforcement. Local dispatch centers contact one of two OSP Regional Dispatch Centers (RDCs) via phone in order to relay requests for trooper response or back up. Municipal and county law enforcement generally have access to a local mutual aid frequency to coordinate on scene activities.

4.14.4 Emergency Medical Services

Publicly owned EMS service is integrated into local fire service communications; and in metropolitan areas, is often served by the same agency. Ambulance service areas are defined in the State and mutual aid between contiguous ASA's is common practice. For government entities, the State's FireNet frequency can be used for on scene communications, although a priority of use for that frequency is established. Private ambulance service, whether ground or air, generally have identified a frequency for communication at incidents. When medic units are transporting patients to higher level hospitals and trauma centers, the frequency monitored by hospital emergency departments, HEAR, is used to advise ED staff of their estimated time of arrival and patient condition. It is common for local dispatchers to monitor that frequency and relay between transport units and the hospitals when there are problems with direct radio communications (either capacity at the ED or coverage related).

4.14.5 Additional Services

Amateur Radio Services play an organized and important role in facilitating communications during emergency incidents, as mentioned earlier in this plan. The Hospital Preparedness Planning efforts are making remarkable progress in building plans that include the deployment of

STRs to ensure continuity of operations during disaster. Red Cross resources are tied to daily operations through agreements with the PSAPs dispatching fire services, among others. These and other services can only be anecdotally referred to in this plan without outside assistance in information gathering and coordination. The next level should include additional interviews and future coordination of planning efforts with: Ports, Transit, Schools, ODOT, Hospitals, Public Works, ARES, Oregon Department of Agriculture, Utilities, Public Health, the Oregon National Guard, and Public Broadcasting by way of the Emergency Alerting System.

5 Strategy

Problem Definition

The following six critical issues have been identified by the Oregon SIEC and provide motivation for many of the objectives in the SIEC Strategic Plan.

1. Need to communicate with each other during emergencies and day-to-day operations.
2. Leveraging of limited funding
3. Elimination of duplication
   a. Maximize resource sharing
   b. Bridge building
4. Need for functional (operational and technical) guidelines that shape city, county and state communications interoperability
   a. Interoperable channel setup
   b. Federal Communications Communication mandate of 2013 system upgrades
5. Lack of central coordination, such as guidance and governance, for interoperability
6. Time criticality
   a. Terrorism, major incidents

Possible Solutions

See Section 5.3

5.1 Interoperability Vision

By 2011, create an interoperable communications environment that allows the public safety community to communicate on a day-to-day basis and during all hazards, by voice or data, with one another in real time, when needed and authorized in order to effectively protect Oregon's citizens and interests.

5.2 Statewide Interoperability Mission

To improve public safety communication in the State of Oregon through enhanced voice and data communications interoperability by:

Developing and implementing a plan to use existing systems, maximizing current capabilities, and establishing a foundation for development of a comprehensive and resilient, standards based public safety communications network, and,

Maximizing scarce resources and funding by leveraging public safety communication investments, management resources, and system assets to support emergency responders with vital voice and data capabilities through an established interoperability framework that facilitates seamless operations and coordination of public safety communications, thereby allowing responders to more effectively serve the citizens of Oregon.

5.3 Goals and Objectives

The State Executive Interoperability Council has operated off of a Strategic Plan since 2003. Goals and objectives direct the leadership priorities for this body. The following goals and objectives are designed to address the critical issues contained in the SIEC strategic plan in Appendix C.

To take interoperability out to the next levels, the SIEC has identified four strategic goals for the SCIP:

1. Create a common understanding of communications interoperability throughout Oregon.
2. As appropriate, utilize common language, coordinated protocols, and standards statewide.
3. Integrate existing and future interoperable systems.
4. Facilitate training to enhance effective use of communications systems.

Goal 1: Create a common understanding of communications interoperability throughout Oregon.

Objective 1.1: Meet state and federal legal requirements for public safety interoperability.

Objective 1.2: Maximize the efficient use and sharing of public safety spectrum and infrastructure.

1.2.1. Identify current interoperability resources by region.

1.2.2. Plan for appropriate future integration of private/other sector users with roles in public safety response (e.g. hospitals, transportation).

Objective 1.3: Through the SIEC, coordinate statewide policy formulation by local, county, tribal, private, State, and federal authorities and elected leaders.

1.3.1. Integrate the identified needs of local, tribal, state, federal and private emergency responder interoperable communications by way of a system-of-systems approach.

1.3.2. Provide leadership and standards/models for development of public safety partnerships.

Goal 2: As appropriate, utilize common language, coordinated protocols, and standards statewide.

Objective 2.1: Establish priority protocols for the use of statewide, regional and local system assets.

Objective 2.2: Identify who will coordinate current resource requests (e.g. regionalized control point).

Goal 3: Integrate existing and future interoperable communications systems.

Objective 3.1: Build OWIN to facilitate the development of a scalable core backbone system to be utilized by the State of Oregon for the integration of public safety systems.

3.1.1. Effectively steward scarce public and private resources.

Objective 3.2: **Identify and meet the needs of local jurisdictions so that there will be significant/widespread integration of OWIN and other resources into local and regional operations.**

3.2.1. Facilitate local community buy in with standards based design that includes open architecture in order to provide for statewide interoperability and access to voice & data communications.

3.2.2. Promote unencumbered access and use of pre-coordinated resources.

Objective 3.3: Integrate local emergency provider resources for interoperability into an established protocol for use (e.g. ACU1000's show up at a scene; TIC plan)

3.3.1. Establish protocols for use with Border States.

Objective 3.4: Manage the statewide interoperable network through the integration of research and orderly transition to advanced technologies.

Objective 3.5: Establish a disaster recovery plan for interoperable communications.

3.5.1 Identify & prioritize key critical components of the system.

3.5.2 Identify a backup strategy for each critical component.

Goal 4: Facilitate training to enhance effective use of communications systems.

Objective 4.1: Establish core objectives on interoperable communications for use in local training and exercises.

Objective 4.2: Provide a template for statewide, regional, and local exercises of I/O resources. Include local provider exercise evaluation and follow up.

5.4 Strategic Initiatives

The initiatives will assist us in meeting our current strategic goals:

Governance

Create a common understanding of communications interoperability throughout Oregon, meeting state and federal legal requirements, maximizing the efficient use and sharing of public safety spectrum and infrastructure, and through the SIEC, coordinate statewide policy formulation.

Outreach

Establish regular forums for information and exchange; prioritize outreach and training so that key stakeholders understand options for interoperability, know how to use those options, and are working in concert with others to enhance the system-of-systems approach.

Planning

As appropriate, complete a plan to utilize common language, coordinated protocols and standards statewide. Design infrastructure with redundancy in mind and identify a disaster recovery system for key components.

Technology

Design and build the OWIN system as the backbone for statewide interoperability. Establish a standards based and scalable voice and data public safety wireless system for public safety. Integrate existing and future interoperable communications systems.

Training and Exercise

Facilitate training to enhance and reinforce effective use of communications systems. Exercise systems and protocols on a regular basis at all levels.

5.4.1 Technology Initiatives

Initiative 1: Build the OWIN statewide backbone in accordance with ORS 401.871 through 401.874.

Timeline: 2007-2011

Tasks:

- Define the requirements for a standards based system that is scalable, upgradeable and sustainable which allows for an integration of technology, and provides redundancy.
    - Industry best practices
    - Guidelines/parameters for functional requirements and capacity to cover state and local needs. Include federal requirements to cover future grant requirements.
- Encourage OWIN to incorporate partners in their infrastructure plan and design
- Encourage partners to incorporate the OWIN system in their infrastructure design and planning
- Establish a finance plan for OWIN that includes construction capital, funding for operations and maintenance, and cost sharing options for participants.
- Initiate a procurement process to begin phased OWIN construction
    - Per legislative direction, develop alternative approaches and cost analysis (January 2008)
    - Obtain Legislative approval to proceed (February 2008)
    - Obtain actual funding for construction (March 2008)
    - Identify initial phases of construction; release Request for Proposal (RFP) for phase I construction (March 2008)
    - Plan so that vendors can anticipate and prepare timely proposals (six month process; award contract September 2008)
- Hire/contract appropriate resources to carry out work for both OWIN and SIEC (refer to "Federal Engineering Business Case" in Appendix H). Those resources will be responsible for:
    - Responding to emerging tasks from the various interoperability committees
    - Completion of the OWIN Finance Plan
    - Outreach efforts
    - Coordination of MOUs
    - Providing professional resources (e.g. legal, engineering)
- Establish and promote policies, standards, and procedures for interoperability:
    - Adopt minimum site standards for OWIN
    - Identify standards for local and network interoperability from the Marion County Federal Partnership for Interoperable Communications (FPIC) project
    - Develop recommendations which include: data collection, identification of backup/surge capabilities, conducting an asset inventory, and reviewing

vulnerability assessments; consider if CASM is an option for compiling/coordinating data in Oregon
    - Develop standards and protocols for connecting to and interoperating with the OWIN system
    - Identify how the network will accommodate legacy systems

Initiative 2: Improve Statewide Interoperability between Stakeholders

TimeLine 2007-09

Tasks:

- Apply the requirements for standards based system that is scalable, upgradeable and sustainable which allows for an integration of technology, and provides redundancy.
- Encourage partnerships in infrastructure plan and design
- Establish finance plan models that include construction capital, funding for operations and maintenance, and cost sharing options for participants
- Promote the importance of SCIP alignment (tied to grant awards)
- Encourage outreach efforts
- Coordinate and/or establish MOUs
- Develop and adopt policies, standards, and procedures for interoperability
- Coordinate with the State for implementation of the national calling and tactical interoperability channels
- Maximize use of nationwide interoperability channels
    - Coordinate state and local placement of interoperability channel base station radios.
    - Develop the SIEC standards, policies, and procedures for interoperability channel base station radios to maximize use and minimize interference.
    - Train and exercise on the use of the interoperability base station radios to assure:
        - Knowledge of their presence
        - Knowledge of how to use the system
        - Equipment works when needed
        - Use of standardized channel names
- Enter into shared facilities with other entities where it makes sense

5.4.2 Planning Initiatives

Initiative 3: Maximize use of voice and data interoperability.

Timeline: 2007-2009

Tasks:

- Determine what voice and data applications need to be supported by the new system
- Ensure that the statewide OWIN data system will comply with applicable FCC and federal standards
    - OWIN wireless data system will support open applications

- SIEC will develop and adopt technical standards for connectivity
- Prioritize interoperability applications and resources
  - Initiate or maintain interoperable plans including strategic, tactical, Continuity of Operations Plan (COOP), and use of the 700 MHz and 4.9 GHz spectrum.
- SIEC will oversee development of joint SOPs with statewide impact
  - Model SOPs will be developed for local and regional use
- Stakeholders will develop, distribute and promote usage of joint SOPs
  - Define how users will regularly access the shared system (e.g. central control points)
  - Demonstrate effectiveness of SOPs through regular training and exercises (coordinated via OEM; communicated regionally)
- Implement NIMS common language concepts
  - Integrate Communications Unit Leader (COML) concept with the goal of completion of training and certification (following the National Pilot Project through NIMS Integration Center)

5.4.3 Governance Initiatives

Initiative 4: Establish governance structures to support the system-of-systems.

Timeline: 2007-2009

Tasks Include:

- Establish models for partnerships tied to infrastructure:
  - Develop a database and keep current on existing infrastructure development (OWIN staff) or consider option of using CASM
  - Develop decision making model(s)[61]
  - Develop financial requirements including such things as cost sharing, sustainability, and financial resources
  - Develop/establish methods for effective preventative maintenance models and planned equipment lifecycle replacement[62]
  - Obtain and identify MOUs for partnership (e.g. levels, SIEC Partnership Committee, local and regional models)
- Establish OWIN governance structure
  - Refine previously submitted legislation
  - Obtain legislative approval of refined OWIN governance structure

[61] Refer to example of 7 County Project taking place in the 4th Congressional District , project manager Lt. Bill Thompson.
[62] Refer to the IWN project, contact Steve Noel.

5.4.4 Outreach Initiatives

Initiative 5: Formalize and strengthen relationships with Bordering States and Tribal Nations.

Timeline: 2007-2011

Tasks Include:

- Identify the SIEC point of contact for each bordering state.
- Set up an initial meeting with each state to share ideas, concepts, overlaps, and specific issues.
- Establish a regular meeting schedule and/or assign SIEC liaisons between states to attend one another's meetings.
- Recruit and actively engage tribes in all steps of planning and infrastructure development.

Initiative 6: Identify partnership opportunities with private & non profit sectors.

Timeline: Ongoing

Tasks Include:

- Use the National Infrastructure Plan to ensure key sectors are invited to participate in interoperability planning.
    - Establish relationships with the Commercial Advisory Council. Engage to garner support, perspective on various partnership opportunities including shared sites and system expansion. Includes all vendors for wireless entities (radio, telcos, cellular, network operators, ISPs)
    - Ensure key nongovernmental entities are invited and engaged in the planning effort[63]
    - Engage transportation and utilities in process.
    - For reference, the National Infrastructure Plan[64] sectors are:
        1. Agriculture & Food
        2. Banking and Finance
        3. Chemical
        4. Commercial Facilities
        5. Dams
        6. Defense Industrial Base
        7. Emergency Services
        8. Energy
        9. Government Facilities
        10. Information Technology
        11. National Monuments & Icons
        12. Nuclear Reactors, Materials & Waste
        13. Postal & Shipping

[63] Refer to Local and State Emergency Management Plans
[64] See "Critical Infrastructure" in Section 2.1

14. Public Health & Healthcare
15. Telecommunications
16. Transportation
17. Water

Initiative 7: Facilitate regular forums

Timeline: Ongoing

Tasks Include:

- Continue regular SIEC and subcommittee meetings (see Executive Summary for schedule)
- Continue regular State Wireless Infrastructure Investment Group (SWIIG) meetings (for additional information see Appendix D)
- SIEC will request FPIC to facilitate multi-state regional meetings
- Develop strategies for formal advocacy and support roles between SIECs and stakeholders
- Maintain communications with regional projects
- Engage regional coordinators (e.g. HPP) to assist in regular processing/planning meetings (begins September 2007)
- Improve stakeholder understanding of public safety wireless communications[65]
- Engage stakeholders in current issues, trends, and impacts of future technologies
- Continue vendor forums

Initiative 8: PSIC Requirements

Timeline: 2007-2010

The State of Oregon's response to the four PSIC requirements are addressed in Section 3 Methodology, PSIC Grant Requirements

5.4.5 Addressing Catastrophic Loss

The new OWIN system has been designed with a multiple loop microwave configuration to ensure route redundancy in the core backbone.

In the event of catastrophic loss of communications equipment, Oregon will rely on an enhanced Strategic Technology Reserve (STR) capability to address communication needs.

Oregon does not have a comprehensive list of STR assets available for deployment. While we have identified a variety of radio caches and mobile communication resources, we do not have a comprehensive list of available resources and procedures for how to access these resources when needed. Oregon will use a portion (est. 30%) of the $943,519 STR allocation to hire a contractor to conduct an independent inventory and assessment of all STR assets. Based on the findings of this statewide assessment, we will either 1) use the remaining STR funds to augment our existing STR assets, 2) use a portion of the remaining funds to hire a contractor to facilitate the

[65] "What If/Why Not" http://www.oregon.gov/siec/docs/tech_comm/what_if_y_not_2-13-07.pdf

development of statewide standard operating procedures (SOPs), 3) request a waiver to reallocate the remaining STR funds to priority projects, or 4) some combination of 1, 2, and/or 3.

Specifically, the inventory and assessment contractor will, at a minimum, be required to:

- Inventory all STR resources within local, state, tribal, federal governments and NGOs;
- Identify which resources could be made available during times of emergencies;
- Map the location of those resources;
- Assess the value of those resources;
- Identify key contacts for each resource and describe the process by which those resources could be requested;
- Recommend priority investments that should be considered to augment the installed base of STR resources and improve state's STR readiness posture;
- Design a training exercise to test the effectiveness/readiness of STR deployment.

The OWIN team will conduct the procurement and manage the contract. The SIEC Technical Subcommittee will review bid responses and make recommendations on which vendor to select. The contractor will deliver the inventory, assessment, and recommendations to the SIEC.

The Oregon SIEC will task the Partnership subcommittee with the responsibility to identify all of the state's major transit systems/providers. The SIEC will then send a letter to each of these providers inviting them to participate in the SIEC meetings and subcommittees (e.g. technical, planning, partnership). The SIEC Technical Subcommittee will be tasked with inventorying the major transit system radio infrastructure and recommend opportunities for coordination and consolidation.

When the SIEC and/or the OWIN groups hold regional meetings, major transit system providers will be invited to participate in the regional deliberations.

5.4.6 Major Transit Systems

The Oregon SIEC will task the Partnership subcommittee with the responsibility to identify all of the State's major transit systems/providers. The SIEC will then send a letter to each of these providers inviting them to participate in the SIEC meetings and subcommittees (e.g. technical, planning, partnership). The SIEC Technical Subcommittee will be tasked with inventorying the major transit system radio infrastructure and recommend opportunities for coordination and consolidation.

When the SIEC and/or the OWIN groups hold regional meetings, major transit system providers will be invited to participate in the regional deliberations.

5.5 National Incident Management System (NIMS) Compliance

In Homeland Security Presidential Directive 5, the President directed the Department of Homeland Security to develop and administer the National Incident Management System. NIMS provides a consistent nationwide approach for federal, state, territorial, tribal and local governments to work effectively and efficiently together to prepare for, prevent, respond to, and

recover from domestic incidents, regardless of cause, size, or complexity. On March 1, 2004, DHS issued NIMS in order to provide a comprehensive national approach to incident management, applicable at all jurisdictional levels and across functional disciplines.

Many of the NIMS requirements are specific to local jurisdictions. In order for NIMS to be implemented successfully across the nation, it is critical that States provide support and leadership to tribal and local entities to ensure full NIMS implementation. NIMS has been adopted nationally and is being implemented in Oregon as the federally required incident management system. To achieve this goal, the Director of Oregon Emergency Management is designated as the responsible party for NIMS implementation.

Jurisdictions in Oregon are being strongly encouraged to ensure that emergency plans and procedures are developed to be NIMS compliant and thus integrate with the National Response Plan and be in accordance with the National Preparedness Goals. Oregon will continue to address this via the statewide plan, building on common language protocols and standards efforts of FY07 through 'Initiative 2' that work to encourage adoption of the common language best practices on the local, state and federal level and in support of National Incident Management System (NIMS) Implementation across the State, endorse the Communications Unit Leader concept and encourage NIMS certification respectively.

5.5.1 Specific Examples of Large Scale Exercises of NIMS & Interoperable Communications Systems

CSEPP – Chemical Stockpile Emergency Preparedness Program in eastern Oregon. This plan covers the area outside of the fence line surrounding the Chemical Weapons Depot and includes a highly interoperable communications system, including community alerting for evacuation. The plan incorporates all NIMS concepts and is exercised annually through federal funding.

TOPOFF 4 – Top Officials 4 was the nation's fourth major exercise in emergency preparedness. The State of Oregon applied successfully to DHS to serve as a venue. Governor Ted Kulongoski made participation by state government a top priority and locals in the Portland metropolitan area were equally committed to participate in October 2007. This was a full scale exercise and the five objectives included: to demonstrate the interoperability of communications among the state, local and federal agencies that play roles in responding to major public emergencies.

5.6 Review and Update Process

The SIEC has an established web site and relationships via council membership that have been used to share information and solicit feedback. The SIEC will continue to be responsible for both update and promulgation of the SCIP. The SIEC Strategic Planning Committee is assigned responsibility for content while the SIEC Partnership Committee has the delegated responsibility for leadership in outreach.

Given the key role of OWIN in the statewide plan, the review cycle for progress and revisions will take place not less than every two years. As in the past with the SIEC's Strategic Plans, changes will be processed with the represented organizations as well as interested parties. Adoption of the plans will be via SIEC approval. After action reports on exercises of the statewide plan will be shared broadly in order to garner additional feedback on the effectiveness of the plan.

6 Implementation

By Legislative authority, the SIEC is responsible for implementation of the statewide communications interoperability plan. The Point of Contact is the SIEC Chair, Chief Jeff Johnson (refer Appendix D). Implementation is to be complete by 2011 with regular reports to the Legislative body on progress. Specific timelines for initiatives in the 2007-09 biennium are addressed however resources needed to carry out those initiatives are not yet completely identified. For those items tied to the Technology Initiative Plan, authorization to hire additional support for OWIN has been granted in 2007 and is in progress.

6.1 Coordination

As with past plans, the SIEC Strategic Planning Committee will take responsibility for delegating assignments and tracking progress. The SIEC has a strong record of being able to establish goals and objectives and carry out priorities as evidenced by the adopted, and annually updated, SIEC Strategic Plan (see Appendix C). While limited resources to complete the work are a concern for Oregon, the critical work will continue. While the lack of a full time interoperability coordinator is a concern for Oregon, the critical work will continue. Roles and responsibilities for each assignment will be clarified as they are made, along with proposed timelines for completion. For the most part, funding and support for interoperability coordination is covered by the individual agencies represented on the SIEC and its committees. Codified into statute, membership (and terms of service) covers a broad range of stakeholders on the local, regional, tribal and state level.

Certain tasks included in this plan have obvious end points and immediate benefit to public safety. Key examples:

- Outside resources are obtained to assist in developing methods of coordinating use (e.g. SOPs) of shared interoperable frequencies. Regionalized control points are envisioned at this point. **Complete in 2008**.
- Inventory and SOPs for use of interoperability resources statewide are completed. Training on same follows. **Complete by End of 2007-09 Biennium**.
- Participation in the SCIP plan feedback loop occurs on every level: local, regional, tribal, state and federal partners are present and engaged. Continuing forums are established for future revisions as communications infrastructure grows and technology options expand. An example to watch for: how will Oregon incorporate use of the public/private broadband network being commissioned by the FCC? **Ongoing, Monthly, Quarterly**.
- Regional exercises are conducted to test usefulness and effectiveness of the inventory, SOPs and training. Adjustments are made as a result of after action reports. Further training follows. **First Exercise 2008; could be tied to NLE 2-08**, the National Level Exercise involving Oregon and Washington simultaneously scheduled for May.

- OWIN design and phased development concepts are approved and budget authority from the Legislature to move forward on phased construction of the microwave infrastructure. **Complete February-March 2008**.

The SIEC and OWIN websites, email lists and meetings will be the most regular and efficient means of sharing progress on the implementation of the SCIP and educating policy makers and practitioners. Association meetings and regional forums will promote face to face interaction and feedback about the priorities and usefulness of the plan.

- SIEC Meetings: Monthly, second Tuesday, 1-3 pm; committee meetings same day.
- Location: Anderson Readiness Center, 3225 State Street, Salem.
- Scheduled Reports to Associations:
- Oregon APCO/NENA Quarterly Meetings: standing business meeting agenda item.
- Locations change each quarter. Northern region, central region, Welches, coast.
- Oregon Chiefs of Police Quarterly Meetings:
- Locations…
- Oregon Fire Chiefs Association Quarterly Meetings:
- Locations…
- Oregon State Sheriffs Association Quarterly Meetings:
- Locations…
- Oregon Emergency Managers' Association Meetings:
- Locations…
- Association of Oregon Counties Quarterly Meetings:
- Locations…
- League of Oregon Cities Meetings:
- Locations
- Oregon Telecommunications Coordinating Council Monthly Meetings: as invited.
- Location: video conference.
- Other…

6.2 Marking Progress Towards Interoperability

Steady work to improve interoperability based on agreed upon priorities has been moving forward since 2002. (refer Appendix C). This first statewide plan will advance our goals best summarized around the SAFECOM Interoperability Continuum. The critical success factors for achieving interoperability in Oregon are:

Governance: Model agreements for shared radio sites and equipment are in place, working well for users. Multi-disciplinary collaboration continues.

Standard Operating Procedures: SCIP is adopted. Regional SOPs are established for communications procedures. All SOPs to date incorporate NIMS.

Technology: While are aiming for a statewide level '4' of proprietary shared systems; connectivity between those systems via OWIN will provide for standards based systems when using the backbone. It is anticipated that construction for OWIN will take six years. Regional radio projects continue at a steady pace, anticipating an ability to connect as a system-of-systems.

Training and Exercise: Training agencies on the use of interoperable communications resources in existence needs to happen in 2008. That same year, we will establish goals and begin regular comprehensive training using the SCIP.

Usage: Already a daily event, moving from inefficient and outdated technology to shared frequencies, equipment and SOPs should occur no later than with the completion of each phase of OWIN construction.

7 Funding

The numbers involved in funding upgraded communications infrastructure, planning, training and exercise for public safety are nothing short of startling. Critical service delivery and this level of technology are hard to come by at bargain prices. For that reason, collaboration at every level is vital in order to make progress, contain costs and maximize benefit.

7.1 Technology Initiative Funding

In the conceptual design document submitted by Federal Engineering in 2006, a value engineering cost of $665 million was identified as the dollar figure necessary to construct and operate the OWIN system. It is expected that this will be mitigated by cost sharing agreements for radio infrastructure and use of the system. The 2007 Oregon Legislative Assembly approved $6.8 million in state funds towards the next phase of the OWIN project. Those funds will be used to hire staff and complete additional planning for OWIN which will then be reviewed during a Legislative Special Session in February 2008.

The SIEC completed a finance strategy for OWIN in 2006. "There are two basic strategies: 1) Construction, financed by the State of Oregon and federal resources equally, and; 2) Operations, financed principally by subscribers but inclusive of State of Oregon finances in the area of public safety (radio owning agencies)." Further on in their report, they recommended that: "It is the goal of the Finance Committee to insure that the subscriber rate is a competitive value for local subscribers. This is a critical consideration for the SIEC, as our financial policy must incent broad adoption of the system to achieve our interoperability objectives for the State as a whole[66]." In 2007, the SIEC Partnership Committee designed a non binding survey based on a New York City model in order to measure the level of potential involvement of local and regional jurisdictions in the OWIN system. As this survey is completed, better estimates of cost savings through partnerships and varied use of the statewide system can be anticipated in the report to the Legislature in February 2008.

7.2 Partnerships & Additional Federal Funding for Technology

As the OWIN project has progressed, opportunities to apply for grants that build out portions of the system have been pursued. An agreement with the federal project, IWN, has been secured to share radio sites along the I-5 transportation corridor. The Columbia River Tribal Council transportation corridor radio project along I-84 includes OWIN system elements. Agreements with local projects in Lane and Jackson County are underway to share infrastructure within their system upgrades. The 7-County Project (funded by federal transportation monies) has a similar agreement to include OWIN resources within its plan. DHS funds from the State's share of the Oregon allocation have been used for staff (current total is six) and early planning efforts. OWIN has signed on to a pilot project with FPIC in Marion County to test some of the concepts in the statewide system proposal. A COPS grant proposal was submitted in June 2007; a PSIC

[66] SIEC Financial Committee Report: Recommendations for OWIN funding, 2006

grant proposal is being written for an August submission and plans to apply for future DHS funds continue.

The next phase of the OWIN project funding plan will be complete for Legislative review in February 2008.

7.3 Grant Opportunities for Planning, Infrastructure, End User Equipment

In each version of the SIEC 'Short Term Strategies for Interoperability' document, incentive to apply for funds that will enhance and expand interoperability via the DHS grant approval process have been included. Grant review criteria anticipated the DHS requirement for completed interoperability plans and have emphasized regional proposals, purchase of equipment that will meet both FCC and DHS requirements, and training and exercise to ensure that people, plans and equipment come together when needed to serve public safety needs. Grant opportunities applied for and awarded (exception is PSIC) by the state, tribal and locals to date include: DHS, FPIC, COPS, and PSIC. Opportunities to partner with Health Care Regions via planning efforts have also been federally funded.

7.4 Reimbursement for Emergency Situations

With the passage of the intrastate mutual assistance legislation and FEMA documentation requirements, there should be some ability to recoup costs of expended resources during emergency situations.

7.4.1 Statewide Interoperability Coordinator

Staff resource to carry out interoperability priorities is an identified human resource gap in Oregon. While OWIN has a paid director to take the lead on managing that program, other responsibilities are carried out by SIEC members who hold full time positions with their own agencies. In the past, the twenty percent pass through for the State from DHS grants was used to partially fund coordination support. There is no ongoing funding stream in place to address this function for Oregon. We are also still considering the prioritization of funding for interoperability needs in Oregon.

7.4.2 Expenses for SIEC members

Per legislative direction, in most cases, SIEC members cover their own travel costs. There is a provision for some expenses to be covered if needed, and while certain grant applications allow for reimbursement of travel and administrative costs associated with grant awards, this has not been regularly exercised.

7.5 Training & Exercise

Expenses for training, planning and evaluating exercises of interoperability plans continues to be primarily covered through federal funding sources, coordinated by Oregon Emergency Management in order to maximize the benefits of contracted assistance.

8 Summary

Oregon public safety leaders are firmly committed to achieving the most basic aspect of communications interoperability, that is to put a plan and a 'system-of-systems' infrastructure in place that will allow responders to exchange voice/data communications with those they need to, in real time, when needed and authorized. Our approach has been purposeful and those involved have provided a voice across the disciplines and jurisdictions in this State. While the statewide efforts for public safety interoperable communications have been formalized since 2002, we recognize that aging infrastructure, the cost to replace and/or upgrade technology, and the need to make our systems work for public safety responders require us to continue to increase collaborative planning and partnerships at every opportunity. Obtaining funding from the Oregon Legislature to continue working on the technical side, through OWIN, was a step towards a key initiative in 2007. There is an added urgency to our timeline with failing systems and FCC mandates. Our process must include the need to address operability in some rural areas of the State. As we move on to next steps, we must also plan for a scalable, upgradeable and sustainable system for the future. Our strength and our measure of success, will be in our continued ability to work together to make progress towards these goals.

Appendix A GUIDE FOR SHORT TERM INTEROPERABILITY

Guide for Short Term Interoperability

Adopted: by the SIEC Technical Committee

May 8, 2007

The Oregon State Interoperability Executive Council (SIEC) and the State of Oregon encourage Oregon's public safety agencies to develop interoperable communications systems that encompass all of the elements of public safety. To most, this issue of "interoperability" is a confusing maze of trade journal articles, technical mumbo jumbo, and vendor hype. The SIEC has assembled this guide to assist non-technical, everyday public safety personnel in achieving simple, short term interoperability solutions that enhance day-to-day operations and that afford preparation for major multi-jurisdictional events. These short term efforts are leading to longer term and much more comprehensive solutions to wireless interoperability for public safety agencies throughout the entire State of Oregon.

Note: This guide was initially developed and endorsed by the SIEC in December 2004. Due to changes in the public safety wireless communications marketplace and regulatory environment since that time, the SIEC Technical Committee has worked to revise this guide in several key areas. It is assumed this 2007 version will also need to be revised on at least a two-three year cycle.

OWIN: The SIEC provides oversight and policy direction to the Oregon Wireless Interoperability Network (OWIN). At the state level, OWIN is implementing the SIEC's plans for statewide interoperability. In the near term, the SIEC/OWIN direction is to maximize use of nationwide interoperability channels in VHF, UHF, and 800 MHz (NPSPAC) frequency bands. The near term solution uses existing resources: nationwide interoperability frequencies and existing radios. In the longer term, the current OWIN conceptual design envisions implementation of a Statewide Internet Protocol network on the state microwave system that addresses enhanced interoperability through the use of statewide programmed connection of systems to each other in a "system-of-systems" approach to interoperability. This guide sets recommendations for the near term development of statewide interoperability in Oregon while the longer term solutions are in development.

Radio Programming: (Agency specific frequencies): The simplest means to gaining a measure of interoperability is programming existing, operational channels from agencies that are adjacent to each other geographically and that operate in the same frequency band, into your radio. Each county, state agency, municipal and special district radio manager should agree to allow other responders, on the same frequency band, to use their radio system on designated interoperable channels when necessary. Formal, model-agreement can be obtained from the SIEC. As an aside, it is highly recommended that adjacent agencies think about radio templates that follow some predictable rationale and that use common nomenclature for channel identification.

(Nationwide Interoperability frequencies) The second simplest means to another level of interoperability is found in the FCC's newly established nationwide interoperability channels. Every portable and mobile radio in Oregon should include all of these interoperable channels that are within the same band of operation as the basic radio. Interoperability Channels are available

in all of the public safety bands and are designed to allow folks to communicate anywhere in the country, within each frequency band.

Make sure new radios you purchase have adequate channel capacity to accommodate all of the additional interoperability channels. It is the SIEC's recommendation for both interoperability and for the receipt of federal funds based upon interoperable communications that these nationwide interoperability channels shall be programmed into every Oregon public safety subscriber radio. In VHF subscriber radios, the other channels that should be in every radio are the **State Fire Net (154.280 MHz)** and the State Police Net – **OPEN, (155.475 MHz)**. VHF Interoperability channels can be utilized on a secondary basis to interoperable communications for day-to-day tactical needs as well, so that personnel are accustomed to utilizing them.

OWIN is working in a partnership with the Federal Partnership for Interoperable Communications (FPIC) on improving nationwide interoperable frequency utility. The most notable enhancement is expected to involve adding federal radio frequencies to the FCC's VHF nationwide interoperability channels to make repeater operation possible in the VHF band. Repeater operation is already possible in the UHF, 700 MHz, and 800 MHz bands. At the present time only simplex (car-to-car) tactical use of the VHF frequencies is possible. In accordance with SIEC policy, the FPIC/OWIN partnership is aimed at extending unencumbered access to all levels of government to the type of interoperability network OWIN may install under the SIEC's guidance. As federal frequencies may be added in the Oregon system, this Short Term Guide will be revised.

800 MHz (NPSPAC) frequencies are currently in a re-banding process in order to remove commercial system interference to public safety systems. This re-banding process will result in a need to reprogram in nationwide, 800 MHz interoperability channels in the near future. As the re-banding process is finalized, this Short Term Guide will be revised.

The following is the SIEC's guide for programming the FCC designated Interoperability (I/O) channels into existing radios and all new radios that are added to any system. Due to space limitations in some existing radios, it may not be possible to program all of the I/O channels into all radios. In that case, the calling channel and the first tactical channel should be programmed at a minimum. The frequencies listed are in each of the three bands and are listed by order of priority, with highest priority shown at the top of the list. They are to be programmed into the radios with the highest priority first, as space permits.

Note: As of January 1, 2005, existing systems on these channels and those existing systems on the adjacent channels become secondary to these interoperability channels. In the event of interference, existing systems must cease use when interference occurs to interoperability channels.

VHF Radios

Channel (MHz)		Label	Description
155.7525	base/mobile	VCALL	National Calling
151 .1375	base/mobile	VTAC 1 *	National Tactical
154.4525	base/mobile	VTAC 2 *	National Tactical
158.7375	base/mobile	VTAC 3 *	National Tactical
159.4725	base/mobile	VTAC 4 *	National Tactical

UHF Radios

Channel (MHz)		Label	Description
458.2125	mobile	UCALL	National Calling
453.4625	base/mobile	UTAC 1 a	National Tactical
458.4625	mobile	UTAC 1	National Tactical
453.7125	base/mobile	UTAC 2a	National Tactical
458.7125	mobile	UTAC 2	National Tactical
453.8625	base/mobile	UTAC 3a	National Tactical
458.8625	mobile	UTAC 3	National Tactical

800 MHz Radios[67]

Channel (MHz)	Label	Description
821/866.0125	ICALL	National Calling
821/866.5125	ITAC-1	National Tactical
822/867.0125	ITAC-2	National Tactical
822/867.5125	ITAC-3	National Tactical
823/868.0125	ITAC-4	National Tactical
821/866.3250	OROPS1	Oregon Tactical
821/866.3875	OROPS2	Oregon Tactical
821/866.7500	OROPS3	Oregon Tactical
821/866.7750	OROPS4	Oregon Tactical
821/866.8000	OROPS5	Oregon Tactical
867.5375	WAOPS-1**	Washington Tactical
867.5625	WAOPS-2 **	Washington Tactical
867.5875	WAOPS-3 **	Washington Tactical
867.6125	WAOPS-4 **	Washington Tactical
867.6375	WAOPS-5 **	Washington Tactical

* Note: In the future, these channels will change from simplex analog to repeater analog and digital channels

** Note: The WAOPS 1-5 Labels used to be labeled "STATEOPS".

[67] Oregon has not yet gone through the process of incorporating NPSTC channel naming nomenclature. It is our intent to work through this in the 2007-09 biennium.

Use of interoperability channels

General SIEC Statement. The SIEC has adopted a policy that is aimed at allowing both operability and interoperability of nationwide interoperability channels. Through allowing a controlled and monitored level of operability on these channels, the SIEC expects to assure that the channels are implemented, are normally tested through day-to-day use, are maintained, and are available when needed for interoperability purposes. The SIEC has also endorsed unencumbered access by federal, state, local, and tribal entities to the use of these channels. This policy foresees that these channels can have controlled and monitored use between agencies and jurisdictions and solely by those agencies and jurisdictions as well.

Calling Channel: The calling channel shall be used to contact other users in the Region for the purpose of requesting incident related information and assistance and for setting up tactical communications for specific events. In most cases, the calling party will be asked to move from the Calling Channel to one of the TAC channels for continuing incident operations or other interoperability communication needs. This channel can be implemented in full repeat mode in 450 MHz or 800 MHz systems. In the 150 MHz, 450 MHz, and 800 MHz bands, direct, or a talk around/simplex mode can be used.

Note: WAOPS is simplex only as per the Region 43 Regional Plan for 800 MHz.

Tactical Channel: By FCC rules, the tactical channels are to be used for coordination activity between different agencies in a mutual aid situation, but in non-interference instances, they may be used on a case-by-case basis for emergency activities of a single agency. Incidents requiring multi-agency participation will be coordinated over these channels by the agency controlling the incident. These channels can be implemented in full repeat mode in 450 MHz or 800 MHz or they may be used on a direct (talk-around/simplex) mode in 150 MHz, 450 MHz or 800.

Dispatch Centers and Interoperability: The SIEC endorsed a SIEC Policy Action 09-2007 on March 13, 2007. That policy action concerned a Memorandum of Understanding calling for potential licensees of the VHF, UHF and 700/800 MHz nationwide interoperability channels to voluntarily refrain from installing or requesting Fixed Base Station licenses until a coordinated effort to limit interference and monitor those channels is put in place by the SIEC. The SIEC is working on longer term methods of coordination of interoperability channels on a statewide basis. Gateways, Interoperability Switches, or console patching, are strongly encouraged at 9-1-1 dispatch centers in the short term to allow connection of interoperable VHF, UHF, and NPSPAC channels to the operating channels within the center's range.

Purchasing New Radios and Systems: If you are in the market to purchase new subscriber radios or a new radio system, you may choose to utilize the SIEC technical committee as a sounding board to help clear the confusion and provide guidance and suggestions to assure maximum interoperability in the most effective manner. By FCC rules all new, VHF and/or UHF systems (meaning below 512 MHz) shall be implemented using narrowband (12.5 kHz bandwidth) technology.

Note: As of January 1, 2011, FCC Rules will no longer allow manufacture or importation of any radio that has a mode in it that works on existing wide band systems.

If your agency intends to remain on VHF and/or UHF public safety radio frequencies, it is important to start the migration to meet FCC timelines for conversion to narrowband operation. The mandate for a complete conversion to narrowband operation is January 1, 2013

When purchasing new VHF and/or UHF portable or mobile radios make sure they are narrowband compatible. This is consistent with FCC requirements. All VHF radios must be capable of adhering to FCC channel bandwidth, efficiency and frequency channelization rules.

Note: The I/O frequencies will operate in the analog narrowband mode. If a CTCSS (Continuous Tone Coded Squelch System) tone is needed, it will be 156.7 Hz. Normally it would be recommended that all receivers and all transmitters use CTCSS.

The SIEC's recommendation for priority in receipt of federal funding for interoperable communications is to strongly encourage conversion to digital technologies.

The primary reason is that digital technologies operate in only 72% of the band occupied by narrowband analog technologies, and they suffer no reduction in voice quality or in system range with this added efficiency. The SIEC recommends that all radios procured under interoperability shall be, at a minimum, capable of programmable conversion from analog to digital operation. The only acceptable digital operation is in compliance with the Project 25 standards. The applicable standards are within the ANSI/TIA/EIA 102 series. All portions of that standard that define the common air interface and the vocoder are to be complied with. Whenever encryption is also used, the Project 25 encryption documents must be complied with as well.

It is suggested that you consider the use of multimode (digital and analog) technologies, and multi-band operation as these features might become available. You may choose to not implement Project 25 technologies while you are continuing to operate or are building an analog system. All Homeland Security grant funding promotes interoperable communications and recommends adherence to open architecture technologies and Project 25 standards.

Note: If you build a new system or convert an existing one to narrowband it is likely that some of your older mobile and portable radios will not work on the narrowband frequencies, however, you'll need to verify with your vendor. The newer radios will work in both modes.

Appendix B SHORT TERM PHYSICAL PLANT REQUIREMENTS

Short Term Physical Plant Guidelines
for
OWIN Core Sites and Alternative Sites

Introduction

The intent of this document is to provide guidance for parties seeking to make improvements or replacements to tower and / or shelters at potential OWIN Core Sites. This document is not meant to serve as a blueprint for physical plant requirements nor as a comprehensive scope of work, however it may serve as a tool for agencies that have compressed time frames in regard to construction of sites. This document was prepared by members of the SIEC Technical Committee and represents input from both vendors and various State and Municipal employees.

Disclaimer

When embarking on any tower or shelter construction project, members of the SIEC Technical Committee strongly advise that individuals contact OWIN Project Engineers. This will allow for the necessary review of the project before the design phase and provide valuable information regarding space, HVAC, power, antenna placement and other physical plant requirements, and improve the likelihood of OWIN funding support and OWIN collocation of facilities.

General Plant Guidelines

- Commercial power delivered to the site, preferably underground (as it approaches the shelter) and not from a power pole drop.
- Commercial power drop w/240 volt to 200 amp service preferably service lateral underground feed.
    - The following list is provided to help organize, and coordinate electrical service installation. Some items may not apply to all projects. Note: Ensure that the electrical installation process is tracked, managed and documented by responsible parties.
        - Where practical, keep overhead lines and poles at least 200 feet from the site compound area during construction. This helps protect against accidental contact by construction or maintenance equipment and hazards associated with ice falling from the tower while under construction.
        - To facilitate single-point grounding, request that electrical service enter the site building on the same wall as and near to the entry point for the antenna transmission lines. Also, request to have the telephone circuits, data circuits, and tower lighting connections in the same area.
        - Proper separation between overhead electrical service conductors and antenna transmission lines shall be a minimum of 2 feet (NFPA 702005, Article 810.13). This may require coordination between the site development engineer and the shelter manufacturer to ensure consistency in layouts.

        - Utility installations are jurisdictional. Ensure that it is clearly understood who the utility supplier will be.
        - Coordinate other utility installations such as closed-circuit television (CCTV) and Telephone Company.
        - Supply the utility with an electrical utility information form.
- If local code allows, a 6 foot fence for site security that is made of a material that will not rust should be utilized. The fence must be a minimum of 4 feet from the shelter. If allowed, consider use of a 6 foot vinyl clad galvanized chain link fence with a minimum of 5 feet from shelter topped with stainless concertina wire.
    - The fence shall be bonded - metallic objects need to be bonded to equalize the potential between conductive parts. This is done for personnel safety and to prevent arcing between metallic components that might otherwise be at different potentials. Bonding conductors shall be as short and straight as possible. (ANSI T1.313-2003, section 6.3)
    - All site fencing, including gates, within 6 feet of the grounding (earthing) electrode system (such as building or tower ground ring and radial grounding conductors), or any metallic item grounded to the grounding electrode system, shall be effectively bonded to the external grounding electrode system to help prevent shock hazard to personnel from lightning or other electrical anomalies (ANSI T1.334- 2002, section 5.3.3). In high lightning prone geographical areas, or areas of high soil resistivity, it is recommended to effectively bond fencing that is located within 10 feet of the external grounding electrode system, or within 10 feet of a grounded metallic item (ANSI T1.313-2003, section 10.3.2).
    - When fences are located at an electrical power substation, the fence grounding shall be made as required by local code and by the electric power utility company. The fence grounding should comply with IEEE-STD 80-2000 and is beyond the scope of this document.
    - Fuel storage tanks located outside of a structure should be protected from damage and tampering, and shall be enclosed within a fenced area. The minimum recommended distance between the storage tank and fence 4 feet. The minimum recommended distance between the tank and site building is 10 feet. See NFPA 58 for additional information. The fuel tank must be bonded to the external grounding electrode system.
- Sites must have road access.
- Telephone and / or fiber connectivity should be in place if it is feasible / possible to do so.
- Area around the shelter should have a graveled approach.
- Any fenced area around the shelter shall have gates that will allow a service vehicle to approach the shelter. Gate opening shall be at minimum 12 feet. Additionally, at snow sites access should be provided via a split man gate.
- For sites that are heavily forested, remove brush and dead trees at least 150 feet from the tower and shelter. Remove all vegetation within 10-20 feet of outside perimeter. This work is likely subject to the lease agreement between the owner and lessee.
- Both generator and fuel sources shall be secured within the site perimeter. It is preferred that the generator be enclosed in a shelter.
- For new tower construction projects, consider a minimum 50% future growth capability.
- Ensure that sufficient grounding for the entire communications compound, including towers,

shelters, tower guying, generators, fuel storage etc. is applied - refer to current R-56 standards as they are amended from time to time. Grounding requirements will often be site specific.

Tower:

- Tower should be a heavy three or four legged tower at least 120 feet in height and at least 40 feet of the tower above the tree line. A self supporting tower is preferable. A heavy four legged 160 foot minimum tower is preferred with at least 40 feet of the tower above tree line.
- In regards to antenna and microwave installation for OWIN and core sites, please consult OWIN Engineers for site specific data.
- Tower must meet EIA / TIA 222 Revision F requirements.
- Civil works include, but are not limited to the access road, site grading, foundations, ground grid security fencing and water management. Civil works should meet or exceed the requirements of local building codes, IEA.TIA-222 Tower design standards, and industry standards such as current R56. The geotechnical analysis of site soils prior to foundation design is a requirement of proper detailed engineering.
- At least one OSHA approved climbing ladder with safety climb cable assembly should be in place
- Waveguide ladders should be specified / utilized on a case by case basis
- Twist and sway specifications to be determined by antenna loading
- Plan for a 50% design load increase to be added over entire tower to facilitate future growth
- If possible, top 40 feet of tower should be vertical
- Tower should be hot dipped galvanized

Shelter:

- Shelter should be enclosed within a fenced area, with adequate distance around the shelter for maintenance and servicing.
- Site shelter should have an adequate 48 volt DC charging system and battery bank. The battery bank capacity will be site specific determined by uptime requirements. Based on the amount of equipment present, location and accessibility of the site, this bank of batteries can vary dramatically.
- Shelter should have two (2) redundant environmental controlled lead lag HVAC (heating & cooling) systems capable of handling shelters maximum thermal load.
- Thermostatically controlled ventilation fans and low ambient control are recommended. The HVACs should utilize a compressor head pressure time delay safety kit and ensure that coolant and refrigerant standards are met.
- Shelter should allow for at least 200 square feet of floor space for OWIN equipment. The recommend floor to ceiling height is 9 feet.
- For IWN sites, allow for at least 30 square feet of additional space in a secured area. Interior security fencing would be appropriate if there is a single, open equipment area within the building.
- Shelter grounding, both external and internal, must meet current National Electrical Code if not superseded by local codes and the current version of the R56 grounding standard as these standards may be amended from time to time.

- It is critical that the installation of any antenna feed line cabling be identified for ease of repair. Where possible a dedicated cable bridge between the shelter & tower shall be utilized for OWIN purposes.
- Shelter should have an alarm capability to include:
    - High and low temperature
    - Smoke – photoelectric and ionization detectors
    - Commercial Power failure
    - Generator Failure
    - Charger Failure
    - Waveguide High Humidity
    - HVAC A-failure
    - HVAC B-failure
- ABC rated fire extinguishers, emergency eye wash kit, and first aid kit should be contained within the shelter at all timers. Consider placement of a small fold down desk and literature rack within the shelter as well.
- Shelters should also have the following:
    - Seismic level 4 rating
    - Two hour fire rating
    - Design load of 500 psf for the floor and 200 psf for the roof
    - Cable entry plate
    - Door stop / holder
    - Surge suppression of all wiring systems which enter the shelter. This includes but is not limited to AC power, DC power, all telephone-fiber-microwave connections, video circuits, tower lighting, other monitor and control circuits.
    - R-19 insulation rating
    - Integrated load center with a minimum 200 amp service, single phase with a primary surge arrestor that is a combination of metal oxide varisitor (MOV) and silicon avalanche diode (SAD) device. Additional secondary electrical surge suppression for both AC and DC may be required.
    - Adequate interior lighting Interior lighting should be a minimum of 1.5 watts per square foot of interior space with full spectrum fluorescent tubes.
    - Interior wallboard should be white in color
    - External GFI receptacle – 20 A
    - Battery powered emergency lights on the interior of the shelter.

Generators:

- Site should be equipped with a Transfer Panel to provide an automatic switch between commercial and generator power.
    - Remote monitoring and control capabilities
    - Exercise timer-provides weekly 1/2 hour test
- 45 kW generator, single phase, 3 wire 120/240 volt 60 Hz. Generator must also satisfy the following:
    - Minimum 1000 gallon propane tank. The system should be designed to allow for one week's continuous run time.
    - Water jacket heater

  - Standard exhaust connector
  - Spark arresting muffler

Security:

- Locked Gate/Door Switches
  - Key card/smart key lock system (computer recording)
  - Limit public access via gates on roads leading to the site
    - Consider use of pre-welded gates that are connected with an underground frame assembly (e.g. Central Lincoln PUD)
    - Consider use of deterrents on either side of gates (e.g. rocks, trenches)
- Fences/anti-climb wires
  - Fence should be at least 6 feet high with stainless razor wire at the top.
  - Buildings and shelters should utilize a locked galvanized chain-link fence where appropriate.
  - Bottom of the fence should be secured
  - Appropriate grounding and bonding should be assured
  - Man-gate access should be appropriately controlled
  - Minimum width of the gate coming into the compound for a vehicle should be carefully considered (site dependent)
- Shelter
  - Shelter should be 30.06 bullet resistant
  - Steel door with non removable hinges and substantial locking mechanisms
  - Lock guard (pick plate) and Deadbolts
  - Sturdy and secure walls (Cement walls with rebar, steel, etc.)
  - Sturdy and secure roof construction – (i.e. no wooden roofs – instead utilize steel plates or concrete)
- Lighting
  - Exterior lighting (specially designed lights that are vandal and bullet resistant) – either motion detection or trigger (e.g. photo sensor, infrared)
  - Interior lighting - Change switch – not an on/off but instead a motion detect switch or mount a light that is activated by motion.
  - Carefully consider light positioning (site specific)
- Alarm System
  - Exterior audible alarm (perimeter breach)
  - Internal audible alarm
  - No delay alarms
  - Open door alarms
  - Notification back to dispatch location
  - Fibersense alarm on the fence (with notification)
- Signage
  - Consider use of a site identification number (Latitude/Longitude) - some identifier on the outside of the building (e.g. a State of Oregon designated number for every site)
  - Signage on fences
  - RF Hazard warning signs
  - Video surveillance

  - Number to report suspicious activity to the property owner or a local authority such as a 911 office (Note: Recommend using a Generic # or call 911– something that won't identify the critical purpose of site)
- Video
  - Consider use of motion activated video surveillance
  - Monitoring and recording (Recommend - 30 day minimum)
  - Off-site recording capabilities (web-based storage – page/email notification – access provided only to designated personnel)
  - Outside camera – day/night camera with good resolution on low-light (Carefully consider pros and cons of black and white vs. color)
- Still Photography
  - Consider use of motion activated still photography
- Audio
  - Two way audio (listen and talk-back)
  - Monitoring and recording (Recommend - 30 day minimum)
- Local telephone
  - Land line (way to restrict use only to authorized personnel)
  - Telephone on-site over microwave
  - Order-wire
- Ladders – (Building or Tower)
  - Ladder plates and locking mechanisms should be in place
- Placement and accessibility of exterior wiring and cabling
  - Carefully consider height of exterior wiring and cabling at each site

Appendix C STATE INTEROPERABILITY EXECUTIVE COUNCIL STRATEGIC PLAN

C.1 Adopted April 2003
C.2 Updated September 2004
Revised and Adopted September 2005
Updated November 2007

Introduction

As the Oregon State Interoperability Executive Council's (SIEC) Strategic Plan, this document outlines a clear mission and specific goals. It identifies critical issues and models the work before the SIEC.

This plan serves as a detailed roadmap that guides the Council's achievement of the mandates set forth in Executive Order 02-17, signed by Governor John A. Kitzhaber and affirmed by Governor Ted Kulongoski. That Executive Order formed the SIEC in September 2002. *See Attachment A.* The SIEC since has been codified in state law through the passage in the 2005 Legislative Assembly of House Bill 2101. *See Attachment B.*

Within both the Executive Order and now state law, the SIEC is called upon to "provide policy level direction for matters related to planning, designing, and implementing guidelines, best practices, and standard approaches to address Oregon's public safety communications interoperability issues."

Building on the Executive Order, the SIEC in 2003 adopted SIEC Resolution 03-01, formally stating its priorities. *See Attachment C.* When initially adopted in 2003 and updated in 2004, the priorities centered on leadership around interoperability issues, the setting of standards, short- and long-term implementation strategies for these systems, and lastly, a plan to maintain interoperability in Oregon as a sustainable priority for the future.

Conducting an internal and external assessment helped the SIEC identify the critical issues before them such as funding, time criticality, duplicate systems, and the need for coordination and collaboration on many levels. During the 2005 update and rewrite of this strategic plan, the critical issues were reviewed and modified slightly. Now included is the Federal Communications Commission (FCC) order for a nationwide change in radio spectrum allocated for public safety radio systems operations and upgrades, with a mandated 2013 deadline.

As with the initial strategic plan, the SIEC continues to focus on three strategic goals. They are:

1. Provide leadership in the development of policies, guidelines, legislative recommendations and other actions that lead to the drafting and implementation of a Statewide Interoperable Communications Plan for Oregon.
2. Research and provide information forums concerning technology advances; establish compatible standards to implement interoperable wireless communications, both for voice and for data.
3. Promote collaborative partnerships to maximize resource sharing.

The product of this effort will be the creation of a communication system accessible for public safety communications across Oregon. Infrastructure and radio systems will be built and tied together using advanced technology to create the network. This approach, referred to as a "system-of-systems," will be designed to allow public safety agencies the option to fully integrate as a partner on a statewide radio system.

This system is being developed for state, federal, county, city, tribal and other emergency service providers. Under House Bill 2101, state agencies are required to share a common communications infrastructure. It is the SIEC's goal to ensure that the system is broadly adopted by other jurisdictions within the State of Oregon. Others may connect to the system by choice. However, the essential nature of this service will create efficiencies in the basic mission of public safety. This mission is so fundamental to local governments that the SIEC believes adoption will be high.

To create such a system requires investment in infrastructure and technology. Moreover, it requires a well-understood blueprint for operation and coordination for the future.

Critical Issues

The following six critical issues have been identified by the Oregon SIEC and provide motivation for many of the objectives in the SIEC Strategic Plan.

1. Need to communicate with each other during emergencies and day-to-day operations.
2. Leveraging of limited funding
3. Elimination of duplication
   a. Maximize resource sharing
   b. Bridge building
4. Need for functional (operational and technical) guidelines that shape city, county and state communications interoperability
   a. Interoperable channel setup
   b. Federal Communications Communication mandate of 2013 system upgrades
5. Lack of central coordination, such as guidance and governance, for interoperability
6. Time criticality
   a. Terrorism, major incidents

Vision, Mission and Goals

Vision and mission statements help to focus the whole of the SIEC's efforts on a commonly desired end state.

Vision Statements

Near-Term Vision

Establish innovative and consensus-based approaches to mission-critical wireless communications technology and interagency partnerships that lead to seamless communication among public safety agencies serving the citizens of Oregon.

Long-Term Vision

Provide a framework for an innovative, inclusive, scalable, sustainable, and well-managed interoperability plan that reflects national standards, as well as being effective in addressing the unique statewide urban and rural requirements of the public safety agencies serving the citizens of Oregon.

Mission Statement

The mission of the Oregon State Interoperability Executive Council is to develop recommendations for policy and guidelines, identify technology and standards, and coordinate intergovernmental resources to facilitate statewide wireless communications interoperability with emphasis on public safety.

Strategic Goals

To facilitate movement toward its vision, the SIEC established the following three strategic goals that align with the Council's stated priorities and identified critical issues:

1. Provide leadership in the development of policies, guidelines, legislative recommendations and other actions that lead to the drafting and implementation of a Statewide Interoperable Communications Plan for Oregon.
2. Research and provide information forums concerning technology advances; establish compatible standards to implement interoperable wireless communications, both for voice and for data.
3. Promote collaborative partnerships to maximize resource sharing.

SIEC Policy Actions

In June 2005, following a public review and comment period for stakeholders and other interested parties, the State Interoperability Executive Council adopted five policy actions intended to provide the initial roadmap for the development of the State's Interoperable Communications Plan. This same process was used during 2006 and 2007 for three additional policy actions. The adopted policy actions are listed below.

SIEC Policy Action 01-2005: "System of Systems"

It is the policy of the SIEC to promote and support a "system-of-systems" approach to achieving interoperability in Oregon.

Through this approach, communication technology gateways will allow the connection of otherwise incompatible public safety communications systems.

This approach builds on existing public safety communications infrastructure and systems deployed throughout the State, and the SIEC finds this alternative to be a feasible option compared to other alternative actions.

Therefore:

1. Public safety communications plans and investments at both the state and local level should be implemented based upon a system-of-systems approach to achieving public safety communication interoperability.
2. The SIEC will work to coordinate state and local public safety interoperability plans and investments to achieve high levels of communication service quality and efficiencies in cost on behalf of Oregonians.

SIEC Policy Action 02-2005: "Level 4 Interoperability"

It is the policy of the SIEC to promote and support a statewide level of interoperability that reaches "level 4" interoperability as defined and described by SAFECOM.

1. Higher levels of interoperability should be pursued in areas where it is cost effective and necessary for protection of the public.

SIEC Policy Action 03-2005: Statewide Platform

It is the policy of the SIEC to support the development of a statewide, state constructed, public safety communications platform to serve state public safety agency communication needs, and to meet the interoperability needs of the entire statewide public safety communications community (city, tribal, county, district, and federal).

The architecture of the communication platform shall include the following elements connected within a virtual private network:

1. Statewide basic infrastructure;
2. Emergency communications virtual private network;
3. Statewide VHF P25 system;
4. Interoperability channel(s) designation(s) for VHF, UHF, 700 MHz, 800MHz;
5. Federal IWN system;
6. 700 MHz Data Network; and,
7. Public safety communications access for county, city, federal, tribal, metropolitan and district communication needs.
8. The network basic infrastructure and communications equipment includes the state operation of the statewide VPN.

The State Interoperability Executive Council shall assume the lead for policies concerning the:

1. Emergency communications virtual private network;
2. Interoperability Channel Designation for VHF, UHF, 700 MHz, 800 MHz; and,
3. 700 MHz Data Network.

The State of Oregon shall assume the lead responsibilities for:

1. Constructing, operating, and maintaining the statewide basic infrastructure; and,
2. Operating a statewide VHF P25 system for state use.

Unless otherwise provided for by law, Oregon Homeland Security and the State Wireless Infrastructure Investment Group (SWIIG) shall assume responsibilities for the State of Oregon.

SIEC Policy Action 04-2005: Virtual Private Network

It is the policy of the SIEC to ensure access to a public safety communications virtual private network for other public safety agencies that are not agencies of the State of Oregon.

1. These public safety agencies are presumed to have access to the public safety communication platform.
2. These public safety agencies, at their own discretion, shall determine whether they will connect to the public safety communications platform.

SIEC Policy Action 05-2005: Co-location of Facilities

The SIEC will work to coordinate and facilitate future co-location of secure facilities and infrastructure that support public safety wireless communications systems, and the SIEC supports the R56 standard as it relates to grounding, electrical, seismic, cabling, equipment installation and construction techniques.

1. Co-location will help reduce redundant expenditures, maintenance time, and interference of services at remote facilities.

State and local public safety agencies considering such investments should work closely with each other and the SIEC to facilitate and maximize the functional use of limited and valuable prime locations for the siting of wireless communications infrastructure.

1. Contractors of public safety agencies shall adhere to R56 standard procedures as they pertain to construction and installation of communication facilities.

Contractors of public safety agencies shall follow site access security procedures as outlined by the SIEC or State Dept. of Homeland Security.

SIEC Policy Action 06-2006: Regional Coordination

The SIEC supports and encourages regional efforts to plan, coordinate and implement interoperability solutions. To the extent this has not yet occurred in parts of the State, the SIEC recommends regions that are patterned after the Healthcare Preparedness Regions.

The SIEC is mindful that regional borders are “paper only” and should not act as a limitation to communications, coordination or service provision.

SIEC Policy Action 07-2006 – Assurance of Access to Interoperability Channels for Mutual Aid and Other Use

Where available, authorized public safety services, for no cost to the users, the Oregon Wireless Interoperability Network (OWIN) system shall be a means to access federally-designated interoperability channels. Use will be prioritized on a regional basis and channels made accessible for all mutual aid and other authorized purposes.

SIEC Policy action 08-2006 – Nationwide Interoperability Channel Administration

The SIEC should be the designated authority to administer nationwide interoperability channels in the 150 MHz, 450 MHz, 700 MHz, and 800 MHz bands in Oregon.

The purpose of this designation is to assure in all interoperability conditions that these channels are available for emergency use.

"Interoperability conditions" includes day-to-day use in areas of concurrent jurisdiction, task force operations, and mutual aid involving multiple agencies.

Channels currently designated for nationwide interoperability are:

VHF Radios

155.7525 base/mobile VCALL National Calling
151.1375 base/mobile VTAC 1 National Tactical
154.4525 base/mobile VTAC2 National Tactical
158.7375 base/mobile VTAC 3 National Tactical
159.4725 base/mobile VTAC 4 National Tactical

UHF Radios

453.2125 base/mobile UCALLa National Calling
453.4625 base/mobile UTAC 1a National Tactical
453.7125 base/mobile UTAC 2a National Tactical
453.8625 base/mobile UTAC 3a National Tactical

800 MHz Radios

821/866.0125 ICALL National Calling
821/866.5125 ITAC-1 National Tactical
822/867.0125 ITAC-2 National Tactical

822/867.5125 ITAC-3 National Tactical

823/868.0125 ITAC-4 National Tactical

As technology emerges and opens other interoperability avenues, the SIEC will assume this same authority in order to promote consistency in the prioritization of use.

SIEC Policy Action 09-2007 – Memorandum of Understanding Regarding Nationwide Interoperability Channels

I. Purpose: This Memorandum of Understanding (MOU) provides guidance for coordination and cooperation among all Licensees of the VHF, UHF, and 700/800 MHz nationwide interoperation channels.

II. Objective: To ask all potential Licensees of the HF, UHF, and 700/800 MHz nationwide interoperation channels to voluntarily refrain from installing or requesting Fixed Base Station Licensees until a coordinated effort to limit interference and monitor these channels is put in place by the SIEC.

III. Authority: Only the FCC has the authority to invoke a moratorium on the issuance of Licenses. The SIEC is asking for a voluntary moratorium for the State of Oregon, in accordance with SIEC Policy Action 8-2006 until a system is put in place that minimizes potential interference and assures that in all interoperability conditions that the channels are usable.

IV. Exceptions: This moratorium does not include existing licenses such as the Federal Partnership for Interoperable Communications (FPIC) or other similar projects.

Strategic Plan Transformation

Guided by the mission of the SIEC and the policy actions adopted to date, the SIEC Strategic Plan has gone through a significant transformation since the first plan was adopted in 2003.

This plan accounts for actions taken during the last two years. Of significance:

- The SIEC defined the leadership structure that supports interoperability and gained the consensus of the public safety community in Oregon for that structure.
- The SIEC contracted for an inventory and gap analysis within Oregon. Assignments based on the findings of that project are incorporated in this plan. The inventory and gap analysis report is available on the SIEC website at http://egov.oregon.gov/SIEC/.
- The SIEC produced publications and other tools for partner governments such as the Guide to Short Term Interoperability.

- The SIEC prompted formation of the State Wireless Infrastructure Investment Group (SWIIG) to coordinate the four state agency-owned radio systems. This coordination will provide the basis for the "system-of-systems."

With jurisdictional concerns addressed and consensus achieved concerning general governance issues, the SIEC enters its next phase: assisting with the development of the Interoperable Communications Plan for Oregon and initiating the planning for a "system-of-systems" approach to achieve enhanced interoperable communications among public safety and other emergency responders in Oregon.

Strategic Goal #1 – Leadership and Planning

In support of the SIEC mission, provide leadership in the development of policies, guidelines, legislative recommendations and other actions that lead to the drafting and implementation of a Statewide Interoperable Communications Plan (ICP) for Oregon.

Objective #1: Communications and Outreach		
Supporting Action	*Responsible Party*	*Status*
1.1.1: Ensure that Oregon's policy makers and the public understand the importance of interoperability planning.	Partnership Committee	
1.1.2: Facilitate communications between the executive, legislative, partner governments and agencies on crucial issues.	Executive Committee	
1.1.3: Make presentations to member organizations and agencies, and encourage them to work to feature public safety interoperable communications at conferences, training, and other meetings over the next two-year period.	SIEC Members Co-Coordinators	
1.1.4: Organize and coordinate a statewide summit/conference for public safety partners and other interested parties to provide information sharing and the latest strategies regarding statewide interoperable communications.	Co-Coordinators	
1.1.5: Actively seek media interest in the public safety communications plan development and brief the media on the issues driving the SIEC activities.	Co-Coordinators	
1.1.6: Develop and promote an "Interoperability Partnership" resolution for adoption and approval of government entities and associations.	Co-Coordinators Partnership Committee	

Objective #2: Professional Resources to Execute Effort		
Supporting Action	*Responsible Party*	*Status*
1.2.1: Collaboratively seek opportunities to combine state and local homeland security grant funding to provide professional resources that will enable the full development of a public safety interoperable communications plan.	Executive Committee	
1.2.2: Advocate and seek funding for staff necessary to carry out the efforts required by HB 2101, Oregon Emergency Management, and the State Wireless Infrastructure Investment Group including staffing for planner and engineer functions, and the recruitment of a private firm to design a detail approach to creating a fully engineered plan for a "system-of-systems" network.	Executive Committee	
1.2.3: Ensure a transition for staffing of the SIEC for the entire 2005-07 biennium.	***Executive Committee*** Co-Coordinators	

Objective #3: Statewide "System of Systems"		
Supporting Action	*Responsible Party*	*Status*
1.4.1: Determine the estimated cost to finance the initial statewide backbone for a "system-of-systems" interoperable communications network.	***Finance Committee*** SWIIG	
1.4.2: Create a capital financing strategy (or a series of alternative plans) that will satisfy the debt service requirements for construction of an interoperable statewide public safety communications network (infrastructure and radio system investments).	Finance Committee	
1.4.3: In conjunction with the State Department of Administrative Services, identify potential federal, tribal, state and local revenue sources to finance the initial statewide backbone.	Finance Committee Partnership Committee	
1.4.4: Work to identify and establish cost sharing mechanisms that encourage local connections to the statewide system and fairly provide benefits.	***Finance Committee*** Partnership Committee	

Objective #4: Development of Regional and County Plans		
Supporting Action	*Responsible Party*	*Status*
1.5.1: Advocate for resources for local interoperability planning.	SIEC Members	
1.5.2: Make timely statewide interoperable communications plan policy decisions to facilitate local planners' understanding and integration with the statewide plan.	SIEC	
1.5.3: Assist regions and counties that require and request facilitation of local planning efforts.	Partnership Committee	

Objective #5: State Land Use Planning and Facility Siting		
Supporting Action	*Responsible Party*	*Status*
1.6.1: Work with local government associations and the Department of Land Conservation and Development to understand what is possible to accomplish under current law.	Co-Coordinators	
1.6.2: Actively work with local governments to modify, if necessary, land use plans and ordinances to facilitate siting of public safety communications infrastructure.	Co-Coordinators	
1.6.3: Identify key federal land owning agencies and work with them to facilitate necessary infrastructure siting on federal lands.	SWIIG Co-Coordinators	

Objective #6: Statewide Communications Interoperability Plan (SCIP)		
Supporting Action	*Responsible Party*	*Status*
1.7.1: Develop the Oregon Interoperable Communications Plan as directed in HB 2101	OEM Strategic Planning Committee	
1.7.2: Ensure statewide ICP provides capacity and access for non-state public safety communicators.	***Strategic Planning Committee*** Technical Committee	
1.7.3: Ensure coordination with public health, hospitals, schools, utilities and others to incorporate all emergency plans.	Partnership Committee	
1.7.4: Coordinate for GIS expertise to be incorporated in the statewide ICP.	Technical Committee	

Strategic Goal #2 – Technology and Standards

Research and provide informational forums concerning technology advances; establish compatible standards to implement interoperable wireless communications both for voice and for data.

Objective #1: Interoperable Channel Designation		
Supporting Action	*Responsible Party*	*Status*
2.1.1: Designate and communicate Oregon interoperability channels to facilitate planning and reduce future radio communication interference.	Technical Committee	
2.1.2: Seek to resolve issues that arise around the use of designated interoperability channels.	***Technical Committee*** Partnership Committee	
2.1.3: Establish standards for the monitoring and operation of interoperability channels in Oregon.	Technical Committee	

Objective #2: Co-location of Facilities		
Supporting Action	*Responsible Party*	*Status*
2.2.1: Actively work to promote the co-location of facilities consistent with the SIEC Policy Action that encourages co-location.	Partnership Committee	
2.2.2: Actively promote a statewide infrastructure investment plan that requires the State to provide radio system space on newly constructed public safety communication facilities.	Partnership Committee	
2.2.3: Request that all public safety agencies work to coordinate new system building and infrastructure with the State of Oregon.	Partnership Committee	

Objective #3: Infrastructure Site Access and Security Standards		
Supporting Action	*Responsible Party*	*Status*
2.3.1: Establish recommendations for site access and security standards consistent with the recognized need that security of sites is of paramount importance.	Technical Committee	
2.3.2: In the absence of a law on standards for encryption, the SIEC will lead in establishing necessary encryption required to operate a “system-of-systems” network.	Technical Committee	

Objective #4: Network Architecture		
Supporting Action	*Responsible Party*	*Status*
2.4.1: State Basic Infrastructure – Promote, support and assist SWIIG in its responsibilities to plan, develop, engineer and deploy a statewide basic communications infrastructure.	Technical Committee	
2.4.2: *Emergency Communications Virtual Private Network (VPN)* – Establish standards for access to and operation of the VPN for statewide public safety use and promote connectivity to this public safety communications portal.	Technical Committee Finance Committee	
2.4.3: *Statewide VHF Project 25 (P-25) System* - Work with the SWIIG to establish a statewide P-25 compliant system for statewide public safety users.	Technical Committee	
2.4.4: *Interoperability Channels: VHF, UHF, 700 MHz, 800 MHz* – Promote the establishment and use of interoperability channels in Oregon.	Partnership Committee	
2.4.5: *Federal Integrated Wireless Network (IWN) System* – Support the establishment of a state/federal contract to operate the IWN system in Oregon.	Technical Committee	
2.4.6: *High Speed Data Network* – Develop requirements for access and secure utilization of a high-speed public safety data network.	Technical Committee	

Objective #5: Region 35 Planning Committee Coordination		
Supporting Action	*Responsible Party*	*Status*
2.5.1: Continue coordination with the Region 35 Regional Planning Committee (RPC) to ensure the efficient operation of Oregon public safety communications systems.	Technical Committee	
2.5.2: Communicate emerging issues, appropriate for resolution of the Region 35 RPC, as necessary.	Technical Committee	
2.5.3: Monitor and respond to decisions and actions of the Region 35 RPC.	Technical Committee	

Strategic Goal #3 – Collaborative Partnerships

Promote collaborative partnerships to maximize resource sharing, in support of the SIEC short- and long-term vision statements.

Objective #1: Coordination Efforts Within and Among Public and Private Sectors		
Supporting Action	*Responsible Party*	*Status*
3.1.1: Promote collaborative and co-location opportunities among local, state and federal entities.	Partnership Committee	
3.1.2: Coordinate with partners in the Urban Area Security Initiative (UASI) to enhance regional and statewide interoperable communications planning.	Partnership Committee	
3.1.3: Identify and coordinate planning with other service providers such as the Telehealth Alliance of Oregon (hospitals), schools and utilities to enhance emergency communications.	Partnership Committee	
3.1.4: Advance border state interoperability through regional/county interoperability planning processes.	Partnership Committee	
3.1.5: Advocate that the state "system-of-systems" provide interoperability access to public safety agencies of adjacent states, and that they are informed of Oregon protocol for usage.	Partnership Committee	
3.1.6: Advance low-cost means to support increased public safety interoperability by increasing the opportunities for communicators to share licensed radio channels.	Technical Committee	

Objective #2: Grant Funding		
Supporting Action	*Responsible Party*	*Status*
3.2.1: Consistently provide input and policy direction on criteria for state grant processes that provide funds to be used for interoperability and public safety communications.	Executive Committee	
3.2.2: Promote focus of interoperability grants toward investments that actually increase interoperability.	Executive Committee	
3.2.3: Promote awareness of grants to partners eligible for grant funding.	Co-Coordinators	
3.2.4: Provide assistance to partners seeking grant funds.	Partnership Committee	

Objective #3:		
Supporting Action	*Responsible Party*	*Status*

Objective #4:		
Supporting Action	*Responsible Party*	*Status*

[Objective # 3 and Objective #4 are placeholders.]

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Appendix D GOVERNOR'S EXECUTIVE ORDER 02-17

Office of the Governor
State of Oregon

EXECUTIVE ORDER NO. EO 02-17

Public safety communication systems, and the ability to readily communicate among all public safety providers, play a critical role in protecting the lives and property of citizens and public safety professionals.

Given that the State's public safety communications infrastructure is rapidly aging and becoming outdated and the Federal Communications Commission is adopting policies and standards that affect communications systems, the State is going to have to make significant investments to upgrade its public safety communication system. These investments must be planned and leveraged in such a way so as to minimize the costs and maximize interoperability of these public safety communication systems.

THEREFORE, IT IS HEREBY ORDERED AND DIRECTED

The Statewide Interoperability Executive Council is hereby created. The membership of the Council shall be comprised as follows:

a. Two members of the Legislative Assembly with interest in the subject of public safety and wireless communication systems.

b. Twelve additional members appointed by the Governor from the following organizations:

i. Oregon State Police
ii. Office of Emergency Management
iii. Department of Forestry
iv. Department of Corrections
v. Department of Transportation
vi. Department of Administrative Services
vii. Department of Human Services (for emergency medical services)
viii Oregon Military Department
ix. Oregon Fire Chiefs Association
x. Oregon Association of Chiefs of Police
xi. Oregon State Sheriff's Association
xii. Oregon Association of Public Safety Communications Officials/ National Emergency Number Association

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c. The Governor shall appoint a Chair from among the Council members. The Council may elect a Vice Chair from among the Council members to carry out the Chair's duties in his/her absence. The Chair shall establish an agenda and meeting schedule for the Council.

d. The State Interoperability Executive Council may vote and elect to accept as council members additional representatives from other agencies or organizations that have an interest in and/or contribution to developing a statewide public safety communication system.

2. The purpose of the State Interoperability Executive Council is to provide policy level direction for matters related to planning, designing and implementing guidelines, best practices, and standard approaches to address Oregon's public safety communications interoperability issues. The Council shall also recommend funding strategies that support development of a statewide system, including seeking federal funding, or other funding, for statewide interoperability. In an effort to improve wireless interoperability in Oregon, the Council shall:

a. recommend strategies with regard to improving Oregon's wireless interoperability between agencies;
b. research and evaluate the best practices for the purchasing of equipment and the sharing of communications infrastructure;
c. strive to foster cooperation and improve inter-agency wireless communications among state, federal, and local jurisdictions;
d. serve as a central coordination point for local, regional, and national interoperability matters; and
e. develop recommendations for legislation or other state action that may be required to further promote wireless interoperability in Oregon.

Done at Salem, Oregon this 10th day of September, 2002

/s/ John A. Kitzhaber

John A. Kitzhaber, M.D.
GOVERNOR

ATTEST:

/s/

Bill Bradbury
SECRETARY OF STATE

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Awareness Committee Chair
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Implementation Committee Chair
Currently vacant/to be assigned

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OREGON SIEC STANDING COMMITTEE MEMBERS[68]

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[68] *denotes SIEC Members. PSAP representatives also serve volunteer fire and ems agencies.

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VW, OWIN 8/07

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Appendix F COUNTY PROJECTS WITH POTENTIAL FOR OWIN SITE SHARING

112507

Baker County

Baker County operates in the VHF High Band. All law enforcement and fire agencies within the county use this frequency band.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of three interoperability sites within the county. Baker Ridge (ATT site), Beaver Ridge, and Lime Hill will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Benton County

Most of Benton County operates in the VHF band; the County also has limited Low band operations (Road Department), and VHF/UHF is used by the Good Samaritan Hospital. There are plans to move out of the Low band, and VHF or UHF will be used, depending on availability of frequencies. Users include 15 agencies that represent over 70 Paid and over 130 Volunteer Fire Fighters, 35 sworn Law Enforcement personnel, and 20 civilian Law Enforcement personnel. Also, throughout the County, which includes other departments such Public Works, almost 300 mobile and over 300 portable radios are currently use. Most of the wideband radios have been replaced with P25 digital capable radios. This includes all Law Enforcement, Public Works, Emergency Management, Ambulance, and most Fire agencies, but it does not include many of the Volunteer Fire Departments. The infrastructure (repeaters/base stations) currently operates in the analog mode and is capable of digital operation when the time is appropriate to make the transition to digital operation.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of one interoperability sites within the county. Mary's Peak will have three each VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Clackamas County

The discussion of the Clackamas County radio system is within the discussion of the UASI area.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of one interoperability site within the county. Goat Mountain will have three VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Clatsop County

Most of Clatsop County operates in the High VHF band (150-174 MHz), including all law enforcement and all fire agencies. Columbia Hospital and the Red Cross operate in the Low VHF (30-50 MHz) band. With the exception of Warrenton, mobile data is not used in Clatsop County. State agencies also operate in the VHF High Band.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of two interoperability sites to support the county. Megler mountain (in Washington opposite Astoria) and Nicolai Mountain will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Columbia County

Columbia County has some ties into the 800 MHz systems in the metro area, but Columbia County owns and operates a conventional, VHF High Band analog radio system. Columbia County has been aggressive in obtaining federal grant funds and the county has added more conventional VHF radio channels and sites for increased local levels of capacity and coverage. Columbia County operates some communications sites in the State of Washington on the Washington side of the Columbia River.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of two interoperability sites to support the county. Green Mountain (in Washington northeast of Columbia City) and Meissner will have two VHF, one UHF, and two 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Coos County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of three interoperability sites to support the county. Baldy Butte, Bennett Butte, and Signal Tree (Kenyon Mountain) will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Crook County

All of Crook County operates in the VHF band. Crook County users include over 300 paid and over 40 Volunteer Fire Fighters, over 30 sworn Law Enforcement personnel, and about 15 civilian Law Enforcement personnel. Also, throughout the County, over 150 mobile and over 350 portable radios currently are in use, and a conservative estimated almost 700 will be in use within the next 8-10 years. Note that COIDC (Central Oregon Interagency Dispatch Center) coordinates initial attack dispatching and logistical support for emergency management for the following: The Prineville District of the Bureau of Land Management, Deschutes National Forest, Ochoco National Forest, and Prineville/Sisters Units of the Central Oregon District of the Oregon Department of Forestry.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of two interoperability sites to support the county. Grizzly Mountain and Powell Butte will each have two VHF, one UHF, and two 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Curry County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of five interoperability sites to support the county. Bosley Butte, Carpenterville, Grizzly Butte, Harbor Hill, and Port Orford will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Deschutes County

Deschutes County owns and operates an 800 MHz Motorola proprietary analog trunked radio system. The Deschutes County, ten-channel trunking system uses multiple sites located throughout the county. Within the county, interoperability is medium to high among county agencies. State and fire districts and departments throughout the county remain on VHF frequencies. Since Deschutes County is isolated from other 800 MHz systems, there should not be an issue with insufficient 800 MHz frequencies to expand that system.

The Deschutes County Sheriff's Office operates several radio systems:

1. A simulcast, 800 MHz trunked voice system (Motorola Smartnet®) with six sites. The six sites are connected by microwave. This is the Sheriff's primary system and is shared with Bend PD, Sunriver PD, Black Butte Ranch PD, Deschutes County Corrections Division, Deschutes County Parole & Probation, and numerous other County and municipal agencies.
2. A VHF voice system with four repeaters sites.
3. A VHF voice system for search-and-rescue with three repeater sites.
4. An 800 MHz, Motorola RD-LAP mobile data system that is shared with Redmond and Sunriver police departments. This is a three site system with redundant network controllers.
5. A VHF simulcast paging system with three transmitter sites. The paging system is utilized by all law enforcement, fire, and ems in Deschutes County as well as County Public Works and City of Bend public works.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of three interoperability sites to support the county. Bachelor Butte, Pine Mountain, and Wampus Butte will each have two VHF, one UHF, and two 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

City of Bend

Bend PD shares the Deschutes County S.O. 800 MHz trunked system for voice radio communications.

Bend PD has 2 conventional (digital-capable) repeaters located at Awbrey Butte for backup voice communications in the event of a failure of the DCSO trunked system.

Bend PD owns and operates a one-site 800 MHz mobile data system manufactured by DataRadio. This data system is supplemented with cellular data service. Mobile clients use NetMotion middleware to select the appropriate network service

Bend FD operates a VHF repeater system. With a single, centrally located transmitter and satellite receivers at each of five fire stations. Backup repeaters are located at each fire station.

Bend PD has a command trailer equipped with a repeater and an ACU-M "mini" patching system with which to patch channels together using portable radios. Bend PD has two portable repeaters.

City of Redmond

Redmond PD operates a single-site 800 MHz trunked system (Motorola Smartnet®) for voice communications. Redmond PD shares the Sheriff's 800 MHz mobile data system.

Redmond FD operates a single-site VHF, conventional repeater system.

Sunriver

Sunriver PD shares the DCSO 800 MHz trunked radio system for voice communications.

Sunriver PD shares the DCSO 800 MHz Mobile Data system.

Sunriver FD is dispatched on a VHF repeater system shared with LaPine FD from two sites.

LaPine

LaPine FD is dispatched on a VHF repeater system shared with Sunriver FD from two sites.

Black Butte Ranch

Black Butte Ranch PD shares the DCSO 800 MHz trunked radio system for voice communications.

Black Butte Ranch FD is dispatched on a VHF repeater system shared with Sisters FD, Cloverdale FD and Camp Sherman FD from two sites.

Sisters

Sisters FD is dispatched on a VHF repeater system shared with Black Butte FD, Cloverdale FD and Camp Sherman FD from two sites.

Cloverdale

Cloverdale FD is dispatched on a VHF repeater system shared with Black Butte FD, Sisters FD and Camp Sherman FD from two sites.

Camp Sherman

Camp Sherman FD is dispatched on a VHF repeater system shared with Black Butte FD, Cloverdale FD and Sisters FD from two sites.

Douglas County

Douglas County owns and operates two systems. One is a MPT1327, UHF, analog trunking system used mostly its general government agencies. The other is a multi-site simulcast VHF system for law enforcement operations. The county system is interconnected with a digital microwave system that connects these sites to each other. State and fire agencies are on separate, conventional VHF, analog systems.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of six interoperability sites to support the county. Canyon Mountain, Dean Mountain, Dodson Butte, Cinnamon Butte, Red Butte, and Scott Mountain have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Gilliam County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of two interoperability sites to support the county. Condon and Roosevelt will each have two VHF, one UHF, and two 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Grant County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of five interoperability sites to support the county. Aldrich Mountain, Anthony Lakes, Dixie Butte, Fall Mountain, and Tamarack will each have two VHF, one UHF, and two 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Harney County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of three interoperability sites to support the county. Burns Butte, Devine Ridge, and Steens Mountain will each have two VHF, one UHF, and two 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Hood River County

Most of Hood River County operates in the VHF band. Exceptions are the Hood River Hospital (UHF) and some Cascade Locks FD users (800 MHz). There are over 20 Paid and almost 200 Volunteer Fire Fighters, about 50 sworn Law Enforcement personnel, and about 20 civilian Law Enforcement personnel. Also, throughout the County, which includes other departments such Public Works, almost 100 mobile and over 200 portable radios currently are in use. Hood River County also has 2 "suitcase" radio interoperability devices that have been used on a number of occasions that provide VHF/UHF multi-band interoperability capabilities in a local fashion. These devices are mainly used for communications with Skamania County, Washington, and are considered a "band-aid" fix that is inadequate for the timely and wide area communications needs along the Columbia River gorge area. Hood River County has also tried to use satellite phones, but the rough terrain, heavy tree cover, and even heavy clouds and fog severely limit the usefulness of this alternative.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of two interoperability sites to support the county. Augspurger (in Washington opposite Hood River) and Middle Mountain will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Jackson County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of four interoperability sites to support the county. Halls Point, Mount Isabelle, Soda Mountain, and Starveout Mountain will each have two VHF, one UHF, and two 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes. OWIN already has a partnership radio site on Roxy Anne.

Jefferson County

Most of Jefferson County operates in the High VHF band (150 - 170 MHz), including all Law Enforcement and Fire Agencies. The County Jail operates an 800 MHz system for use within and in close proximity of the facility.

There are 5 Paid and 54 Volunteer Fire Fighters, 58 sworn Law Enforcement personnel, and 12 civilian Law Enforcement personnel. 58 mobile and 84 portable radios currently are in use.

Jefferson and Crook County officials recognize the benefits of joint implementation of voice and data radio communications systems, including the other neighboring counties of Wheeler and Sherman, which are not within the scope of this phase of the project, but should be considered during the next project phase.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of two interoperability sites to support the county. Agency Plains and Stephenson Mountain will each have two VHF, one UHF, and two 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Josephine County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of four interoperability sites to support the county. Fiddler Mountain, Manzanita, Onion Mountain, and Sexton Mountain will each have two VHF, one UHF, and one 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Klamath County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of six interoperability sites to support the county. Bald Mountain, Hamaker Mountain, Hogback Butte, Pelican Butte, Walker Mountain, and Yainax Butte will each have two VHF, one UHF, and one 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Klamath County law enforcement, fire, EMS, 911, and public works agencies are forming an intergovernmental agency to own and maintain the new interoperable radio system installed throughout the county on five mountain sites. The sites are Odell Mountain, Applegate Mountain, Hamaker Mountain, Hogback Butte, and Swan Lake Peak. This system is fully P25 compliant, interoperable, expandable, and upgradeable. All of the sites are built to the SIEC standards and are capable of adding additional systems and partners. In addition grant funding and a partnership with a railroad have been obtained to construct a microwave system to link all of the mountain sites; this microwave system is currently in the design phase.

Lake County

All of Lake County operates in the High VHF band (150 - 170 MHz), including all Law Enforcement and Fire Agencies. There are approximately 234 portable radios in law enforcement and fire use. All ambulance services are volunteer; they have about 55 portable radios. There are about 146 mobile radios, 13 of these are used by the ambulance services. The VHF interoperability channels (simplex) are already programmed in all radios. There are about 150 pagers in use; about 30% can operate in the narrowband mode.

The US Fish and Wildlife Department has a new site on Hart Mountain (near Warner Peak, about 20 miles NNE of Adel.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of five interoperability sites to support the county. Dead Indian Mountain, Fish Rim, Glass Butte, Grizzly Peak, and Round Pass Mountain will each have two VHF, one UHF, and one 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Lane County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of six interoperability sites to support the county. Glenada, Goodwin Peak, Mount Hagan, Prairie Mountain, and Wolf Mountain will each have two VHF, two UHF, and one 800 MHz analog/digital interoperability repeaters. In addition, Buck Mountain will have three each VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Lincoln County

All of Lincoln County operates in the VHF band, and Lincoln County, the City of Newport, and North Lincoln Fire & Rescue District 1 also have some low band operations. There are 27 agencies that represent 10 Paid and almost 200 Volunteer Fire Fighters, 50 sworn Law Enforcement personnel, and almost 20 civilian Law Enforcement personnel. Also, throughout the County, which includes other departments such as Emergency Management and various Public Works agencies, well over 350 mobile and almost 400 portable radios currently are in use.

Lincoln County has expressed an interest in a trunked VHF system. Lincoln County is considering a private paging system as the existing VHF commercial paging system is apparently being shut down in the near future.

The north end of Lincoln County is dispatched on 2 repeaters from separate dispatch facilities, and a single channel is desired.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of four interoperability sites to support the county. Cape Perpetua, Euchre Mountain, Saddlebag Mountain, and Yaquina Head will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Linn County

Linn County operates mostly in the VHF band but also has some use of the UHF band. There are over 60 paid and over 50 Volunteer Fire Fighters, over 220 sworn Law Enforcement personnel, and almost 100 civilian Law Enforcement personnel. Also, throughout the County, which includes other departments such Public Works, over 300 mobile and almost 400 portable radios currently are in use. Oregon Department of Forestry (ODF) transitioned to narrowband radios in the Linn County area in mid-February. The ODF radio systems are typically funded via land owner assessments. There is only a single hop of microwave in Linn County, from the Courthouse to one of the sites.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of three interoperability sites to support the county. Green Peter, Hoodoo Butte, and Snow Peak will each have two VHF, two UHF, and one 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Malheur County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of four interoperability sites to support the county. Blue Mountain, Cottonwood Mountain, Pharmacy Hill, and Monument Peak will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Marion County

Law Enforcement agencies within Marion County utilize multiple frequency bands for their voice radio communications: Marion County Sheriff's Office (MCSO) and the smaller towns use the VHF band, while Salem PD uses a UHF system and Keizer PD uses an 800 MHz trunked system.

Gervais PD and Aurora PD share MCSO-1 with the Sheriff.

Sheriff's vehicles are equipped with VHF radios which have most, but not all of the local police departments' frequencies and surrounding counties' Sheriffs programmed into them. OSP and VHF fire frequencies are also programmed in. Interoperability with the other VHF agencies works to a limited degree in that those agencies can usually be contacted when necessary. They are not equipped with 800 MHz radios or UHF radios, limiting interoperability with Keizer PD and Salem PD (the Jail radio system uses both UHF and VHF, but only the VHF jail frequencies are programmed into the vehicle radios). An ACU-1000 patch system is available at the dispatch center but not all personnel are trained in the use of it. Results of patching vary from good to poor depending on the agency being patched. Differences in coverage of the two systems being patched can also be a problem.

Salem PD uses a conventional UHF system with a transmitter at Downs Hill and five additional receiver sites. Coverage is acceptable except that in-building coverage is often poor. Since Salem is the only law enforcement agency in the county using the UHF band, direct radio-to-radio interoperability is not possible. Dispatch has an ACU1000 available which is used to patch channels together when necessary; however, patching is not regarded as an optimum solution.

Keizer PD uses an 800 MHz trunking system for its primary communications.

Silverton PD and Mt. Angel PD share a channel.

Aumsville PD, Stayton PD and Turner PD share the same dispatch frequency.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of two interoperability sites to support the county. Eagle Crest will have three each VHF, UHF, and 800 MHz and Halls Ridge will have two will have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability purposes.

Morrow County

Morrow and Umatilla counties operate a UHF, analog, 450 MHz trunked radio system. This two-county system was built using Federal funds in support of the Chemical Stockpile Emergency Preparedness Plan (CSEPP) whose goal is to incinerate thousands of tons of old chemical weapons at the Umatilla Depot. Funding support for these two systems comes from Federal funds until the hazardous materials destruction is complete. At that time, the two counties are supposed to take over ownership and support of the radio system. The State of Oregon (through the Department of State Police) agreed to take ownership and responsibility for the CSEPP microwave system and the communications buildings. The State has done this. One portending problem with the CSEPP system is that since it uses UHF frequencies, it is subject to narrow-banding by January 1, 2013. That system will need to have much of its radio infrastructure replaced. At the same time, since frequencies in that band are not eligible for exclusive use, getting additional frequencies and/or expanding coverage with more sites is difficult at best.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of two interoperability sites to support the county. Black Mountain and Silussi Butte will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability

Polk County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of two interoperability sites to support the county. Bald Mountain and Doane Creek will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability

Sherman County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of two interoperability sites to support the county. Columbia Hills (Juniper Point) and Kent Elevator (Frontier Telenet site) will each have two VHF, one UHF, and one 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability

Tillamook County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of four interoperability sites to support the county. Cape Lookout (Ridge 190) Neahkahnie Mountain, Tillamook Head, and Wilson River will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability

Umatilla County

Morrow and Umatilla counties operate a UHF, analog, 450 MHz trunked radio system. This two-county system was built using Federal funds in support of the Chemical Stockpile Emergency Preparedness Plan (CSEPP) whose goal is to incinerate thousands of tons of old chemical weapons at the Umatilla Depot. Funding support for these two systems comes from Federal funds until the hazardous materials destruction is complete. At that time, the two counties are supposed to take over ownership and support of the radio system. The State of Oregon (through the Department of State Police) agreed to take ownership and responsibility for the CSEPP microwave system and the communications buildings. The State has done this. One portending problem with the CSEPP system is that since it uses UHF frequencies, it is subject to narrow-banding by January 1, 2013. That system will need to have much of its radio infrastructure replaced. At the same time, since frequencies in that band are not eligible for exclusive use, getting additional frequencies and/or expanding coverage with more sites is difficult at best.

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of three interoperability sites to support the county. Bone Point, Cabbage Hill, and Mount Weston will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability

Union County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of four interoperability sites to support the county. Ladd Canyon, Mount Emily, Mount Fanny, and Spout Springs (Tollgate) will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability

Wallowa County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of four interoperability sites to support the county. Courtney Butte, Howard Butte, Mount Howard, and Sheep Ridge will each have two VHF, two UHF, and one 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability

Wasco County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of four interoperability sites to support the county. Cedar, Criterion Summit, Hulse Ranch, and Stacker Butte will each have two VHF, UHF, and 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability

Wheeler County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of two interoperability sites to support the county. Keyes Summit and Rancheria Rock will each have two VHF, one UHF, and one 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability

Yamhill County

OWIN Interoperability Layer: The OWIN conceptual design suggests the use of three interoperability sites to support the county. Bald Mountain, Chehalem Mountain, and High Heaven will each have two VHF, one UHF, and one 800 MHz analog/digital interoperability repeaters. Under the SIEC policy, these stations are available without any charge for use by federal, state, local, and tribal entities for limited operability and for unlimited interoperability

Appendix G OREGON SB 330-INTRASTATE RESOURCE SHARING

74th OREGON LEGISLATIVE ASSEMBLY--2007 Regular Session

Enrolled

Senate Bill 330

Printed pursuant to Senate Interim Rule 213.28 by order of the President of the Senate in conformance with pre-session filing rules, indicating neither advocacy nor opposition on the part of the President (at the request of Senate Interim Committee on Judiciary for Oregon Emergency Management, Oregon Association Chiefs of Police, Oregon State Sheriffs' Association and Oregon Fire Chiefs Association)

CHAPTER .....

AN ACT

Relating to intrastate compact for resource sharing; creating new provisions; and amending ORS 401.025.

Be It Enacted by the People of the State of Oregon:

SECTION 1. { + The Legislative Assembly finds that:
(1) In order to minimize the impact of an event that overwhelms the resources of a local government, one local government should be able to make resources available to another local government as quickly as possible.
(2) It is appropriate to establish an efficient and permissive intrastate mutual assistance compact among local governments that will allow local governments maximum flexibility to protect life and property within their jurisdictions. + }
SECTION 2. { + As used in sections 1 to 9 of this 2007 Act:
(1) 'Event' means an incident that overwhelms or may overwhelm the resources of a local government.
(2) 'Requesting local government' means a local government that requests assistance from other local governments.
(3) 'Resources'means employees, services, equipment and supplies of a responding local government.
(4) 'Responding local government' means a local government that has responded to a requesting local government by providing resources. + }
SECTION 3. { + (1) There is created an intrastate mutual assistance compact among the local governments within this state.
(2) The compact streamlines the process by which a local government:
(a) Requests assistance from another local government whenever an event occurs; and

(b) Temporarily acquires resources for training, drills or exercises.

(3) The compact does not:

(a) Require a local government to provide resources to a requesting local government.

(b) Preclude a local government from entering into any other agreement with another local government.

(c) Affect any other agreement to which a local government is a party or may become a party. + }

SECTION 4. { + (1) A local government may request assistance to:

(a) Prevent, mitigate, respond to or recover from an event; or

(b) Work on its own or with other local governments in training, drills or exercises.

(2) A request for assistance must be made by or through the presiding officer of the governing body of a requesting local government or the chief executive officer or chief executive officer's designee of the requesting local government.

(3) A request for assistance may be oral or written. If a request is oral, the responding local government must document its response to the requesting local government in writing within
30 days from the date on which the request was made.

(4) Response and the extent of the response are voluntary and may be terminated at anytime. + }

SECTION 5. { + (1) A responding local government may withhold resources to the extent necessary to provide reasonable protection and services for the responding local government.

(2) For purposes of the operational and tactical objectives required by the requesting local government, the resources of a responding local government are under the direct command and control of the requesting local government.

(3) Unless otherwise directed by the requesting local government:

(a) The employees of the responding local government shall use the standard operating procedures, medical and other protocols and rating procedures used by the responding local government to accomplish the strategic and tactical goals.

(b) The services, equipment and supplies of the responding local government shall be used under the standard operating procedures, medical and other protocols and rating procedures used by the responding local government to accomplish the strategic and tactical goals.

(4) Notwithstanding subsection (2) of this section, employees of the responding local government remain at all times employees of the responding local government and under the ultimate command and control of the responding local government. + }

SECTION 6. { + Subject to any limitations and conditions the governing body of the requesting local government may prescribe, if an employee of a responding local government holds a license, certificate, permit or similar documentation that evidences the employee's qualifications in a professional, technical or other skill, the employee is considered to be licensed, certified or permitted in the jurisdiction of the requesting local government for the duration of the event or the training, drills or exercises. + }

SECTION 7. { + (1) The intent of the intrastate mutual assistance compact created under section 3 of this 2007 Act is to provide for non-reimbursable assistance to a requesting local government.

(2) Notwithstanding subsection (1) of this section, a responding local government may request reimbursement and a requesting local government may reimburse the responding local government.

(3) A request for reimbursement must be made and agreed to in writing prior to the provision of resources by the responding local government.

(4) If a dispute regarding reimbursement arises between a requesting local government and a responding local government, the involved local governments shall make every effort to resolve the dispute within 30 days of written notice of the dispute given by the local government asserting noncompliance to the other local government.

(5) If the local governments cannot resolve the dispute within 90 days after receipt of the notice of alleged noncompliance, either local government in the dispute may submit the dispute to arbitration under the commercial arbitration rules of the American Arbitration Association. + }

SECTION 8. { + If a person is an employee of a responding local government and the person sustains injury in the course of providing requested assistance, the person is entitled to all applicable benefits, including workers' compensation, normally available to the employee while performing regular duties for the responding local government. + }

SECTION 9. { + (1) Assistance rendered by an employee of a responding local government is a governmental function.

(2) Employees of a responding local government are agents of the requesting local government.

(3) The requesting local government shall defend, save harmless and indemnify an employee of a responding local government to the same extent the requesting local government is required to do for its employees as provided in ORS 30.285 and 30.287. + }

SECTION 10. ORS 401.025 is amended to read:

401.025. As used in ORS 401.015 to 401.105, 401.260 to 401.325 and 401.355 to 401.580 { + and sections 1 to 9 of this 2007 Act + }, unless the context requires otherwise:

(1) 'Beneficiary' has the meaning given that term in ORS 656.005.

(2) 'Commission' means the Seismic Safety Policy Advisory Commission established under ORS 401.337.

(3) 'Emergency' includes any human caused or natural event or circumstance causing or threatening loss of life, injury to person or property, human suffering or financial loss, and includes, but is not limited to, fire, explosion, flood, severe weather, drought, earthquake, volcanic activity, spills or releases of oil or hazardous material as defined in ORS 466.605, contamination, utility or transportation emergencies, disease, blight, infestation, crisis influx of migrants unmanageable by the county, civil disturbance, riot, sabotage and war.

(4) 'Emergency management agency' means an organization created and authorized under ORS 401.015 to 401.105, 401.260 to 401.325 and 401.355 to 401.580 by the state, county or city to provide for and assure the conduct and coordination of functions for comprehensive emergency program management.

(5) 'Emergency program management' includes all the tasks and activities necessary to provide, support and maintain the ability of the emergency services system to prevent or reduce the impact of emergency or disaster conditions which includes, but is not limited to, coordinating development of plans, procedures, policies, fiscal management, coordination with nongovernmental agencies and organizations, providing for a coordinated communications and alert and notification network and a public information system, personnel training and development and implementation of exercises to routinely test the emergency services system.

(6) 'Emergency program manager' means the person administering the emergency management agency of a county or city.

(7) 'Emergency service agency' means an organization within a local government which performs essential services for the public's benefit prior to, during or following an emergency. This includes, but is not limited to, organizational units within local governments, such as law enforcement, fire

control, health, medical and sanitation services, public works and engineering, public information and communications.

(8) 'Emergency service worker' means an individual who, under the direction of an emergency service agency or emergency management agency, performs emergency services and:

(a) Is a registered volunteer or independently volunteers to serve without compensation and is accepted by the Office of
Emergency Management or the emergency management agency of a county or city; or

(b) Is a member of the Oregon State Defense Force acting in support of the emergency services system.

(9) 'Emergency services' includes those activities provided by state and local government agencies with emergency operational responsibilities to prepare for and carry out any activity to prevent, minimize, respond to or recover from an emergency. These activities include, without limitation, coordination, preparedness planning, training, interagency liaison, fire fighting, oil or hazardous material spill or release cleanup as defined in ORS 466.605, law enforcement, medical, health and sanitation services, engineering and public works, search and rescue activities, warning and public information, damage assessment, administration and fiscal management, and those measures defined as 'civil defense' in { - section 3 of the Act of January 12, 1951, P.L. 81-920 (50 U.S.C. 2252) - } { + 50
U.S.C. app. 2252 + }.

(10) 'Emergency services system' means that system composed of all agencies and organizations involved in the coordinated delivery of emergency services.

(11) 'Injury' means any personal injury sustained by an emergency service worker by accident, disease or infection arising out of and in the course of emergency services or death resulting proximately from the performance of emergency services.

(12) 'Local government' means any governmental entity authorized by the laws of this state.

(13) 'Major disaster' means any event defined as a 'major disaster' under 42 U.S.C. 5122(2).

(14) 'Oregon emergency management plan' means the state emergency preparedness operations and management plan. The Office of emergency Management is responsible for coordinating emergency planning with government agencies and private organizations, preparing the plan for the Governor's signature, and maintaining and updating the plan as necessary.

(15) 'Search and rescue' means the acts of searching for, rescuing or recovering, by means of ground or marine activity, any person who is lost, injured or killed while out of doors.
However, ' search and rescue' does not include air activity in conflict with the activities carried out by the Oregon Department of Aviation.

(16) 'Sheriff' means the chief law enforcement officer of a county.

Appendix H GLOSSARY

"SIECepedia"

(Our version of Wikipedia for very basic information and definitions)[69]

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ACU 1000: *See Gateway Switch.*

Analog: As a technology, analog refers to a continuously varying waveform. The way in which it varies, carries information. (Digital on the other hand makes a conversion from the analog waveform into digital bit stream where bits are assigned a value of either "1"s or "0"s. This is termed a binary bitstream.) Analog technology has been around for decades. *See **Digital** below.*

Band (radio): A band is a small section of the spectrum of radio communication frequencies, in which channels are usually used or set aside for the same purpose. Each band has a basic band plan which dictates how it is to be used and shared, to avoid interference and to set protocol for the compatibility of transmitters and receivers.

There are five primary public safety bands:

- VHF Low which operates in the 30-50 MHz range, commonly referred to as "Low Band."
- VHF High which operates in the 138-174 MHz range.
- UHF which encompasses 406-512 MHz.
- 700 MHz that goes from 764 to 806 MHz
- 800 MHz operations that goes from 806 to 866 MHz

Broadband: In telecommunications, this is a term that refers to a signaling method, which includes or handles a relatively wide range of frequencies, which may be divided into, channels. The wider the bandwidth, the more information can be carried.

Conventional Radio System: A conventional radio system basically is one that is not trunked. Conventional systems can be simplex (base to mobile) or repeated (where the signal from a low power/low elevation mobile or portable radio is automatically rebroadcast usually with higher power and/or higher elevation. A repeater system extends the line of sight operating range of communications beyond that achievable directly between users on the ground. Conventional radio repeater systems can be either analog or digital.

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[69] Special acknowledgement to Marla Rae, former SIEC co-coordinator

A conventional radio repeater system typically consists of one or more channels, each made up of a pair of frequencies (input and output) and a user selects the frequencies being used by changing channels on his or her radio.

Conventional radio repeater systems are inefficient when used by a large number of users because they only offer a single talk path through the repeater. Users must standby until the system is idle to initiate a conversation.

Coverage: The amount or percentage of area reached by a communications medium. Coverage depends upon the definition of how much signal the user must have for communication. If the requirement is for small levels of signal, the coverage area can be large. If the requirement is for high levels of signals, the coverage area shrinks. The amount of signal required depends upon whether they support vehicles in motion (the greater the speed, the more signal that is required) and upon the amount of losses that are expected (for example, it takes more signal to penetrate high foliage trees than it does to penetrate winter trees that may have no leaves). In order to equate coverage between systems, it is imperative to know what level of signal is required. Coverage also depends upon a stated reliability. An example is where it is a requirement that the desired level of signal is present at least 95% of the time.

Digital: Digital technology, unlike analog, breaks your voice signal into binary codes – a series of "1"s and "0"s – and transfers it to the other end where another device takes all the numbers and reassembles them into the original signal. The beauty of digital is that it knows what it should be when it reaches the end of the transmission. That way, it can correct any errors that may have occurred in the data transfer. In most cases, this means you'll get distortion-free conversations. The nature of digital technology allows it to cram lots of those "1"s and "0"s together in the same space an analog signal uses. Like any new technology, digital is still relatively expensive.

Gateway Switch: One solution to interoperability is the Gateway Switch device, also called an audio matrix or cross band switch, that links different radio systems. Not unlike a dispatcher's patch panel, the Gateway Switch device simply passes base band audio signals from the receiver portion of one radio to the transmitter portion of a another radio system. An advantage of the Gateway Switch device over the dispatcher's patch panel is that it requires no manual intervention once configured.

The Gateway Switch device automatically routes voice calls from one radio system to another in response to the linking of Icons on a computer screen. It will also allow a connection between radios and telephone or cellular phones, or vise versa. In addition, the Gateway Switch has a degree of versatility that is not available via the dispatch patch panel.

The Gateway Switch device can be configured either in a fixed location or in a mobile platform that can be mounted in a van, sports utility vehicle or command vehicle. In a transportable mode, the Gateway Switch device becomes a mobile repeater, allowing different radio systems to communicate in a wide geographical radius around an incident.

Hertz: Radio frequency spectrum is measured in hertz (Hz). Radio frequency is the portion of electromagnetic spectrum that carries radio waves. The distance an energy wave takes to complete one cycle is its wavelength. Frequency is the number of wavelengths in a given amount of time. One cycle in one second is one Hertz. Radio frequency radiation is usually

measured in kilohertz (kHz), megahertz (MHz), or gigahertz (GHz). One million cycles in one second is one megahertz, or 1 MHz.

Infrastructure: The underlying permanent installations required for radio communications. Infrastructure includes antennas, base/repeater stations, consoles, links (fiber, microwave, radio and wire), power supplies, and the support structure such as secure buildings and towers.

Intentional Filler: This is the term used to describe what was necessary in order to have the page break exactly right so that the Interoperability Channels listed below was not split on two pages.

Interoperability: In general, interoperability refers to the ability of emergency responders to communicate seamlessly with other systems or products without any special effort. Wireless communications interoperability specifically refers to the ability of emergency response officials to share information via voice and data signals on demand, in real time, when needed, and as authorized. For example, when communications systems are interoperable, police and firefighters responding to a routine incident can talk to each other to coordinate efforts. Communications interoperability also makes it possible for emergency response agencies responding to catastrophic accidents or disasters to work effectively together. Finally, it allows emergency response personnel to maximize resources in planning for major predictable events such as the Olympic Trials or an inauguration, or for disaster relief and recovery efforts.

Interoperability Channels: The Federal Communications Commission (FCC) has designated several frequencies as primary status for interoperable communications within the Very High Frequency (VHF), Ultra High Frequency (UHF), 700 MHz, and 800 MHz bands. These frequencies can be used on a non-routine basis for interoperable communications between any local or state entity. Additionally, these channels can be used across interstate borders with neighboring public safety jurisdictions.

Channels designated for nationwide interoperability are:

Frequency (MHz)	***Use***	***Label***	***Description***
155.7525	Base transmit	VCALL	VHF calling channel
151.1375	Base transmit	VTAC 1	VHF tactical channel no. 1
154.4525	Base transmit	VTAC 2	VHF tactical channel no. 2
157.7375	Base transmit	VTAC 3	VHF tactical channel no. 3
159.4725	Base transmit	VTAC 4	VHF tactical channel no. 4
453.2125	Base transmit	UCALL	UHF calling channel
453.4625	Base transmit	UTAC 1	UHF tactical channel no. 1
453.7215	Base transmit	UTAC 2	UHF tactical channel no. 2
453.8625	Base transmit	UTAC 3	UHF tactical channel no. 3
764-806 MHz	I/O sub-band		
821.0125	Base transmit	ICALL	NPSPAC calling channel
821.5215	Base transmit	ITAC 1	NPSPAC tactical channel no. 1
822.0125	Base transmit	ITAC 2	NPSPAC tactical channel no. 2
822.5125	Base transmit	ITAC 3	NPSPAC tactical channel no. 3

823.0125	Base transmit	ITAC 4	NPSPAC tactical channel no. 4

Interoperability Challenges: There are still many issues that need to be addressed to achieve interoperability among first responders. Five key issues underline the current status of interoperability among public safety agencies throughout the country:

- incompatible and aging communications equipment;
- limited and fragmented funding;
- limited and fragmented planning
- a lack of coordination and cooperation; and
- inadequate and fragmented radio spectrum.

Interoperability Continuum: This term refers to a tool designed by the U.S. Department of Homeland Security's SAFECOM group for improving emergency response communications and interoperability. The elements of the continuum include governance, standard operating procedures, technology, training and exercises, and use of interoperable communications.

Interoperability Levels: There are six levels of interoperability that represent the most common communications solutions public safety agencies and departments consider for implementation. Most are not mutually exclusive. Departments may selection more than one to meet various interoperability requirements. The six levels of interoperability are: (1) swap radios; (2) talk-around; (3) mutual aid channels; (4) gateways or console patches; (5) system-specific roaming; and (6) standards-based shared systems.

Narrowband (narrow bandwidth): This refers to a signal that occupies only a small amount of space of the radio spectrum – the opposite of broadband or wideband. Narrowband is a transmission medium or channel with a single voice channel.

Narrow banding Requirement: This is the term used to refer to the Federal Communications Commission (FCC) requirement that – on or before January 1, 2013 – all public safety agencies must migrate their 25 kHz wide operating systems below 512 MHz to 12.5 kHz narrowband channels. The FCC's order will affect planning, new equipment purchases, and new systems procured in the timeframe leading up to that date. Any equipment that is not capable of operating on channels of 12.5 kHz or less will need to be replaced. It is important to note that the FCC actually divided the frequencies into 6.25 kHz channels. They are allowing narrow-banding to 12.5 kHz as an interim step, and they have not decided on the date to move to 6.25 kHz.

Operability: Communication operability is the ability to communicate effectively on one's own radio communication system. Before interoperability can be achieved, agencies must have a system that can support and maintain operability.

Project 25: Project 25 (P-25) is a standard's process for assuring the manufacturing of interoperable digital two-way wireless communications products. Developed in North American under the guidance of state, local and federal representatives and by use of the Telecommunications Industry Association (TIA) standards process, P-25 is gaining worldwide acceptance for public safety, security, public services, and commercial applications. The published P-25 standards suite is administered by the TIA. Radio equipment that demonstrates compliance with P-25 is able to meet a set of minimum requirements to fit the needs of public safety. These include the ability to interoperate with other P-25 equipment, so that users on

different systems can talk via direct radio contact. The P-25 standard was created by and for public safety professionals.

From the beginning, P-25 has targeted four primary objectives:

- *Allow effective, efficient and reliable intra-agency and inter-agency communications* so organizations can easily implement interoperable and seamless joint communications in both routine and emergency circumstances.
- *Ensure competition in system life cycle procurements* so agencies can choose from multiple vendors and products, ultimately saving money and gaining the freedom to select from the widest range of equipment and features.
- *Provide user-friendly equipment* so users can take full advantage of their radios' lifesaving capabilities on the job – even under adverse conditions – with minimal training.
- *Improve radio spectrum efficiency* so networks will have enough capacity to handle calls and allow room for growth, even in areas where the spectrum is crowded and it's difficult for agencies to obtain licenses for additional radio frequencies.

Radio Frequency (RF): Radio frequency refers to that portion of the electromagnetic spectrum in which electromagnetic waves can be generated by alternating current fed to an antenna. For purposes of our interoperability discussions, public safety radio systems operation in different radio frequency bands, much like the AM and FM bands of a radio. Just as an AM radio cannot pick up an FM radio station, public safety radios in one frequency band cannot pick up transmissions in another frequency band. Wireless technology requires radio frequency capacity in order to function.

Radio Repeater: A radio repeater is a combination of a radio receiver and a radio transmitter that receives a weak or low-level signal and retransmits it at a higher level or higher power, so that the signal can cover longer distances without degradation. In emergency services communications, repeaters are used extensively to relay radio signals across a wider area. With most emergency dispatching systems, the repeater is synonymous with the base station, which performs both functions.

Radio Spectrum: Radio spectrum refers to the array of channels available for communications. Spectrum is the highway over which voice, data, and image communications travel. It is electronic real estate. Radio spectrum, one of our nation's most valuable resources, is a finite resource – what exists today is all there ever will be. Public safety shares radio spectrum with television and radio broadcasters, government users, and other communication consumers who require spectrum for everything from garage door openers to cell phones.

There is a limited and fragmented amount of radio spectrum available to public safety. The Federal Communications Commission (FCC) has allocated certain frequencies to public safety, but it is inadequate and scattered in ten separate bands across the spectrum, making in difficult for different agencies and jurisdictions to communicate.

The fragmentation of spectrum assignments for public safety is a significant barrier to achieving interoperability in the future and, in the past, has been the source of many of the technical problems that plague public safety communications, such as out-of-date equipment, proprietary solutions, congestion and interference.

Radio Wave: Radio waves are the basic building block of radio communications. Like waves on a pond, a radio wave is a series of repeating peaks and valleys. The entire pattern of a wave, before it repeats itself, is called a cycle. The number of cycles, or times that a wave repeats in a second, is called frequency. Frequency is measured in the unit hertz (Hz), referring to a number of cycles per second. One thousand hertz is referred to as a kilohertz (kHz), one million hertz as a megahertz (MHz), and one billion hertz as a gigahertz (GHz).

SAFECOM: This is the umbrella program within the federal government that oversees initiatives and projects pertaining to public safety communications and interoperability. The program is managed by the U.S. Department of Homeland Security.

Simplex : Simplex refers to sending information only in one direction at a time. Simplex can refer to car-to-car, and/or it can refer to base to mobile. Simplex only means that one person transmits at a time. (Duplex, for example, is typified by use of a telephone where both parties can speak at once.) One common simplex mode is referred to as "talk-around", or direct, mode.

The significant drawback to talk around is that it only provides radio coverage in a very limited area, such as one city block. While this is inefficient for dispatch operations, talk around operations are used extensively for fire ground, and often for law enforcement special operations, where in-building signal penetration or operational security is critically important.

Spectrum: *See Radio Spectrum above.*

Statewide: Taking place throughout the State.

System of Systems: In its simplest form, "system-of-systems" means the use of technology gateways to allow the connection of otherwise incompatible public safety communications systems. This approach builds both on existing and future systems. In June 2005, the Oregon SIEC adopted a policy to promote and support a "system-of-systems" approach in Oregon.

Trunked radio system: A trunked radio system is a radio system used to maximize available capacity in a two-way radio system. Trunking works by using a computer to assign users to a limited number of transmitters. This is possible because not everyone in a group talks at once, and radio transmissions are usually short. An example is that in non-trunked use, four independent transmitters used by independent groups each carry a single talk path. Users of each talk path do not have routine access to other transmitters on the site. If those same four transmitters were trunked, the effect is though there were perhaps ten virtual talk paths. Users are dived into logical "talk-groups", and the computer aligns all of a talk group's users onto an assigned channel.

Trunking relies on use of a constant control channel that is a full time bit stream sent over the area to and from users and the system computer. The computer keeps track of who is on the air and who is selected to each talk group. When a user wants to talk to his/her group, the users' radio sends data packets to a computer, operating on a dedicated frequency (control channel) to request communication on a specific talk-group. The controller sends a digital signal to all radios monitoring that talk-group, instructing the radios to automatically switch to the frequency indicated by the system to monitor the transmission. After the user is done speaking, the users' radios return to monitoring the control channel for additional transmissions.

This arrangement allows multiple groups of users to share a small set of actual radio frequencies without hearing each other's conversations. Trunked systems primarily conserve limited radio frequencies and also provide other advanced features to users.

"Trunked" radio systems differ from "conventional" radio systems in that a conventional radio system uses a dedicated channel (frequency) for each individual group of users, while "trunking" radio systems use a pool of channels which are available for a great many different groups of users.

For example, if police communications are configured in such a way that twelve conventional channels are required to permit citywide dispatch based upon geographical patrol areas, during periods of slow dispatch activity much of that channel capacity is idle. In a trunked system, the police units in a given geographical area are not assigned a dedicated channel, but instead are members of a talk-group entitled to draw upon the common resources of a pool of channels. In this example, seven trunked channels could probably handle the traffic load previously used by the 12 conventional channels

Trunked radio takes advantage of the probability that in any given number of user units, not everyone will need channel access at the same time. Therefore with a given number of users, fewer discrete radio channels are required. From another perspective, with a given number of radio channels, a much greater number of user groups can be accommodated. In the example of the police department, this additional capacity could then be used to assign individual talk-groups to specialized traffic, investigative or special event groups who might otherwise not have the benefit of individual private communications.

Wave: This is commonly seen at the stadium in Seattle during a Seahawks game. Individuals stand up, raising their arms in the air, one after another until it comes full circle throughout the stadium. (You need an oval-shaped stadium for the wave to be truly effective.) For purposes of public safety interoperability, see *Radio Wave* above.

12.06mr

Appendix I 2005 SYSTEMS SURVEY

Public Safety Land Mobile Radio Systems In Oregon

County	VHF Licenses	VHF Systems[1]	UHF Licenses	UHF Systems[1]	800 MHz Systems
Baker	44	9	5	1	
Benton	49	10	7	2	
Clackamas	119	24	20	4	1
Clatsop	52	10	5	1	
Columbia	55	11	6	1	
Coos	66	13	4	1	
Crook	29	6	4	1	
Curry	38	8	1	1	
Deschutes	72	14	7	2	1
Douglas	119	24	8	2	
Gilliam	14	3	0	0	
Grant	38	8	3	1	
Harney	23	5	0	0	
Hood River	33	7	6	2	
Jackson	152	30	11	3	
Jefferson	28	6	2	1	
Josephine	58	12	5	2	
Klamath	107	21	5	2	
Lake	51	10	3	1	
Lane	124	25	23	4	
Lincoln	61	12	2	1	
Linn	61	12	6	2	
Malheur	52	10	4	2	
Marion	114	23	14	4	1
Morrow	27	5	9	2	
Multnomah	38	8	15	4	2
Polk	32	6	3	2	
Sherman	15	3	1	1	
Tillamook	76	15	6	2	
Umatilla	69	14	20	2	
Union	50	10	3	1	
Wallowa	32	6	0	0	
Wasco	50	10	6	2	
Washington	43	9	10	3	1
Wheeler	15	3	0	0	
Yamhill	24	4	8	2	
Totals		385		62	6

Appendix J WHITE PAPER: "WHAT'S IN IT FOR ME?"

A State Network to Support
A "System of Systems"
Oregon SIEC
April 27, 2005

"What's in it for me?"

This White Paper builds upon a concept for a statewide interoperable communications system that was presented by the State Wireless Infrastructure Investment Group (SWIIG) to the Oregon SIEC on April 12, 2005 in Salem, Oregon. Specifically, this paper takes a look at how agencies other than state agencies could make use of the concept of a System of Systems.

The overall concept is one of a network that is made up of various layers that combined make up a statewide interoperable system. Each layer can be independent from the others in normal use, but any node on any layer could also tie itself to any other node on any layer through an Information Technology network. By node, this could be an individual radio base station or dispatch console. The concept assumes that this IT network would be a completely self contained Virtual Private Network that would use Transport Control Protocol (TCP) and Internet Protocol (IP) as the transport medium.

A common type of network could be an Ethernet. These protocols are well understood, and they can utilize commercial off the shelf (COTS) components rather than proprietary devices. For example, such components could be switches, hubs and routers. There are a number of packages available to support such wireless communications networks. Three examples of such packages came from SmartLink, Motorola and M/A-Com in the first three technology presentations that were made to the Oregon SIEC's Technical Committee. All three companies make devices that have an IP network on one side and interface to a radio or console on the other side.

This discussion is very preliminary and is not intended to indicate any preference for any one way to provide such a system. One thing that needs to be understood is how such a system would degrade during failures. For example, if all of the intelligence to control the system resided in one server or location, then presumably, a failure of that server or of the transport medium between the server and the equipment might make that equipment inoperative. On the other hand, it might be possible to distribute intelligence throughout the system so that individual sites could continue to function at some level even in the face of some system failures. At this time, all of these are unknown and uninvestigated.

Each device in such a network would have a unique address. Basically, such a network could be considered to be a room full of individual people. Each person in the room has a unique name. Fred on one side of the room could call out to Martha on the other side of the room and converse. There could be one half of the number of conversations in the room as there are people because each conversation takes at least two people. On the other end of the scale, there could be only one conversation if one person was addressing everyone in the room. In an IP network, the same is true except that the start of the conversation says the name of the talker and the name or names of the listeners first.

Now, let's assume that in the room next door, there is another group of people and each of them has a unique name. Also we put in a two-way intercom system between the rooms. In this case, anyone in either room could start a conversation with any person in either room. This is analogous to layers of systems that are connected to each other by a network.

According to the SWIIG discussion, the various layers in the network could include a state layer, an interoperability layer, a federal layer, and a local layer. If all layers are connected to each other, and if each component has a unique name, then it would be possible for anyone to hold a conversation with a person or group of people inside or outside of a layer. Through prior planning, it would be possible for a unique pathway to be defined that allowed anyone on a sheriff's radio channel to talk to anyone on an ODOT or other channel. Interoperability.

Because most of the need for interoperability is the day-to-day kind, such a system could give local capabilities that never existed before, plus it could give other capabilities that would allow other examples of interoperability. One such case could be where a 800 MHz equipped fire apparatus responded to a location to help fight a wildfire and have that unit able to use the 800 MHz radio in the apparatus to talk to another piece of apparatus that only had their local VHF channel. Much preplanning could be required, but if the common point for such interoperability started on mutual aid channels, then a much more limited number of straight forward paths could be put into use that did not involve perhaps hundreds or thousands of combinations of channels or frequencies.

What makes this possible is the prepositioning throughout Oregon of a layer of interoperable channel radios. Under FCC rules, there are five channels in the VHF band, four in the Low-UHF (450 MHz) band, and six channels in the NPSPAC (800 MHz) band. If a statewide system (layer) of all of these radios were prepositioned throughout Oregon (and each was given and address and a path to the controller), then any unit on any of the public safety radio bands could have an entry point into the network.

Let's take this example a little farther. Let's say that a VHF mobile radio is programmed with a channel that is labeled "County Roads" and that the county road department is on a UHF channel. Ordinarily, there would be no interoperability between these two systems. The VHF radio programming could include the frequencies of one of the mutual aid channels with a unique control tone on it that corresponded to a virtual patch between the VHF mutual aid channel and the UHF operational channel of the road department. Business could then be conducted, or if a long term patch was required (say for a flooding situation) then the two units could coordinate with each other so that the roads unit could switch to a UHF mutual aid channel and then two mutual aid channels on different bands could be connected to each other. The common denominator between these units is the presence of statewide mutual aid equipment and the presence of a network that allows units to be connected to each other.

The other significant "What is in it for me?" factor is the presence throughout the State of reliable buildings and towers that were predesigned and configured to be able to house public safety equipment from local, state, and federal units of government. Most of the reliability of radio systems is in that infrastructure. There are many more failures in those elements than there are in radios themselves. It is the building power, the immunity to lightning and electrical surges, and antenna systems that most often fail. If these things are installed to be ultra reliable, then the reliability of the radio systems in them goes way up. The SWIIG presentation suggested that there should be a predefined standard to all of these state facilities that took into account that

they should be available for all levels of government to use. The SWIIG concept is that levels of government could choose to place their equipment inside of these reliable shelters so that their system remained completely independent of others other than the fact that they happened to share building and tower space.

Summary

In any system that accommodates the function of interoperability between different systems, the situation most often encountered is going to address the day-to-day needs of agencies and jurisdictions. The network concept discussed by SWIIG assumes that, but it also addresses the large-scale needs emergency communications support for environmental events, natural disasters, and man caused emergencies. It allows connection of state and federal responders to local responders, and it also facilitates the normal needs for interoperability between disciplines and jurisdictions. It is not proposed as a system that costs a lot and then waits to be used. Rather, it is suggested to allow statewide interoperability throughout disciplines and jurisdictions that are used every day so that they are available and operational for the abnormal events that will surely occur.

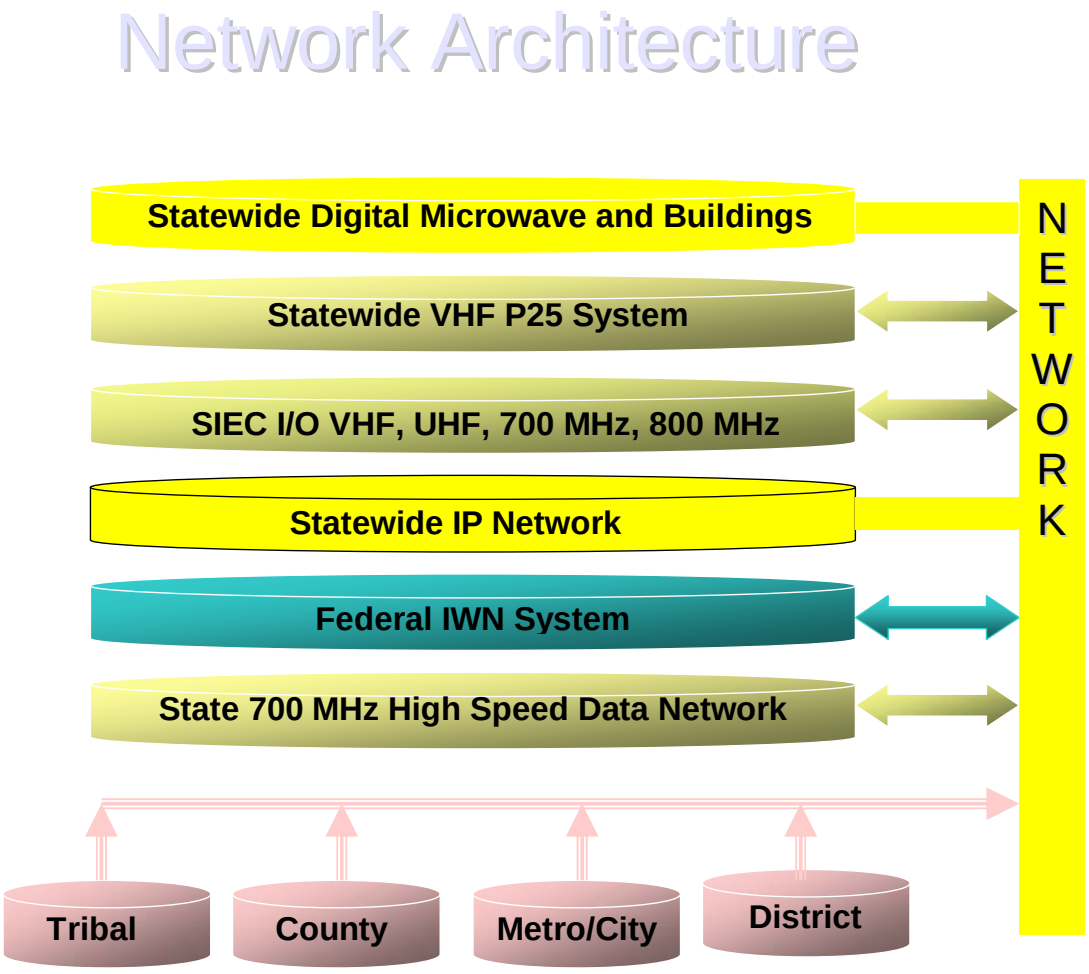

Figure 13 Network Architecture

Appendix K SCIP WORKSHOP ROSTERS

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SCIP Regional Workshop Rosters

Beaverton - October 29, 2007

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Beaverton - October 29, 2007

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Springfield - October 30, 2007

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Springfield - October 30, 2007

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Medford - October 31, 2007

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Medford - October 31, 2007

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Bend - November, 6, 2007

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Bend - November, 6, 2007

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Appendix L ACRONYM LIST

Acronyms	
ALF	Animal Liberation Front
ANSI/TIA	American National Standards Institute/Telecommunications Industry Association
APCO	Association of Public Safety Communication Officials
ASA	Ambulance Service Area
ATAB	Area Trauma Advisory Board
BLM	Bureau of Land Management
CAD	Computer Aided Dispatch
CASM	Communications Asset Survey Management Tool
CCTV	Closed-Circuit Television
COML	Communications Leader
COMC	Communications Commander
COOP	Continuity of Operations Plan
COPS	Community Oriented Policing Services, Department of Justice
CRESA	Clark Regional Emergency Services Agency
CRITFC	Columbia River Intertribal Fishery Council
CSEPP	Chemical Stockpile Emergency Preparedness Program
DHS	Department of Homeland Security
DM	Disaster Management
DOC	Department of Corrections
DOJ	Department of Justice
DOT	Department of Transportation
DPSST	Department of Public Safety Standards and Training
ED	Emergency Department

Acronyms	
EIA	Electronic Industry Association
ELF	Earth Liberation Front
ECC	Emergency Coordination Center
EMP	Emergency Management Plan
EMS	Emergency Medical Service
EOC	Emergency Operation Center
I/O	Interoperable
FCC	Federal Communication Commission
FEMA	Federal Emergency Management Agency
FPIC	Federal Partnership for Interoperable Communications
GPS	Geographic Positioning Satellite
HVAC	Heating, Ventilation and Air Conditioning
HEAR	Hospital Emergency Administrative Radio
HPP	Hospital Preparedness Program – formerly know as HRSA
ICS	Incident Command System
IGA	Intergovernmental Agreement
ISSI	Inter-subsystem Interface
IT	Information Technology
IWN	Integrated Wireless Network
LEDS	Law Enforcement Data System
MACS	Multi-Agency Coordination System
MEDNET	Medical Network
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MOV	Metal Oxide Varisitor

Acronyms	
MSA	Metropolitan Statistical Area
NENA	National Emergency Number Association
NIMS	National Incident Management System
NLEC	National Law Enforcement Channel
NPSPAC	National Public Safety Planning Advisory Committee
NTIA	National Telecommunications Information Administration
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
OEC	Office of Emergency Communications
OEM	Oregon Emergency Management
OEM	Office of Emergency Management
OER	Oregon Emergency Response
OPEN	Oregon Police Emergency Network
OSHA	Occupational Safety and Health Administration
OSP	Oregon State Police
OWIN	Oregon Wireless Interoperability Network
PEP	Pre-positioned Equipment Program
POC	Point of Contact
PSAP	Public Safety Answering Point
PSIC	Public Safety Interoperable Communications
PSU	Portland State University
PUD	Public Utility District
PW	Public Works
RDC	Regional Dispatch Center

Acronyms	
RF	Radio Frequency
RFI	Request for Information
RFP	Request for Proposal
RPC	Radio Planning Committee
SAD	Silicon Avalanche Diode
SAR	Search and Rescue
SCIP	State Communications Interoperability Plan
SIEC	State Interoperability Executive Council
SOP	Standard Operating Procedure
STR	Strategic Technology Reserves
SWIIG	State Wireless Infrastructure Investment Group
TIA	Telecommunications industry Association
TIC PLAN	Tactical Interoperable Communications Plan
UASI	Urban Area Security Initiative
UHF	Ultra high Frequency
USFS	United States Forest Service
VHF	Very High Frequency
WAOPS	Washington State tactical channels in Region 43 (800 MHz)
WCCCA	Washington County Consolidated Communications Agency
WiFi	Wireless Fidelity