2011

Economic Mitigation Plan

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ECONOMIC MITIGATION PLAN

EXECUTIVE SUMMARY

When there is a natural disaster, a separate and equally devastating economic disaster can occur. Mitigating the impact of disasters on the local economy should be a task conducted in concert with the life safety and physical structure focus of traditional hazard mitigation. Even if businesses are structurally sound, damage to critical infrastructure, such as transportation routes or utilities, or a change in their customer base can negatively impact businesses if they cannot adapt quickly. Historically businesses have been ill-equipped to handle these types of post-disaster changes. Many mitigation measures traditionally adopted by businesses have been shown to have little impact on the likelihood that a business will survive after a disaster. Tailoring measures to businesses with the specific focus of improving businesses' chances of survival will be critical to ensuring post-disaster economic resiliency. This document is intended to help understand the assets and vulnerabilities of the Everett economy and to suggest action items specifically designed to mitigate any economic damages that disasters may cause.

The Economic Mitigation Plan first gives a brief overview of the Everett economy. Economic base analysis suggests Manufacturing, and to a lesser extent Health Care and Social Assistance, drive the economy of Everett. This is confirmed by the research done by The Economic Development Council for the City of Everett which has identified aerospace, life sciences and clean technology as the three key industry clusters of Snohomish County. Table 1 ranks all sectors[1] in Everett based on three different criteria: revenue, number of employees, and number of establishments. This data offers further support to the importance of Manufacturing and Health Care and Social Assistance to the Everett economy. Retail is also ranked as one of the top five industries in all categories observed. Although Retail Trade is not considered a primary driver of the Everett economy, special analysis of the Retail Trade industry will also be included in the final analysis.

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[1] Sectors are based on NAICS classification and only include sectors identified at the economic place level.

TABLE 1: TOP 5 INDUSTRIES

Rank	Employer sales, shipments, receipts, revenue, or business done	Number of paid employees for pay period including March 12	Number of Employer Establishments
1	Manufacturing	Manufacturing	Retail Trade
2	Retail Trade	Health Care and Social Assistance	Health Care and Social Assistance
3	Wholesale trade	Retail Trade	Accommodation and food services
4	Health Care and Social Assistance	Accommodation and food services	Professional, scientific, and technical services
5	Professional, scientific, and technical services	Administrative and Support and Waste Management and Remediation Services	Other services (except public administration)

Source: Economic Census 2007

The industries of Everett all face unique challenges during a hazard event. Many manufacturing firms in Everett rely on "just in time" production. This means that firms have very little inventory on hand in storage facilities and they transport in or make products as needed. Although this can reduce the operating cost of a business, it also increases these companies' vulnerability in the event of a hazard.

Health Care and Social Assistance is another important business sector in the City of Everett. Not only is it part of the economic engine of Everett, driving the creation of other jobs; it is also vital to emergency response after a hazard event. Health Care and Social Assistance firms are different from Manufacturing firms in that their market orientation is much more likely to be local.

Retail Trade makes up a substantial portion of sales in the city. Most of the retail businesses in Everett are small, with fewer than 20 employees working at a given establishment. Historically, Retail business and smaller business tend to have a harder time recovering after a disaster.

A meeting held with Seattle business groups by Cascadia Regional Earthquake Workgroup (CREW) in 2005 produced a report, "Just in Time Inventory: Effects on Earthquake Recovery," that identified eight potential problems that businesses might face in the event of a disaster. They included:

- Personal Concerns about families and life safety

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- Loss of power
- Loss of surface transportation
- Questions of the ability of business to communicate with customers
- Physical loss and damages
- Questions of the capacity of hospitals
- Losses resulting from limited Just-in-Time inventories
- Potential for permanent loss of businesses due to damaged infrastructure

This list does not include all of the risks to business and may not even list them in an appropriate order based on economic impact specifically to the City of Everett. Isolation and loss of power and other utilities may be the most important, and certainly the most obvious, risks that need to be addressed with businesses specifically in mind.

Special attention should also be given to mitigating isolation risks since Everett could essentially become an island if there were a major hazard event. Over 80 percent of the people who work in the City of Everett commute from outside the city, while about two thirds of the city's residents work outside of the city. This would suggest that personal concerns about things such as child care, food and shelter are intimately tied to concerns about surface transportation since people's workplaces are often far from their homes.

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STATEMENT OF PURPOSE

When there is a natural disaster, a separate and equally devastating economic disaster can occur. Mitigating the impact of disasters on the local economy should be a task above and beyond the life safety and physical structure focus of traditional hazard mitigation. Even if businesses are structurally sound, damage to critical infrastructure, such as transportation routes or utilities, or a change in their customer base can negatively impact businesses if they are unable to adapt. Historically businesses have been ill-equipped to handle these types of post-disaster changes. Many mitigation measures traditionally adopted by businesses have been shown to have little impact on the likelihood that a business will survive after a disaster. This is primarily due to the fact that many mitigation measures taken are done to address life safety rather than business continuity, such as first-aid training. This document is intended to determine the assets and vulnerabilities of the Everett economy and suggest action items specifically designed to mitigate economic damages that a disaster could cause.

KEY BUSINESS SECTORS

Data from the 2007 Economic Census was used to determine the key sectors in Everett based on the North American Industry Classification System's two digit codes. The sectors were then ranked to determine the top ten sectors based on revenue, number of employees and number of firms. It is important to note that some sectors were not included in the analysis because data for these sectors are only collected at the state level. These sectors include Mining, Utilities, Construction, Transportation & Warehousing, Finance & Insurance, and Management of Companies & Enterprises. Census data on the number of businesses in Everett in 2008 seemed to indicate that the only unrepresented sectors that have a substantial number of establishments are Construction and to a lesser extent Finance &Insurance. Although utilities are critical for post-disaster recovery, the cross industry impact that utilities have is very different from other private sectors.

Of the industries included in the sample, Manufacturing, Retail Trade, Wholesale Trade and Health Care & Social Assistance play a major role in the City of Everett with each industry having over a billion dollars in employer sales, shipments, receipts, revenue, or business done. Manufacturing, Retail Trade and Health Care and Social Assistance also are the top three employers in the city based on the number of paid employees. Manufacturing has over three times the number of employees as the next largest industry, Health Care and Social Assistance. Health Care and Social Assistance and Retail Trade are the two largest industries based on the number of establishments. Manufacturing has many fewer establishments; however, the dominance of this industry is due to the fact that Boeing's operations make up the lion's share of manufacturing employees and revenues.

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TABLE 2: TOP SECTORS BY SALES

Rank	2007 NAICS code	Employer sales, shipments, receipts, revenue, or business done ($1,000)
1	Manufacturing	18,143,402
2	Retail Trade	2,079,939
3	Wholesale trade	1,436,083
4	Health Care and Social Assistance	1,178,505
5	Professional, scientific, and technical services	410,561
6	Accommodation and food services	249,507
7	Administrative and Support and Waste Management and Remediation Services	167,128
8	Other services (except public administration)	155,742
9	Real estate and rental and leasing	134,063
10	Arts, entertainment, and recreation	32,004

Source: Economic Census 2007

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TABLE 3: TOP BUSINESSES BY NUMBER OF EMPLOYEES

Rank	Meaning of 2007 NAICS code	Number of paid employees for pay period including March 12
1	Manufacturing	29,991
2	Health Care and Social Assistance	9,701
3	Retail Trade	7,619
4	Accommodation and food services	4,661
5	Administrative and Support and Waste Management and Remediation Services	3,247
6	Professional, scientific, and technical services	3,189
7	Information	2,460
8	Wholesale trade	2,039
9	Other services (except public administration)	1,762
10	Real estate and rental and leasing	926

Source: Economic Census 2007

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TABLE 4: TOP BUSINESS BY THE NUMBER OF EMPLOYER ESTABLISHMENTS

Rank	2007 NAICS code	Number of Employer Establishments
1	Retail Trade	481
2	Health Care and Social Assistance	405
3	Accommodation and food services	332
4	Professional, scientific, and technical services	295
5	Other services (except public administration)	238
6	Real estate and rental and leasing	191
7	Administrative and Support and Waste Management and Remediation Services	156
8	Wholesale trade	139
9	Manufacturing	136
10	Information	61

Source: Economic Census 2007

The above tables do not necessarily indicate which industries are driving the economy of Everett. Economic base analysis suggests the engine of the economy is the industries that produce items for export outside of a study region, in this case Everett. Non-basic sectors, which produce items primarily consumed within the region, depend indirectly on the viability of the basic industries because they support people working in all industries. Manufacturing is the primary basic industry in the City of Everett. Health Care and Social Assistance is also a basic industry, although its impact seems to be much smaller than Manufacturing.[2] This is confirmed by the research done

[2] Everett also seems to also have a minor impact on the real estate and information sectors at the state level

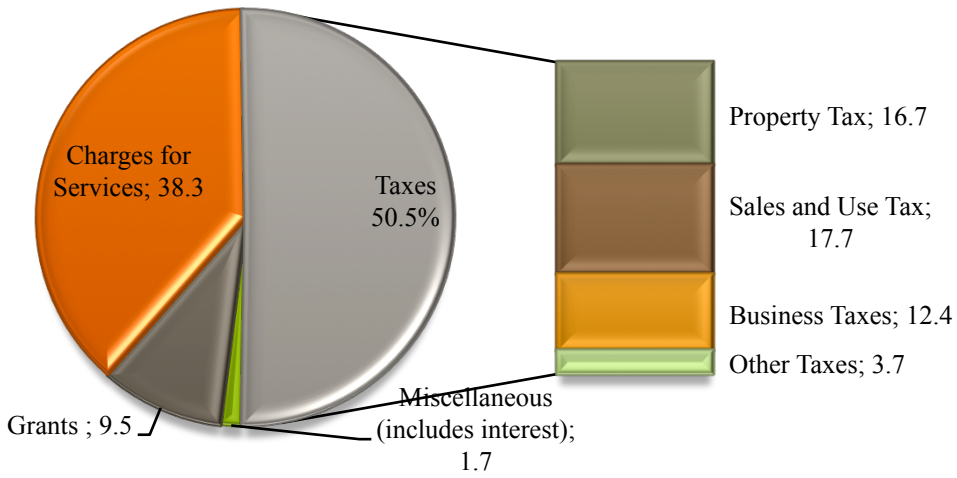
by The Economic Development Council for the City of Everett which has identified aerospace, life sciences and clean technology as the three key industry clusters of Snohomish County.

Economic base analysis suggests that Retail Trade does not make up a disproportionately large number of sales or have a disproportionate number of employees relative to the typical size of a Retail Trade sector. A special analysis of the Retail Trade industry will also be included because Retail Trade and Accommodation makes up a significant percentage of the total number of business establishments in the City of Everett. Everett's 2025 Comprehensive Plan noted that the city collects approximately a quarter of the retail sales tax in Snohomish County, which is evidence of the importance of retail trade to government revenue.

KEY BUSINESSES BASED ON EVERETT TAX BASE.

The Finance Department of the city of Everett describes the economic position of the city in its Comprehensive Annual Financial Report. The report indicated that Everett obtained its revenue from the following sources in 2009.

FIGURE 1: BREAKDOWN OF THE REVENUE SOURCES FOR THE CITY OF EVERETT.



Source: City of Everett, Washington Comprehensive Annual Financial Report for the Year Ended December 31, 2009.

To have a better understanding of the contributions of different industries to city revenue, the finance department of the city of Everett provided the following ranking of the North American Industry Classification System (NAICS) classifications for Everett's Business and Occupation (B&O) tax payers based on B&O tax revenue paid in 2010. It is important to note that not all of the businesses that pay B&O taxes have a physical location in the city of Everett.

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TABLE 5: TOP 25 B&O TAXPAYERS BY INDUSTRY

Rank	NAICS 2007 Industry	NAICS 2007 sector code
1	Aircraft Manufacturing	Manufacturing
2	Offices of Physicians (except Mental Health	Health Care and Social Assistance
3	Drugs and Druggists' Sundries Merchant	Wholesale Trade
4	Commercial and Institutional Building	Construction
5	General Line Grocery Merchant Wholesalers	Wholesale Trade
6	New Car Dealers	Retail Trade
7	Supermarkets and Other Grocery (except	Retail Trade
8	Electrical Contractors	Construction
9	Department Stores (except Discount	Retail Trade
10	Plumbing, Heating, and Air-Conditioning	Construction
11	Motorcycle Dealers	Retail Trade
12	All Other Miscellaneous Chemical Product and	Manufacturing
13	Full-Service Restaurants	Accommodation and Food
14	Other Aircraft Parts and Auxiliary Equipment	Manufacturing

15	Hardware Stores	Retail Trade
16	Soft Drink Manufacturing	Manufacturing
17	Medical Laboratories	Health Care and Social Assistance
18	Pharmacies and Drug Stores	Retail Trade
19	Automotive Parts and Accessories Stores	Retail Trade
20	Commercial Banking	Finance and Insurance
21	Ship Building and Repairing	Manufacturing
22	Electrical Apparatus and Equipment, Wiring	Wholesale Trade
23	Noncellulosic Organic Fiber Manufacturing	Manufacturing
24	Offices of Dentists	Health Care and Social Assistance
25	Transportation Equipment and Supplies	Wholesale Trade

These results are consistent with the data that we found when industries were sorted based on total revenue. Many of the top industries are in the Manufacturing, Retail Trade, Wholesale Trade of the Health Care and Social Assistance industries. The construction industry also seems to contribute significantly to the B&O taxes in Everett. Unfortunately, analysis could not be done on this sector in the general analysis because no data is available from the census that analyzes this sector at the city level.

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MANUFACTURING

The Census data does not give sufficient detail for the Manufacturing industry. It omits many of the small firms and provides almost no information on the larger firms because it would disclose too much information on individual companies. The Census does however confirm that the major industries in the Manufacturing sector are pulp, paper and paperboard mills, computer and peripheral equipment manufacturing, electronic and instrument manufacturing, and aerospace product and parts manufacturing. The table below shows the key subclasses of Manufacturing and provides information on approximately how many people are employed in each subcategory.

TABLE 6: MANUFACTURING BUSINESS BY NUMBER OF EMPLOYEES

eaning of Type of operation or tax status code	Number of paid employees for pay period including March 12
Pulp, paper and paperboard mills	500-999 paid employees
Computer and peripheral equipment manufacturing	500-999 paid employees.
Electronic and instrument manufacturing	1,000 to 2,499 employees
Aerospace product and parts manufacturing	10,000 to 24,999 employees.

Source: Economic Census 2007

According to the Aerospace Industries Associations' "2010 Year End Review and Forecast" the aerospace industry is continuing to improve. As we move out of the global recession foreign sales are expected to continue to grow. Foreign purchases are also increasing as it becomes easier for firms to obtain credit for the purchase of civil aircraft. They noted that the aviation industry overall is still facing issues because of "falling demand, restrictive credit markets and strong competition from used aircraft"(AIA Research Center, 2010). Larger airplanes, however, have been cushioned against these issues. Since the Everett plant produces only larger aircraft this impact might be minimal. Rising fuel prices might also help Everett's economic prospects. As fuel prices continue to rise, there is an increasing incentive for airlines to replace older airplanes, especially with models such as the fuel-efficient 787 coming into production. Boeing expects that 85 percent of the airplanes flying in 2029 will be made after 2010. Boeing is in an especially good position after winning the contract to build the air-refueling tanker in February 2011. This is important not only because the contract is worth more than $30 billion dollars but also because the company can switch engineers from the 747 and 787 to the tanker as it goes into production (Seattle Times, 2011). The Air Force contract is also expected to extend the projected lifespan of the 767 production line in Everett (Vance-Sherman, 2011).

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"JUST IN TIME" PRODUCTION

One potential concern with manufacturing firms is that many rely on "Just in Time" production. This production model suggest that firms have very little inventory and they process goods as needed for production. The benefits of Just-in-Time production are that the business can adapt quickly to change, reduce overhead and prevent over production. The drawback is that these businesses become much more vulnerable if there is a disaster. Since businesses have little to no supply stock to fall back on, if any of the suppliers or transportation routes is impacted by a disaster, the company can be incapacitated.

The recent earthquake in Japan has brought to light many issues with this production model. The first is that manufacturing firms should have deeper understandings of the risks facing their supply chain. When collaboration between the city and key businesses takes place, it may be beneficial to include local suppliers in some capacity. This is because suppliers may have unique concerns of which the larger corporations are not aware. While it would be impractical to involve all international and perhaps even regional suppliers in a discussion, since even one part can sometimes stop all production, it would be beneficial for Everett Harden manufacturing channels where they are able. The disaster also demonstrated the importance of having transportation recover as quickly as possible. To this end, the government and businesses could work together to identify priority routes to be opened following a disaster.

HEALTH CARE AND SOCIAL ASSISTANCE

Health Care is one of the fastest growing sectors nationally and is expected to generate many new jobs in the future with the fastest growth in home care services. Health Care and Social Assistance is an important business sector in the City of Everett. Not only is it part of the economic engine of Everett, driving the creation of other jobs; it also will be vital to emergency response after a hazard event. The Health Care and Social Assistance sector also contributes a great deal to city revenues directly with Offices of Physicians being the second largest B&O tax payer. Health Care and Social Assistance is different from Manufacturing in that their market orientation is much more likely to be local. A study on Business Vulnerability in King, Kitsap, Pierce and Snohomish County in 2002 found that 100 percent of the primary market orientation for Health Care and Social Assistance was in the Pacific Northwest (Beyers and Chang, 2003). This could be compared to only about 50 percent of manufacturing business done by the companies surveyed.

The paper, "Modeling Post-Earthquake Functionality of Regional Health Care Facilities," (Yavari, Chang and Elwood, 2010) highlighted the importance of external lifelines in the event of a disaster. The paper noted that many medical clinics may not have sufficient redundancies for other critical utilities. For example, many hospitals do not have a large enough back-up supply of potable water to meet demand if there was a loss of water to the facility. Although the Providence Region Medical Center is working on methods to reduce this vulnerability, it is something that always must be considered in a mitigation and recovery plan. Hospitals have also often had concerns about loss of electricity and communication following a disaster. Even if the hospital has taken all necessary precautions to mitigate a disaster internally, a disaster causing physical damage to the communication infrastructure may lead the

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hospital to have difficulty contacting staff, emergency vehicles, government partners, or even communicating to other people within the building.

Another concern of the health and medical profession is having enough personnel on staff in the event of a hazard event. Road blockage could make it difficult for staff to get to the hospital. In addition, when there is a serious disaster demands for medical care will be even higher. Transportation then becomes doubly important because hospitals will have to determine how they can receive critical supplies following a disaster. Pharmacies will have similar problems determining how they will be able to meet the increased demand for prescriptions. Everett must be concerned with how it can ensure that hospital staff can get to their jobs to provide needed services.

Communication and transportation availability is also important to people within the health care profession because many of the workers will be torn between their obligations at work and their personal responsibilities. People who work in the medical profession deal with people who are especially vulnerable after a disaster. There will be added stress associated with their jobs as they face increased demands under what will most likely be more complicated constraints. Medical facilities must then also be concerned with what actions they can take to help assuage their staff's personal concerns during a disaster. This would include determining how staff could obtain housing for themselves and possibly their families following a disaster. Although it may not be necessary for medical facilities to pay for these services, having a plan in place will allow people to respond quickly following a disaster.

Data from the census provides more specific information about the Health Care and Social Assistance sector in the city of Everett. The tables below lists the number of establishments by size, the various subclasses within the Health Care and Social Assistance category and provides information on the number of firms, revenue and employees in each subcategory.

TABLE 7: HEALTH CARE AND SOCIAL ASSISTANCE BUSINESSES BY NUMBER OF EMPLOYEES

Number of Employees	Total	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
Number of Establishments	480	204	105	82	60	14	11	2	1	1

Source: U.S. Census Bureau, North American Industrial Classification System (2008)

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TABLE 8: BREAKDOWN OF HEALTHCARE SECTOR BY TAX STATUS CODE

Meaning of Type of operation or tax status code	Number of employer establishment	Employer sales, shipments, receipts, revenue, or business done ($1,000)	Number of paid employees for pay period including March 12
All establishments	405	1,178,505	9,701
Establishments subject to federal income tax	344	537,831	4,847
Establishments exempt from federal income tax	61	640,674	4,854

Source: Economic Census 2007

TABLE 9: BREAKDOWN OF HEALTHCARE SECTOR BY INDUSTRY GROUP

Meaning of 2007 NAICS code	Number of establishments	Receipts/Revenue ($1,000)	Number of paid employees for pay period including March 12
Offices of physicians	85	291,229	1,800
Offices of other health practitioners	79	40,568	409
Offices of dentists	74	56,581	452
Child day care services	32	D	250 to 499 employees
Community care facilities for the elderly	31	D	250 to 499 employees
Outpatient care centers	29	D	1,000 to 2,499 employees
Individual and family services	23	D	500 to 999 employees

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Community food and housing, and emergency and other relief services	16	D	100 to 249 employees
Home health care services	7	53,253	801
Nursing care facilities	6	D	500 to 999 employees
Vocational rehabilitation services	6	D	20 to 99 employees
General medical and surgical hospitals	1	D	2,500 to 4,999 employees

Source: Economic Census 2007

A vast majority of businesses in the Health Care and Social Assistance industry have fewer than 20 employees; The Providence Regional Medical Center is the major exception with over 3,000 employees. One benefit that Providence Regional Medical Center offers to the City of Everett is that their new facility has been built to accommodate growth. The facility has also been designed to be able to adapt as needs change, which will be important during a hazard event. Since the hospital's medical tower was recently built it should also have a much better probability of surviving a major hazard event. Many articles have noted that having open collaboration between the hospital and government will be critical. Discussions about life safety as well as economic needs of the hospital should take place before the disaster occurs that way both parties can collaborate to come up with solutions to potential problems when there is not the added stress of the disaster.

Offices of physician are also important to the economy. The impact that the disaster will have on these businesses can vary quite significantly based on the type of office. Many people may need to contact physician offices following a disaster to obtain medical information that was lost or destroyed. Physician offices will then need to determine how they can contact patients and pharmacies and provide critical information even if they suffer physical damage to their office. Disasters can also have a significant impact on the customer base of physician offices. If patients are significantly impacted by the disaster or lose a significant portion of their disposable income as a result of the disaster then they choose to defer appointments. This may be especially true for offices whose services are not considered critical. Patients relocating after a disaster can also change the consumer base. The development of detailed business continuity plans then becomes important to determine how private offices will deal with changes in their patient base and how to not lose patient confidence when there is damage to their facility.

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RETAIL TRADE

As discussed earlier ~~in the paper~~, Retail Trade makes up a substantial portion of sales in the city. Most of the retail businesses in Everett are small, with fewer than 20 employees working at a given establishment.

TABLE 10: RETAIL BUSINESSES BY NUMBER OF EMPLOYEES

Industry Code Description	Total Establish.	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
Retail Trade Total	575	226	157	99	50	25	14	3	1	0

Source: U.S. Census Bureau, North American Industrial Classification System (2008)

Historically, retail businesses and smaller businesses tend to have a harder time recovering after a disaster. This is due, in part, to the fact that retail businesses are more reliant on other local businesses. Retail Trade is also more likely to have substitutes which can cause businesses to lose customers as they struggle to recover. Since many businesses are smaller, they are less likely to have a comprehensive recovery plan. Another reason that retail businesses might be at risk is because many businesses are likely to lease, rather than own, their property. This means that the businesses will be less likely to invest in mitigation items, such as retrofitting or investing in a generator, because they are unlikely to reap the full benefit of that investment.

Data from the 2007 Economic census gives us a more detailed picture of the Retail Trade by subsector. This breakdown is included to provide information on the relative size of the subsectors. It does not mean that subsectors with a larger number of establishments, sales or employees are necessarily more important to the city's economy.

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TABLE 11: BREAKDOWN OF RETAIL TRADE SECTOR BY SUBSECTOR

Meaning of 2007 NAICS code	Number of establishments	Sales ($1,000)	Number of paid employees for pay period including March 12
Motor vehicle and parts dealers	77	631,877	1,416
General merchandise stores	10	443,616	1,656
Food and beverage stores	71	300,878	1,064
Building material and garden equipment and supplies dealers	36	187,995	838
Gasoline stations	45	131,926	277
Health and personal care stores	29	75,812	381
Electronics and appliance stores	20	74,570	339
Clothing and clothing accessories stores	55	65,877	547
Miscellaneous store retailers	55	57,867	493
Sporting goods, hobby, book, and music stores	33	42,931	327
Furniture and home furnishings stores	29	42,463	196
Nonstore retailers	21	24,127	85

Source: Economic Census 2007

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The paper, “Organizations at Risk: What Happens When Small Businesses and Not-for Profits Encounter Natural Disasters” identified key variables that predict small business and not-for-profit organizations’ chance of surviving a disaster (Alesch, Holly, Mitter and Nagy, 2001). These included:

- **“The extent to which the customer base was affected adversely”:** Businesses are more likely to fail if their customer base decreases as a result of the disaster. This can occur if their customers were negatively impacted by the disaster, have less disposable income as a result of the disaster or leave the region.
- **“Industry competition”:** If there is a large amount of competition, then customers will buy product from another company while the business is making repairs and the impacted store will lose these potential sales. This can be devastating for businesses which produce durable goods since purchases may not be made again for several years.
- **“Product necessity”:** Customers will usually change purchasing choices as they recover from a disaster. Stores that sell items whose purchase can be deferred for a while, especially niche items, are more likely to suffer a decrease in sales following a disaster.
- **“Overall business stability before the event”:** The financial position of a business is strongly tied to the probability that it will survive. If a store is already struggling, then a disaster might push it over the edge. Stores that were stronger before the disaster tend to be more resilient.
- **“Position on the industry curve”:** If a business is located in a location that is shrinking or selling a product that is losing market share then it will be less likely to survive than a business that is in a burgeoning location or selling a product that is growing in demand.
- **“The extent of direct organizational loss during the event”:** Stores that suffer greater loss of inventory and production capabilities will have a harder time recovering following a disaster, controlling for the other variables. Although the purchase of business continuity and hazard specific insurance can ameliorate the impact of loss, it is important for businesses to fully understand their coverage and risks. Many businesses suffered significant losses in spite of purchasing insurance because they did not understand what was actually covered by the insurance. Other businesses did not purchase the correct type of insurance because they did not know what their actual risks were.
- **“Extent of proactive entrepreneurial response to a disaster”:** A firm’s ability to assess how markets have changed after a disaster and adapt are more likely to survive. Th eared to be one of the largest indicators of whether a business would or would not survive. Education businesses about the potential issues following a disaster may help them to adapt more quickly to the new economic environment when a disaster occurs.

Although these variables can be used to predict the likelihood that any business will survive a disaster, it is important to pay special attention to these variables as they relate to small retail businesses because they are more likely to be poorly positioned after a disaster.

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Most of the factors that predict s ability are out of the direct control of the local government. The main mitiga lan does have some items that would encourage citizens to take steps to mitigate their losses following a disaster which would indirectly strengthen the consumer base following a disaster. In addition, steps taken to harden transportation routes and water systems may reduce organizational loss due to the loss of these services. Although the government could try to encourage businesses that are leading the industry curve to locate in the city of Everett many of the variables are ultimately dependent on the choices made by the local business owners. The city of Everett should then help to facilitate the recovery of businesses through communication and collaboration.

A recurring theme in disaster mitigation articles on small businesses is that mitigation steps seem so daunting and the likelihood of disaster so remote that small businesses ignore the potential threat. The city should then work to inform them of the potential disaster problems and actionable steps that they can take to reduce their risks in a meaningful way. By discussing potential hazards with businesses, the city can help businesses to reduce direct losses that occur as a result of the disaster and to encourage businesses to respond proactively to the disaster. This will enable businesses to take advantage of the changing climate following the disaster or at least minimize the burden.

BANKING

The finance and banking sector of the Everett economy will be critical following a disaster. Fortunately, this sector is better positioned to survive. There are many federal laws that require busines have a plan to keep information protected even following a disaster. Studies have also shown that "This industry ha me the leader in the private sector with regards to investments and expenditure on (Business Continuity) plans." (Ghosh, Lunce and Maniam)

It seems that the vulnerability for this sector lies in communication as well as testing and updating continuity plans. Communication will be a critical factor for banks following a disaster because they will need to have a method of gathering information on customers' accounts and transactions quickly, accurately and securely. Methods of testing a bank's communication capabilities will be essential. For many banks, problems arose following a disaster not because the bank did not have a contingency plan, but because their plan was not properly tested. The most recent example of this was the ATM failure experienced by Mizuho Bank following the Tohoku earthquake in Japan. According to the American Banker, a system overload due to an increase in the volum ansactions "delayed 1.16 million transactions worth about $10 billion and ATMs were down for three days." (Crossman, 2011)

The system was overwhelmed partially because the bank was still using an old computer system and had not fully integrated all of its branches following a recent merger. Although they had a plan in place, they had not fully anticipated the problems posed by the older system. Although businesses in the banking sector are ultimately responsible for testing and updating their continuity plans, the city can help by properly informing local businesses of risks. If businesses have a better understanding of the risks and accurate expectations of the city's actions following a disaster they can better prepare their continuity plan.

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Having an accurate understanding of risks and tested methods of dealing with all potential disasters can help financial institutions open quickly following a major disaster. For example, a small credit union in the United States was able to minimize the amount of time they were closed due to flooding in the area by literally moving their computers and customer information to a safe location. They were only able to do this because they were aware of the potential risks of their location and had taken steps to minimize the impact on their business.

Like with many other sectors, larger businesses in the finance sector with more b es are generally better able or surviving a disaster than smaller institutions. This is largely because these larger an pull resources from other branches that are unaffected by the disaster. Mitigation tools are generally determined at the national level for there larger organizations. It would then behoove the city to partner with local banks and credit unions to coordinate their response effort since these institutions will often need to rely on more innovative steps to ensure that they stay open following a disaster.

The availability of cash will be important in many disasters. The increase in cash demands affects not only banks, but also retail businesses where customers can get cash back. Before an expected disaster such as a flood or severe storm, many businesses will find increases in cash demands as customers try to have more cash on hand so that they can make emergency purchases. Finally, there may be in increase in cash demands throughout the recovery process. Coordination between banks, the retail industry, utilities and the city are then important to make sure that these demands are met and that this economic impact of the disaster is limited.

Wal-Mart's disaster management strategy is a good example of how effective cooperation can be following a disaster. Wal-Mart has contingency plans established with banks to meet their cash needs following a disaster (Starkley). Whenever there is a warning, Wal-Mart is able to activate the pre-negotiated strategies with banks for pre and post disaster cash needs. This minimizes the need for decision making during the crisis and can make the recovery process more seamless. Wal-Mart has boasted that they are one of the last businesses to close and one of the first to open following a hurricane. Having a similar comprehensive plan would be infeasible for smaller businesses in the city; however, the government can then help to facilitate this coordination between key businesses and the banking sector to make the recovery process easier.

UTILITIES

Although the census did not have information on the size of the utility sector at the city level in the 2007 economic census, the availability of utilities including water, garbage, electricity and communication will be important for business recovery following a disaster. The operation of utilities may also be difficult because if the infrastructure for water, electricity or communication is damaged during the disaster, it could affect businesses that are not otherwise impacted.

The Mitigation Plan lists the exposure for some of these utilities in its section on critical facilities. This section lists the number of parcels/facilities located on class E soils for the critical facility categories. Facilities on class E soils

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were isolated because this soil type is the least stable soil in Everett. This means that buildings on top of these soils will be susceptible to increased ground shaking in an earthquake as compared to similarly reinforced buildings in area on more stable soils.

TABLE 12: NUMBER OF CRITICAL FACILITIES ON LEAST STABLE SOILS BY CATEGORY

Critical Facility Categories	Number of Parcels/Facilities on E Soils
Electrical Facilities	6
Natural Gas Facilities	2
Water Facilities	5
Sewage Treatment Facilities	3
Solid Waste Facilities	1

Source: City of Everett 2011 Hazard Mitigation Plan

The city does not have direct control over electricity or communication. In addition, information on lines which run through vulnerable soils is not publically available due to security concerns. The city has noted that water and sewer lines which run through vulnerable soils are a concern. Several steps have already been taken to ensure the resiliency of water and sewer utilities. There are currently pressure sensors in the pipelines so that they can determine if there is a break in the pipeline. In addition, the city has three to four days' worth of water stored in reservoir reserves that can be tapped into if the main pipelines were to break. There also specific action items in the 2011 Hazard Mitigation Plan designed to further harden the water supply.

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POTENTIAL RISKS

A meeting held with Seattle business groups by Cascadia Regional Earthquake Workgroup (CREW) identified eight potential problems that businesses might face in the event of a disaster. (Salvagio and Freitag, 2005)They included:

- Personal Concerns about families and life safety
- Loss of power
- Loss of surface transportation
- Questions of the ability of business to communicate with customers
- Physical loss and damages
- Questions of the capacity of hospitals
- Losses resulting from limited Just-in-Time inventories
- Potential for permanent loss of businesses due to damaged infrastructure

This list does not include all of the risks to business and may not even list them in an appropriate order based on economic impact specifically to the City of Everett. Isolation and loss of power and other utilities may be the most important, and certainly the most obvious, risks that need to be addressed with businesses specifically in mind.

RISKS IDENTIFIED BY EVERETT BUSINESSES

A survey was sent to the businesses of Everett to determine what mitigation steps they had already taken and identify what they believed to be their key risks. Of the 45 businesses that responded, most had taken some disaster mitigation steps. The most common mitigation steps taken were to store critical data offsite, to provide first aid training for employees or store first aid supplies and to purchase business disruption insurance. The least common mitigation steps taken were to have a professional assess the earthquake safety of the building, invest in structural or non-structural retrofits of their building and developing a workforce housing or transportation plan. Although not the least common preparedness action, most businesses did not have a specific business recovery plan.

When asked to identify their biggest threat to businesses following a disaster, many of these businesses identified disruption of power, disruption of transportation services, disruption of communication services, and loss of clients as their biggest threat following a disaster. The amount of time that businesses could tolerate disruption of utilities seemed to vary greatly. Most businesses stated that their most immediate need after a disaster would be access to electricity and communication. Extended travel times could be tolerated for the longest amount of time.

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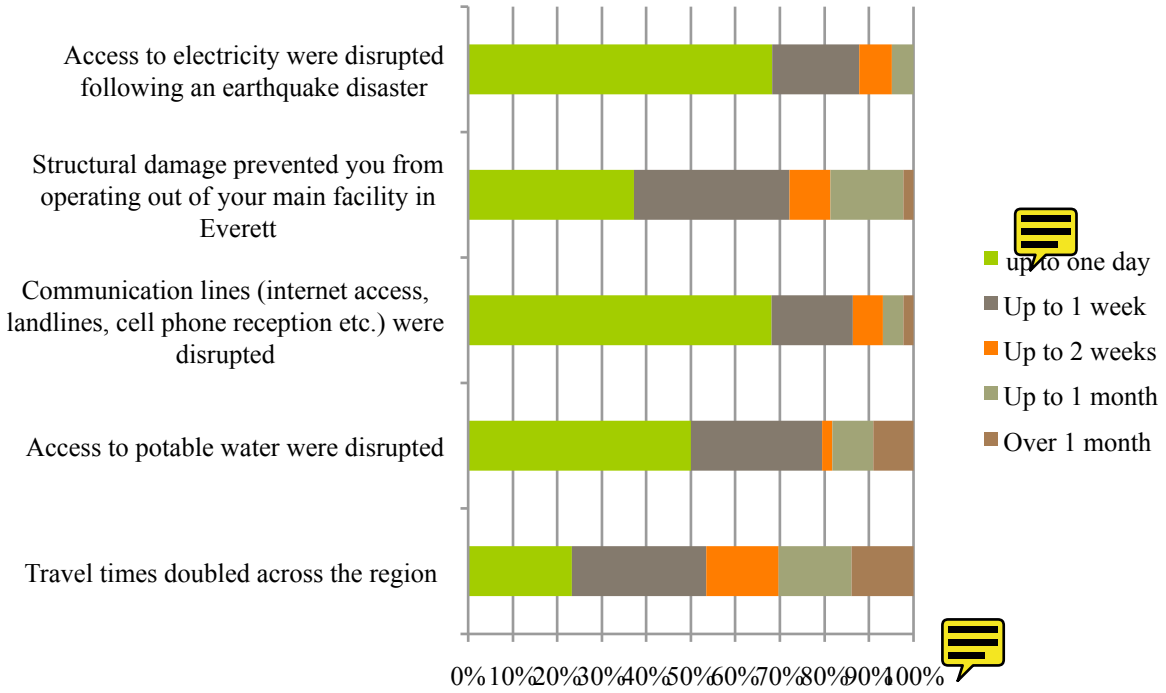
FIGURE 2: AMOUNT OF TIME SERVICE COULD BE DISRUPTED BEFORE BUSINESS SUFFERED A SEVERE LOSS.



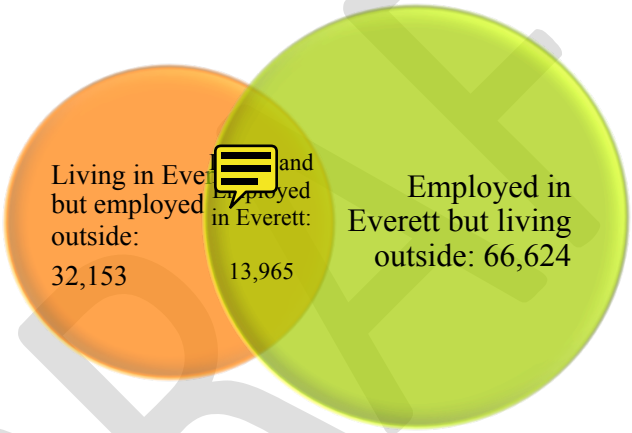
The city only has direct control over the availability of potable water and to a lesser extent travel times. In the main mitigation plan many actions items have been specifically crafted to address the issue of hardening the water supply system or increasing the likelihood that it will remain functional after a hazard event. Action items have also been created as an attempt to harden transportation corridors. Due to some of the peculiarities of the city, which will be discussed in the next section, additional attention will be given to transportation with Everett businesses specifically in mind. The fact that many of the biggest concerns for businesses are not things that the city has direct control over will shape the type of actions that the city will take in mitigating economic disaster. The city will try to make businesses a partner in the mitigation and recovery effort. It will work to increase communication, and collaboration with the private sector. It will also support businesses with their private mitigation endeavors.

ISOLATION:

To better understand potential issues of isolation in the city of Everett, it is important to understand the travel patterns of Everett workers and residents. A picture of the Everett transportation patterns was generated by using information from OnTheMap through the US census.[3]

Over 80 percent of the people who work in the City of Everett live outside the city. About two thirds of the city's residents work outside of the city. This would suggest that personal concerns about things such as child care, food and shelter are intimately tied to concerns about surface transportation.

FIGURE 3: MOST PEOPLE DO NOT LIVE WHERE THEY WORK.



Source: On the map, Longitudinal Employer-Household dynamics

ANALYSIS OF EVERETT WORKERS

Only about 17 percent of the people who work in Everett live in the city. All other workers come from a variety of locations, with less than 3 percent of workers coming from most cities. The only exceptions are Seattle, where roughly 6.6 percent of workers live, Seattle Hill-Silver Firs CDP with 4.5 percent and Marysville with 4.4 percent. Although workers do come from a variety of towns, many of the non-resident workers live in cities located to the south of Everett. (A Figure depicting the top 10 cities where workers live is included in the appendix). Most workers

[3] OnTheMap uses unemployment insurance records to determine the home and work location of the Everett population. Workers who do not pay unemployment insurance are not included in the sample. This would include self-employed workers, federal workers and military personnel.

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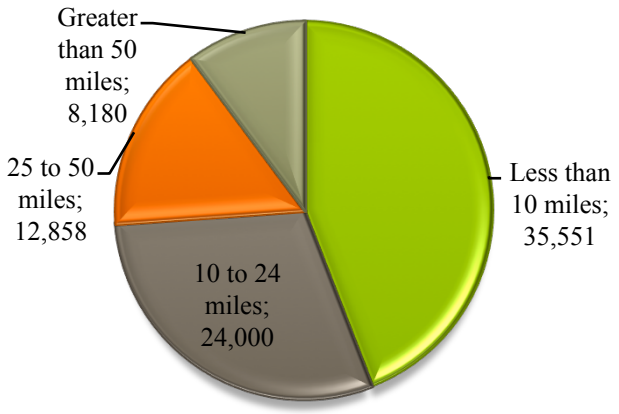
do not travel very far to get to work in the city. Less than 10 percent of city workers travel more than 50 miles in order to get to work.

FIGURE 4: TRAVEL DISTANCES ARE RELATIVELY SHORT FOR PEOPLE WHO WORK IN EVERETT.



Source: On the map, Longitudinal Employer-Household dynamics

Analysis on the direction of travel demonstrates that a vast majority of workers live to the south of Everett. Figure 5 shows the direction of travel and the number of workers coming from each direction. The center of the Figure represents the location of the job and the direction demonstrates where their home is located relative to their job.

FIGURE 5: SPATIAL REPRESENTATION OF THE RELATIVE LOCATION OF HOME BLACK TO WORK BLOCK FOR PEOPLE WHO WORK IN EVERETT

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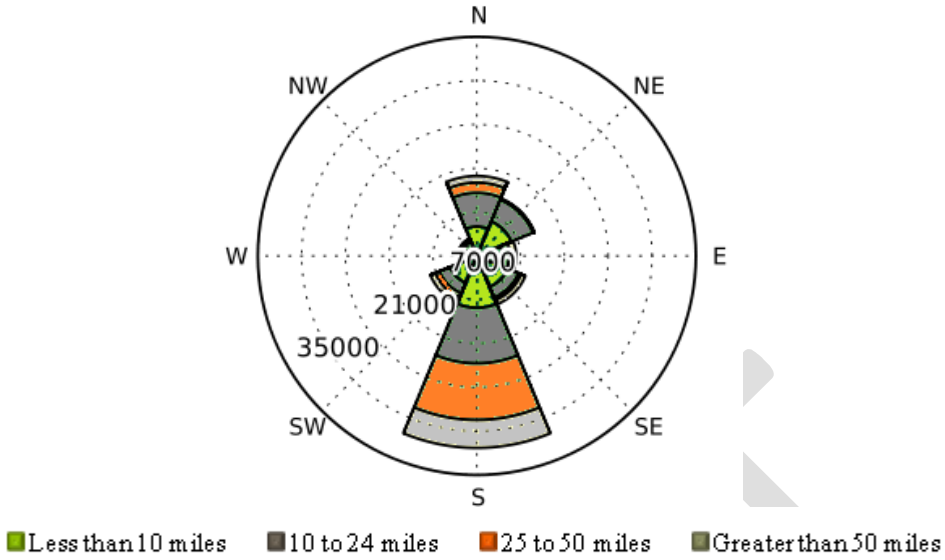

Source: On the map, Longitudinal Employer-Household dynamics

FIGURE 6: JOB DENSITY AND MAJOR BUSINESSES IN THE CITY OF RETT.

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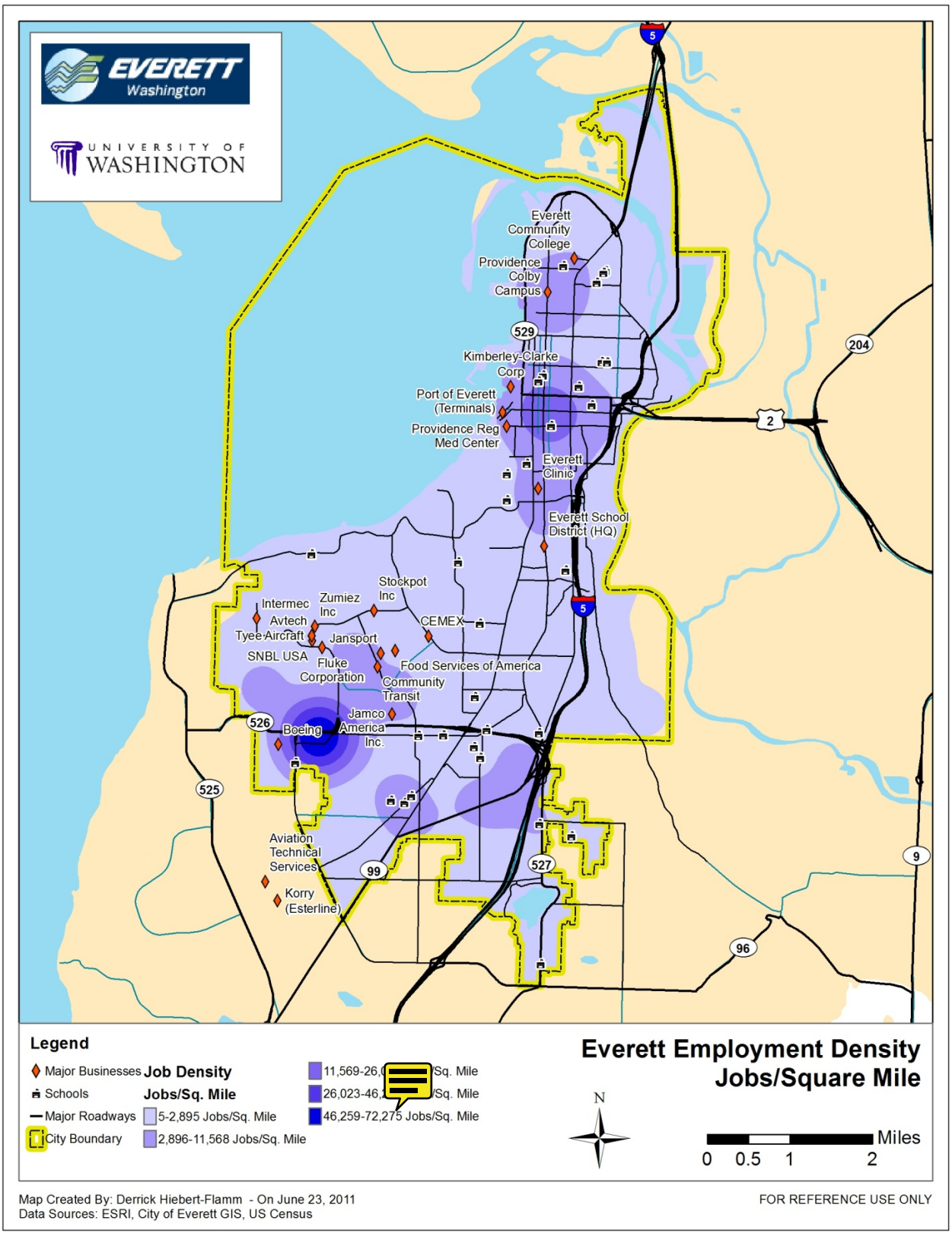
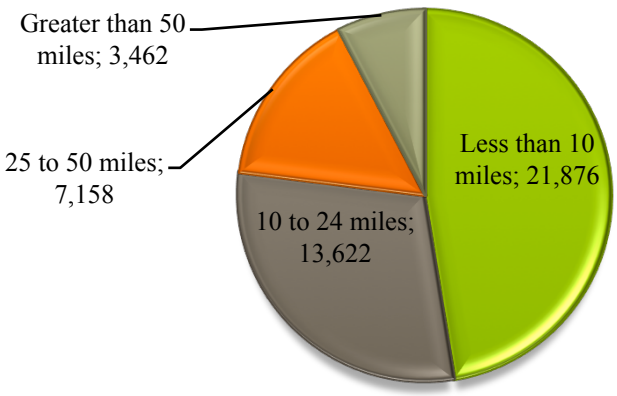

EVERETT
Washington
UNIVERSITY OF WASHINGTON
Everett Community College
Providence Colby Campus
Kimberley-Clarke Corp
Port of Everett (Terminals)
Providence Reg Med Center
Everett Clinic
Everett School District (HQ)
Stockpot Inc
Intermec
Zumiez Inc
Avtech
Tyee Aircraft
CEMEX
Jansport
SNBL USA
Fluke Corporation
Food Services of America
Community Transit
Jamco America Inc.
Boeing
Aviation Technical Services
Korry (Esterline)
5
529
204
2
526
525
99
527
9
96
Legend
Major Businesses
Schools
Major Roadways
City Boundary
Job Density
Jobs/Sq. Mile
5-2,895 Jobs/Sq. Mile
2,896-11,568 Jobs/Sq. Mile
11,569-26,
26,023-46,
46,259-72,275 Jobs/Sq. Mile
Sq. Mile
Sq. Mile
Everett Employment Density
Jobs/Square Mile
N
Miles
0 0.5 1 2
Map Created By: Derrick Hiebert-Flamm - On June 23, 2011
Data Sources: ESRI, City of Everett GIS, US Census
FOR REFERENCE USE ONLY

The map shows job density for the city of Everett based on data collected by OnTheMap as well as the location of public schools and businesses with over 100 employees as identified by the Economic Development office. It is important to emphasize that this does not include people who are self-employed, military personnel or federal employees.

ANALYSIS OF EVERETT RESIDENTS

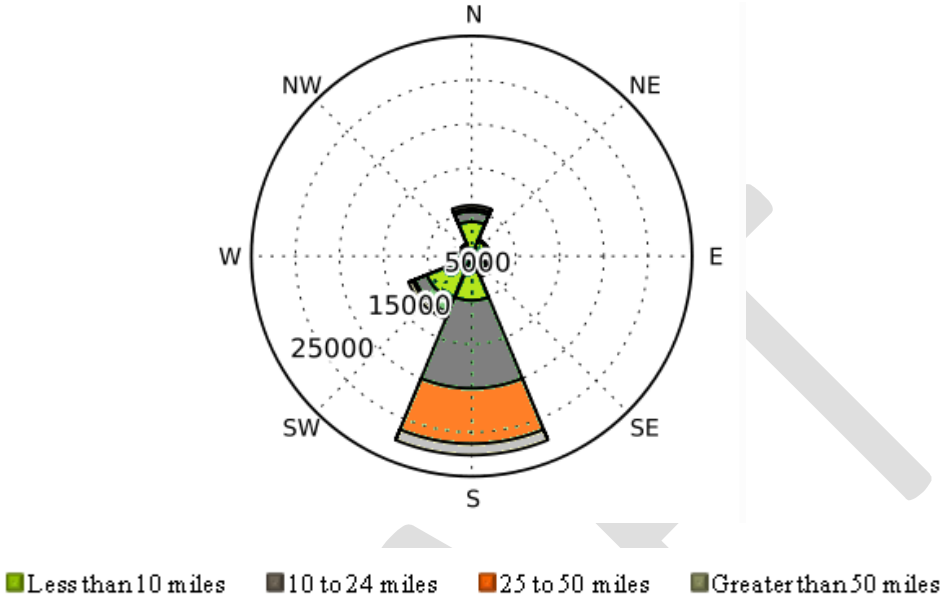
Only one third of city residents also work in the city. Most residents have a fairly short commute with over three quarters of residents traveling less than 25 miles to get to work. Traffic patterns for people who live in Everett are the opposite of the traffic patterns for people who work in Everett. Most Everett residents live to the north of their jobs. Residents who work outside of the city work in a variety of locations, with less than 3 percent of the population working in most cities. The only exceptions are Seattle, where 14.9 percent of citizens work, Bellevue with 4 percent and Lynnwood with 3.8 percent. Figure 8 shows the relative location of residents' jobs to their homes. Again the center of the Figure is Everett.

FIGURE 7: TRAVEL DISTANCES ARE ~~RELATIVELY~~ SHORT FOR PEOPLE WHO LIVE IN EVERETT.



Source: On the map, Longitudinal Employer-Household dynamics

FIGURE 8: SPATIAL REPRESENTATION OF THE RELATIVE LOCATION OF WORK BLOCK TO HOME BLOCK FOR PEOPLE WHO LIVE IN EVERETT



Source: On the map, Longitudinal Employer-Household dynamics

This would mean that the ability for Everett to function after a disaster depends not only on its own mitigation efforts but also the mitigation efforts of neighboring cities. This is concerning because the two major crustal faults, the South Whidbey Island fault and the Seattle fault, are located to the south of Everett so cities to the south of Everett may have more damage. The actual economic impact also depends on which sectors the non-resident workers are employed. If a large portion of these employees are working in basic sectors, then the Everett economy could suffer greatly in disaster even if the city is not severely impacted. It is then critically important to ensure that transportation routes serving the city, especially to the south, are viable after a disaster since this is where many employees live and where most residents work.

COMMUNICATION

Communication is vital to any business' recovery effort. After a disaster, businesses will need to coordinate with employees how the business will operate after the disaster. For some businesses communication is more crucial than others. For example, in the trucking business many routes are assigned to trucks at the last minute as requests come in. This is because last minute assignment allows the companies to more efficiently allocate trucks to routes. During an earthquake, a trucking company lost the communication capabilities in their hub for eight hours. This caused the company to lose millions of dollars in revenue because, although the trucks were not damaged, they could not be assigned new routes.

For other businesses, communication might not seem obviously critical, but will be vital for the recovery effort. Some businesses rely on phone trees to relay information after a disaster. However, cell phones and lines may not be operational after a major disaster. Communication lines may also be important for businesses are not in regular contact with suppliers and consumers. As seen in Japan, ATM machines are sometime subject to the same overload problems as other communication technology. In addition, the physical infrastructure used to verify credit card information is sometimes in the same lines as other communication technology. If a large disaster were to damage the communication lines, it is then possible that it would reduce businesses capability to make transactions.

Communication outside of the corporation is also important. Although the city does not have direct control over communication services, coordination of the government and private organizations will be important. Businesses need to be able to tell local officials what their needs are for recovery. Businesses also need to communicate if they are open. If a local grocery store was damaged during a disaster, it would be beneficial if they had a way of informing their customers so that they would not venture out on potentially dangerous roads unnecessarily.

"Telecommunications Infrastructure in Disaster" identified three primary reasons for telecommunications failure following a disaster. (Townsend and Moss, 2005)

They include:

- Physical Destruction of Network Infrastructure:
- Disruption in Supporting Infrastructure:
- Disruption Due to Congestion:

~~Physical Destruction of Network Infrastructure:~~ Damage to telephone lines, interconnection facilities and cell phone towers can all cause a loss of telecommunication services. The increased variety of service providers can be a mixed blessing. Although it is now easier to diversify ones telecommunication capabilities, and make sure that a business has many ways of contacting key people, it also means that more collaboration may be required after a disaster. It may be important for the government to work with the various telecommunication providers to identify vulnerable areas that multiple media rely on and then determine how these locations can be strengthened. Transportation infrastructure will be vital in allowing repair personnel access damaged areas.

Communication technology can also be disrupted because a disruption in supporting infrastructure. Telecommunications, like any other industry, will rely on electricity to continue to function. If there is a loss of power then these telecommunications might also be unable to provide services to their clients. Even if critical nodes have backup generators, they will rely on transportation to transport additional fuel to these sites if the loss of power last longer than anticipated. Communication choices that businesses make may determine whether they have access to critical telecommunication technology during small disasters where communication systems are otherwise operational. For example, wireless landline phones will not operate if a business loses electricity, but a wired landline will. Having a wired phone in the business would then make it easier to relay information to people on the phone tree than if only a wireless landline phone was available during a power outage. It then becomes important to

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not only know that communication capabilities are needed, but also to determine how one will be able to communicate based on the magnitude of the disaster.

When determining the best course of action for businesses to take, it is important to remember that disruption of services can also occur because of congestion and determine what the best response might be based on common congestion patterns. Following a disaster there will be undoubtedly an increase in the demand on communication systems. Bottlenecks can cause a loss of telecommunication capabilities even if all systems are otherwise functional. Businesses should then be educated to use the same strategies for business continuity as are encouraged for families. Following a disaster it is usually easiest for people to make calls outside of the disaster region than it is to contact another person within the disaster region. Since many people who work in Everett live to the south of the city, it is likely that many will be living in the disaster region and not be able to make internal calls to the phone tree. It might be better for business to have a website or access to an out of state number that employees could call to get critical information. It is also important that the business is able to update information presented through the outside line in a variety of ways, such as by phone, through the internet or through text messaging. Businesses should also discuss with communication providers likely communication problems that will occur in all disaster magnitudes and try to determine ways that businesses can continue critical operations during the recovery process.

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ACTION ITEMS

Having identified some of the key risks to the city of Everett, the next step is to create strategies and actionable steps that the city can take in order to reduce these risks. The city of Everett cannot directly address many of the needs identified by businesses. Many cities facing similar hazards have found success in being a catalyst for private mitigation measures. Everett would be able to have similar, if not greater success if it worked to coordinate its mitigation actions with businesses before a disaster, provide mitigation assistance to businesses and set up a support system to help businesses adapt after a disaster.

Strategies were developed by looking at the best practices and bottlenecks identified by the companies during previous disasters. These included, but are not limited to concerns identified in the Nisqually Earthquake, the Northridge Earthquake, the Tōhoku earthquake, the aftermath of Katrina and the 9/11 attack as well as a variety of smaller storms and flooding events throughout the United States. These were then further refined by comparing them to and synthesizing innovative strategies from plans with an economic mitigation focus from a variety of cities as well as information provided by the International Economic Development Council and other non-profit economic development think tanks. Strategies were then refined based on input from city officials and experts in the field and on concerns raised by businesses attending the Business Resiliency Summit.

Through this process, seven key action items were chosen based on their ability to address these concerns, appropriateness for mitigation rather than a recovery plan and ease of execution.[4]

They include:

- Include "providing support to business" as an element within the relevant Everett Departments Continuity Of Operations Plans (COOP)
- Establish a private sector response and recovery center (PSRRC) after a disaster declaration.
- Increase the City's building inspection capabilities following a disaster.
- Partner with businesses and neighboring governments to coordinate transportation planning for disasters.
- Build on current disaster awareness education programs for local businesses.
- Expand the responsibility of the Business Improvement Service Area to include mitigation, preparedness, response and recovery.

[4] Other action items created presented at the Business Resiliency Summit but not included in the final plan are included in the appendix.

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EVERETT – BUSINESS SPECIFIC ACTION ITEMS

The following action items were developed with business specifically in mind, to ensure that they remain viable following a disaster.

ACTION ITEM 1: INCLUDE "PROVIDING SUPPORT TO BUSINESS" AS AN ELEMENT WITHIN THE RELEVANT EVERETT DEPARTMENTS CONTINUITY OF OPERATIONS PLANS (COOP)

Background: Everett businesses, although not necessarily critical for immediate event life safety, are vital to Everett's recovery. The business community, like residents, can both benefit from support from the city and can support government actions during an event. It is important to have the government departments that deal with businesses be ready to provide this support following a disaster. City departments should then think more broadly about who is relevant following a disaster, should have a COOP plan and what duties they should expect to continue after a disaster. In support of this action item, Everett will undertake the following:

1) Create the Everett Disaster Council and create a Business sub-committee. This committee could help to define and lead many of the ~~entities~~ discussed under the following action ~~times~~ and including:
   a) Add to the COOP plans
   b) Create a Private Sector Response and Recovery Center (PSRRC)
   c) Develop a Business Economic Network

2) Provide opportunities for the Business Community to have a presence in the City Emergency Operations Center

3) Have all city offices re-evaluate their need to have a COOP plan based on their importance to the city's economy and/or ability to disseminate information to businesses. Critical offices can be identified through:
   a) Recommendations of businesses
   b) Participation in PSRRC
   c) Self-identification

4) Add to items covered under the Continuity of Operations (COOP). Through COOP, all Departments are expected to be operational following a disaster. In addition COOPs for those specific Departments identified as being able to offer support to businesses will:
   a) Make full use of alternative communication opportunities including but not limited to social media vehicles to establish a Private Sector Response and Recovery center (PSRRC) – ed in the following section**.**
   b) Include businesses in Department exercises to test PSRRC operations. .
   c) Configure the PSRRC to be operation m remote locations
   d) Use the PSRRC to be broader than just response, but also to promote structural and non-structural mitigation and recovery.

Assessment: This action item will be considered completed when all departments that have been identified as critical offices have developed and exercised their COOP elements that support businesses.

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ACTION ITEM 2: ESTABLISH A PRIVATE SECTOR RESPONSE AND RECOVERY CENTER (PSRRC) **AFTER A DISASTER DECLARATION.**

Background: Getting accurate information quickly following a disaster is vital to the recovery of businesses following an event. Many cities have established business recovery centers[5] following a disaster and have collaborated with businesses to:

- Inform the economic community of the current post-disaster situation and response steps being pursued.
- Allow the government and businesses to communicate their needs to each other.
- Collaborate with business on decisions that affect economic response and recovery.

These business centers help to make the recovery process more efficient. It reduces the burden on the main emergency response team because they will not have to process the businesses concerns individually. It also ensures that businesses do not feel neglected because there is a dedicated location for them to obtain non-life safety information that is tailored to their needs. The Center would support information gathering, dissemination and decision making in many ways including but not limited to:

- Collaborating with FEMA in support of the use of local contractors.
- Supporting businesses that have become official and de facto shelters and gathering places to meet citizens' demands following a disaster.
- Working with these businesses to determine how they can reduce the financial burden of becoming a gathering place.
- Working with the Providence Regional Medical Center to ensure their economic viability during and following a disaster.
- Enabling critical businesses have access to utilities post disaster.
- Promoting structural and non-structural mitigation opportunities.

Specific steps needed to establish a PSRRC would include (the):

1) Identification of a Department responsible for operating the PSRRC (see Action Item one).
2) Creation of a means to achieve two way communications between the PSRRC and the Emergency operation center as well as between the PSRRC and businesses after a disaster.
3) Inclusion of business in the development of PSRRC so that the city can ensure that it meets businesses' needs. Through this collaboration the city should:
    a) Determine a process whereby priorities can be determined that reduce the potential bottlenecks and competing interests for post-disaster resources and funding.
    b) Provide businesses with information on what the government plans to do following a disaster so that they can coordinate their mitigation efforts.
    c) Establish realistic recovery scenarios to help businesses better prepare for and understand the length and potential difficulty of recovery.
4) Delegation of roles and responsibilities for different economic functions.

[5] An example of the steps for establishing a business recovery center is included in the appendix of this document.

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5) Creation of an Internet based Business Economic Network (BEN) that will allow the City of Everett to communicate with businesses directly, and provide and receive critical information following a disaster. BEN may involve:
   a) Social media tools
   b) Reliance on offsite servers to the extent possible to ensure post disaster viability.
   c) A website that allows the creation and editing of any number of interlinked web pages via a web browser using a simplified markup language or a WYSIWYG text editor similar to a wiki.
      i) This webpage should provide businesses with :
         (1) Hazard recovery information
         (2) A road closure map whose creation and update is coordinated with the state through its business portal.
         (3) Supporting partnerships needed by the city.
         (4) A business recovery database that clearly defines federal, state, and local business recovery responsibilities and provides information on business assistance grants and loans.
      ii) The WYSIWYG page should also be connected to the citizen-focused page so the businesses can inform residents about businesses in operation, supplying services and closures of critical businesses.
         (1) Information about closures of key businesses could also be forwarded to the emergency E-Alert system so that businesses could inform their customers and employees.
         (2) This reinforces action item C4 in the Mitigation plan

Assessment: This action item will be considered completed when the city:

- Establishes a committee that will oversee the PSRRC
- Determines how the PSRRC will interact with emergency management following a disaster.
- Establishes a website that will have critical disaster information available
- Creates a list-serve of businesses that will be sent information through the website during a disaster,
- Compiles key recovery information that should be available on the server and
- Determines who will be responsible for maintaining the website before, during and following a disaster

Other measures of progress will include:

- The creation of a database of potential business partners
- The establishment of a memorandum of understanding to govern post disaster business contracting.
- While creating the website, it is important to discuss the process with representative businesses to ensure that the website meets the needs of local business. The website can also be beta tested during moderate storms and floods to see how useful it might be following a severe disaster**.**

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ACTION ITEM 3: INCREASE THE CITY'S BUILDING INSPECTION CAPABILITIES FOLLOWING A DISASTER.

Background: Much of the City's retail operates out of Unreinforced Masonry (URM) structures that are uniquely vulnerable to earthquake-generated ground shaking. Many businesses located along the coast operate out of older structures that were not built to survive the poorer coastal soils and are also more vulnerable to ground shaking. These conditions increase the need for the availability of post disaster building inspection. The Department of Engineering and Public Services should partner with the Office of Emergency Management to take steps to ensure that buildings can be inspected as quickly as possible.

Specific steps included in this action item are:

1) Setting up relationships with other jurisdictions to use their building inspectors in the event of a disaster as permitted by the mutual aid system.
2) Exploring the possibility of permitting owners of private buildings to hire qualified architects, engineers, and other licensed construction professionals to create building-specific, post-disaster inspection plans.
3) Creating a special process whereby the Building Official and the City Engineer could deputize qualified inspectors in the event of an earthquake or other disaster.
4) Setting up relationships/ contracts with local engineering consultants to assist with timely post-disaster building assessment and reporting strategies.

Assessment: This would be a continuous process. Initial benchmarks would include the creation of a database of potential inspectors and the establishment of a memorandum of understanding between local cities to offer mutual aid. A secondary benchmark would be for the Building Official and City Engineer to develop a contract and/or procedure for deputation of inspectors. All information generated through the completion of this action item should be made available to businesses through the PSRRC.

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ACTION ITEM 4: PARTNER WITH BUSINESSES AND NEIGHBORING GOVERNMENTS TO COORDINATE TRANSPORTATION PLANS IN DISASTERS.

Background: Having transportation operational after a disaster will need to be a priority. Not only is it important for the manufacturing businesses of Everett, who rely on just-in time production, it also will be critical for obtaining hospital supplies following a disaster and for the city's emergency officials to get to their jobs. Businesses will be better able to make their own contingency plans if they have some idea of what the priority and reliability of the city's transportation system will be following a disaster. The city should then try to preempt some concerns the businesses will have about transportation following a disaster and include businesses in discussions on how transportation routes will be repaired following a disaster.

Specific measures of progress include:

1) Have a meeting with the PSRRC, local/state/federal departments of transportation and representative businesses to discuss the priority routes for debris/snow removal.
   a) Have business representatives involved in organizing the priority routes for debris removal in order to keep business needs in mind.
2) Have the PSRRC work with Public Works to encourage businesses to partner with each other to develop a workforce transportation strategy in the event of a hazard.
   This reinforces action items IT2 in hazard mitigation plan.
3) Work with local/state/federal departments of transportation to place priority on having multiple routes to the south of Everett following a disaster.
4) Sharing information about vulnerabilities and mitigation steps with businesses in Everett so that they can take mitigation steps accordingly.
5) Use the educational meetings discussed in Action Item 5 to remind businesses that they are responsible for their own debris removal.
   a) Have information on how to get debris removed following a disaster available to businesses through the PSRRC and at educational meetings.
6) Coordinating road repair with other cities in the County and Region.
7) Emergency management will coordinate with key businesses to ensure that critical employees are able to travel following a disaster.
8) Consider creating a tiered evacuation and re-entry plan for local businesses.
   a) The tiered process would identify businesses that provide critical functions for the city, such as grocery stores, banks etc. that are not a part of emergency management or life safety. The city would implement measures to facilitate the prioritized re-entry of employees in these service areas behind life safety professionals but before the general population.

Assessment: This would be a continuous process. Initial benchmarks would include establishing a procedure for businesses to have input on priority routes or to establish why this is infeasible. Another benchmark would include the creation of a workforce transportation strategy.

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ACTION ITEM 5: BUILD ON CURRENT DISASTER AWARENESS EDUCATION PROGRAMS FOR LOCAL BUSINESSES.

Background: The probability of a business surviving a disaster will ultimately depend on actions taken by the business. The city should then make it a priority to inform businesses of what steps they can take to increase the probability that they will survive. The PSRRC should then partner with the Office of Emergency Management and the Office of Neighborhoods to create a series of workshops that will inform businesses of how they can best prepare for a disaster.

In support of this action item, Everett can pursue the following steps:

1) Educate business owners about the means of seeking disaster assistance. Through the education program, encourage businesses to prepare as much paperwork as possible ahead of time so that they can be submitted quickly following a disaster. This would include informing businesses about the types of records they will need to have access to after a disaster including those required to obtain a business administration loan.
2) Partner with businesses to provide emergency response training to their key employees.
3) Partner with businesses to provide workshops on how businesses can ensure that workers are personally prepared.
4) Have workshops to discuss the benefits and costs of business interruption insurance with small and midsized businesses.
5) Develop a workshop to encourage businesses to establish and test business continuity plans prior to a disaster.
6) Hold a workshop that will inform businesses of non-structural retrofit actions that mitigate losses following a disaster.
7) Develop public education programs that will compare the costs of mitigation versus various types of disaster insurance (flood, fire, earthquake etc.)
8) Partner with the Port of Everett and owners of "Brownfields" in overcoming the long term economic threat posed by multiple hazards that may more severely impact these areas.
    i) Also provide potential businesses with cost effective ways to mitigate these hazards and other potential places to locate within the city.
9) Identify potential post-disaster land use scenarios and work with businesses to show how they may impact recovery and rebuilding.
10) Explore the adoption of one of the following strategies as incentive to encourage businesses to take mitigation steps.
    a) Waivers or reduction in permit fees
    b) Below-market loans
    c) Local tax breaks
    d) Grants to cover the cost of structural analysis/ retrofit
    e) Land use and procedural incentives
    f) Technical assistance

Assessment: This would be a continuous process. Initial benchmarks would include the creation of a curriculum, or packet of information for the meetings with businesses or the identification of separate organizations that would run the events. This action item will be satisfied if the city can demonstrate that it has put in a reasonable amount of effort to educate the businesses of Everett and demonstrate that it has explored possible incentive strategies and implemented the ones that it considers to be most feasible.

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ACTION ITEM 6: EXPAND THE RESPONSIBILITY OF THE BUSINESS IMPROVEMENT AREA TO INCLUDE MITIGATION, PREPAREDNESS, RESPONSE AND RECOVERY.

Backgrou he Everett central business district is uniquely vulnerable. URMs could collapse following an earthquake, injuring occupants and those within the shadow of the falling structure. Streets could be impassible, limiting the economic resiliency of surviving businesses. The train tunnel could also collapse, destroying businesses located above the corridor.

The Business Improvement Area organization could provide a forum to address the district's vulnerabilities.

Guidelines for the implementation of this Action Item include:

1) Encourage the Service area to address issues of vulnerability
2) Provide support for the Service Area to develop a neighborhood plan. This can be accomplished by focusing on the vulnerable areas in downtown Everett when implementing specific action items contained within the Everett Hazard Mitigation Plan update. These include:
   a) Establish programs to encourage building ow to perform structural and non-structural retrofits to brace their property against seismic hazards (E3)
   b) Include businesses in the process of creating a base of Everett's unreinforced masonry buildings and pre-seismic building code structures. (BE4)
   c) Support businesses in adopting the same non-structural mitigation measures that will be implemented by city facilities upon the completion of action item BE5.

Assessment: This item would be complete when the BIA has developed a disaster risk reduction strategy.

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CONSULTED WEBSITES

Association of Bay Area Governments

http://www.abag.ca.gov/bayarea/eqmaps/business/manageit.html

Business Recovery Managers Association

http://www.brma.com/

DisasterRecover.org

http://www.disasterrecovery.org/index.html

Economic Development Administration

http://restoreyoureconomy.org/?page_id=73

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Federal Emergency Management Agency

http://www.fema.gov/privatesector/tips.shtm

http://www.fema.gov/plan/prevent/howto/index.shtm

http://www.ready.gov/business/plan/planning.html

IM Diversity

http://www.imdiversity.com/Villages/Channels/healthcare/Articles/overview.asp

International Economic Development Council

http://www.iedconline.org/

http://restoreyoureconomy.org/

Small Business Administration

http://archive.sba.gov/training/index.html

http://archive.sba.gov/idc/groups/public/documents/sba_homepage/sba_h1n1.pdf

United States Census

http://lehd.did.census.gov/cgi-bin/broker?_SERVICE=industry_focus&_PROGRAM=pgm.top_report.sas&_table=no&_skin=0&_from=pgm.top_report.sas&_top=20&_rankings=1+&_1=ON&_4=ON&_2=ON&_5=ON&_entity=county&_state=wa&_geog=061+&_ind2=off&_ind3=000&_level=naics3&_agegroup=A00+&_sex=0+&_pgmrun=View+Report

http://www.bls.gov/oes/#tables

Washington State Economic Recovery Forecast Council

http://www.erfc.wa.gov/

Washington State Emergency Management Division

http://www.emd.wa.gov/preparedness/business/prep_business_plan.shtml

Workforce Explorer

http://www.workforceexplorer.com/

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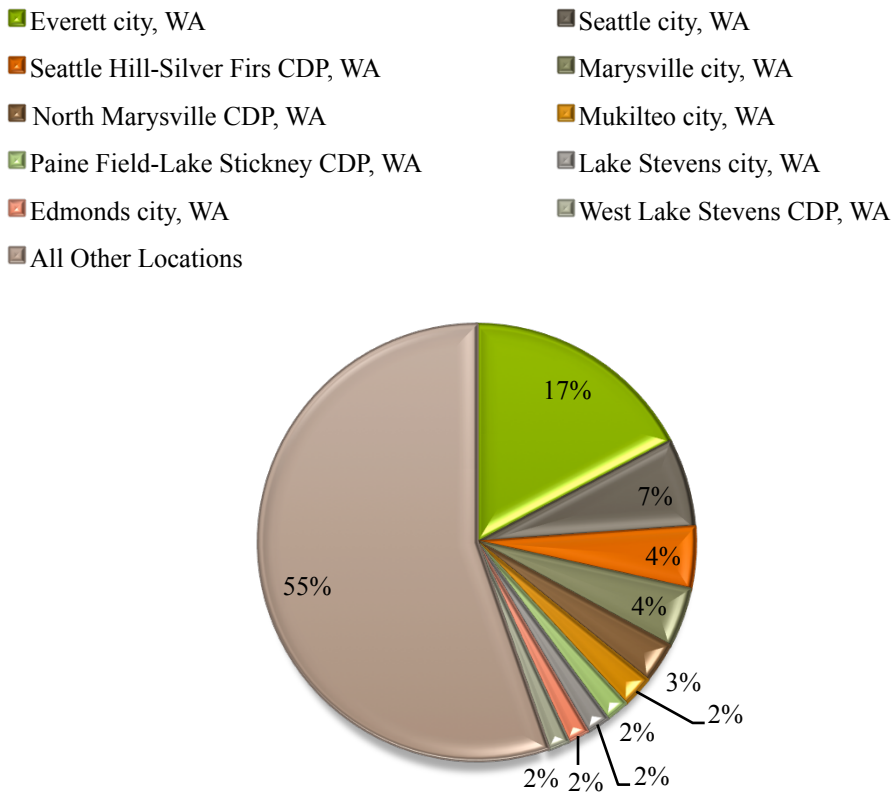
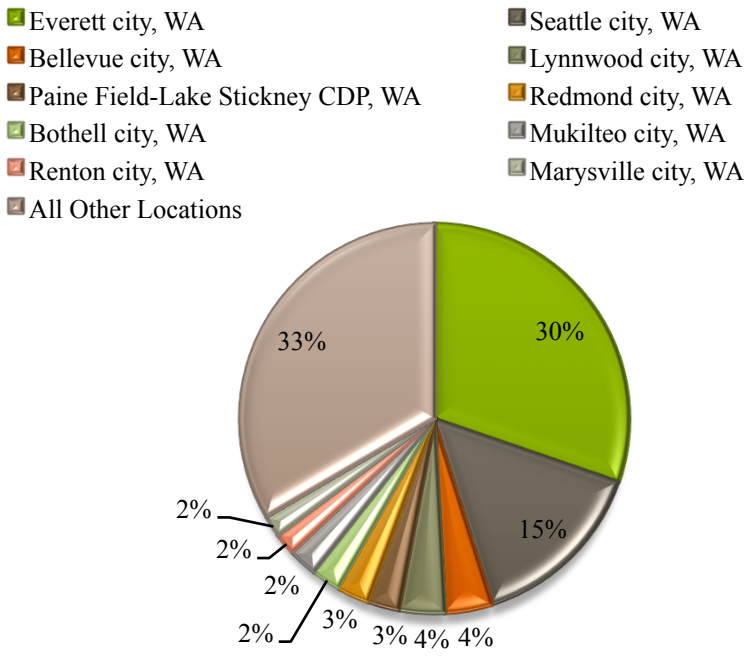
APPENDIX A: TOP 10 CITIES WHERE WORKERS LIVE.



Source: On the map, Longitudinal Employer-Household dynamics

APPENDIX B: TOP 10 CITIES WHERE RESIDENTS WORK.



Source: On the map, Longitudinal Employer-Household dynamics

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APPENDIX C: ACTION ITEMS NOT INCLUDED IN THE PLAN THAT DESERVE FURTHER CONSIDERATION.

1. Explore and develop a repair and reconstruction ordinance to ensure that damaged buildings are repaired and/or retrofitted where appropriate.
2. Develop a rainy day fund for immediate post-disaster grants and loans to local businesses.
3. Help businesses to establish a temporary workforce housing plan.
    a. Encourage businesses to create their own workforce housing plans.
    b. Partner with local real estate agencies to identify potential temporary housing locations for employees after a disaster.
    c. Explore the possibility of establishing subsidized rental locations that people could rent after a disaster.
4. Establish a disaster mitigation incentive program for local businesses, working with insurance companies to consider rate b[illegible] in return for mitigation actions.
5. Coordinate wit[illegible]pital to get critical information collected from victims after a disaster in the field when possible.
6. The city should help facilitate the creation of co-ops between similar businesses in Everett and in surrounding area. These co-ops would be designed to help businesses rebuild and provide alternate work locations in the event of a hazard.
    a. Businesses should be encouraged to partner with businesses within and outside of Everett following a disaster.
    b. Encourage existing businesses associations to fill this role when possible.
7. Explore partnering with a business incubator to encourage new job development in the city of Everett.
8. The city should give special attention to schools and daycare centers when developing their recovery plan.
    a. Work with local school districts to create a coordinated recovery plan.
    b. Include daycares with schools as critical infrastructure for the city of Everett.
    c. Specifically target all critical workers in schools and daycare centers to have emergency response training and to take mitigation steps at home.
9. Perform analysis of current data lines and communication technology in Everett.
    a. Determine potential locations of vulnerability.
    b. Work with private organizations to harden these locations.

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APPENDIX D: EXAMPLE OF A BUSINESS RECOVERY CENTER

These are the guidelines for establishing a Business Recovery Center listed on the website RestoreYourEconomy.org. http://restoreyoureconomy.org/?page_id=93

FINANCING AND TECHNICAL ASSISTANCE FOR BUSINESSES

According to the Institute for Business & Home Safety (IBHS), at least one in four businesses will not re-open after a catastrophic event. Particularly vulnerable are small businesses, because of a host of issues which may include:

- lack of capital and access to financial assistance
- limited workforce options
- lack of insurance or being under-insured
- problems with restoring damaged inventory
- problems with rebuilding property and permitting issues
- problems with finding alternative, temporary workspace
- limited resources/capacity to withstand a few weeks of business disruption
- diminished customer base
- limited access to business/technical assistance resources
- limited or no utility access (water, sewage, telecommunications, etc.)
- lack of knowledge for re-tooling a business in a post-disaster environment

These business closures have devastating impacts on the local economy and the community's recovery, due to reduced employment and tax revenues as well as diminished business services. A business recovery center can play a crucial role in getting local companies the assistance needed to re-open and/or stay open.

WHAT IS A BUSINESS RECOVERY CENTER?

A business recovery center is a one-stop shop set up to provide local, state and federal resources and services for businesses after a catastrophic event. Because their services are tailored to address business needs, they typically are established separately from FEMA disaster recovery centers to avoid confusion with individuals needing social services.

A local economic development organization (EDO) often takes responsibility for establishing the center, in cooperation with local, state and federal partners, so that representation includes the local small business development center (SBDC) and SBA representation. Other representation may include local bank officers, specialized technical assistance counselors, SCORE, chamber

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of commerce, workforce development entities, and other local organizations that provide financial or technical assistance to small businesses. Ideally, a community will have conducted some pre-disaster preparation activities and talked about the process and lead agency for establishing a business recovery center.

ACTION STEPS

The following steps are helpful to consider when establishing a business recovery center:

Step 1: Establish a business recovery center (BRC) as quickly as possible. Most disaster-impacted communities have found it very effective to have the BRC up and running within one to two weeks after a disaster.

Step 2: Select an appropriate location for the business recovery center. Communities typically establish them in the most impacted area to provide close access to affected businesses. Examples include conference space of a local business, a vacant retail space in a mall, a FEMA trailer, etc.

Step 3: Reach out to local, regional and federal partners so the center has representation from a multitude of private, non-profit, and government service providers. Counselors should be prepared to educate businesses on the various financial and technical assistance services available (bridge/gap financing, SBA low-interest loans, etc.), as well as to provide guidance in the application process for federal loans.

Step 4: Develop a marketing and promotion campaign to advertise the center's location and services. Communication with businesses will be a major issue if telecommunication lines are down. Consider alternative promotion methods, such as canvassing flyers directly to impacted businesses; using the local media, particularly radio advertising; advertising on billboards with a hotline number; etc.

Coordinate the various EDOs within the affected area to advertise to their own networks of businesses. For example, chambers of commerce are likely to have the largest network of small businesses. One community in Florida worked with a technology company to provide a mobile alert system to communicate with businesses through text messaging (text messaging gets prioritized in a major disaster/incident). Make sure the local government is advertising the BRC on its website for emergency information as well as posters/flyers at city hall and the disaster recovery center.

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Step 5: Establish a hotline number that business owners can call to get information about the center and its services. Make sure to advertise the hotline number such as on a centrally located billboard and in all promotional efforts.

Step 6: Provide business recovery materials and loan/grant applications in relevant languages to assist major demographic groups in your community. In a Florida community, the BRC provided documents in Spanish and French to reach the community's large Latino and Haitian populations.

Step 7: Disseminate an outreach survey at the BRC for local business owners to complete to gather intelligence on what programs or information they need in the long term. Page 33 of Polk County's Disaster Recovery Plan has an example of an outreach survey.

Step 8: Consider holding workshops at the BRC on specific or common issues. One community brought in a panel of speakers that included IRS representation, which provided critical information to help with business recovery.

Step 9: Consider brief training or providing mental health services to the counselors providing services at the BRC. The counselors should be prepared to listen to many business owners share tearful stories of how their lives have been impacted, and might be overwhelmed.

Step 10: Be prepared to keep the BRC open anywhere from a few months up to a year (for unprecedented disasters like Hurricane Katrina). Consider applying for Department of Labor's National Emergency Grant (NEG) to fund temporary workers at the BRC.

OTHER RESOURCES:

Ready Business was created to educate and empower individuals, small businesses and interested parties to prepare for and respond to emergencies.

Small Business Development Centers (SBDCs) assist small business owners by offering technical assistance to individuals and small businesses both before and after a disaster.

Business Disaster Planning Guidebook is a comprehensive disaster planning resource that provides specific technical assistance on business preparedness and continuity planning, hazards analysis and response, recovery and mitigation, and other resources.

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DisasterRecovery.org is an independent organization dedicated to providing guidance and information about disaster recovery and business continuity planning. Resources available through their website include: plan templates, case studies, and online live support.

Agility Recovery Solutions provides business continuity and recovery strategies, consulting services and testing options to businesses across the United States and Canada.

APPENDIX E: ECONOMIC MITIGATION SURVEY

Thank you for filling out the Economic Mitigation survey. Your answers will help us to better understand the needs of Everett business following a disaster.

In which neighborhood is your business located?

Please select the industry of your business

(Please select the primary industry)

Approximately how many full-time employees do you have?

(Please list your full-time and part-time employees separately)

Approximately how many part-time employees do you have?

(Please list your full-time and part-time employees separately)

Please check the category that best describes your geographic market.

- The city of Everett
- The central Puget Sound region
- The Pacific Northwest
- The US as a whole

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- ○ The global marketplace
- ◉ Other: _____

Please check the category that best describes the location of your suppliers.

- ○ The city of Everett
- ○ The central Puget Sound region
- ○ The Pacific Northwest
- ○ The US as a whole
- ○ The global marketplace
- ◉ Other: _____

Which of the following preparedness actions have you taken?

- ☐ Purchased earthquake insurance
- ☐ Purchased flood insurance
- ☐ Purchased business disruption insurance
- ☐ Had a professional assess the earthquake safety of your building
- ☐ Invested in an earthquake retrofit for your building
- ☐ Invested in non-structural retrofits (ex. bracing shelves, equipment or heavy objects)
- ☐ Built redundancy into business (ex backup machines, backup generator etc)
- ☐ Stored critical data offsite
- ☐ Developed a business emergency plan
- ☐ Developed a business recovery plan
- ☐ Conducted drills
- ☐ Trained employees in emergency response
- ☐ Provided first aid training for employees or stored first aid supplies
- ☐ Developed a workforce housing plan in case workers become stranded
- ☐ Developed a workforce transportation strategy
- ☐ Other: _____

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Suppose travel times doubled across the region following an earthquake disaster. How long could this be tolerated before the business suffered severe revenue loss?

- Up to 1 day
- Up to 1 week
- Up to 2 weeks
- Up to 1 month
- We would not suffer severe revenue loss even if this situation persisted for over a month

Suppose access to electricity were disrupted following an earthquake disaster. How long could this be tolerated before the business suffered severe revenue loss?

- Up to 1 day
- Up to 1 week
- Up to 2 weeks
- Up to 1 month
- We would not suffer severe revenue loss even if this situation persisted for over a month

Suppose that access to potable water were disrupted following a disaster. How long could this be tolerated before the business suffered severe revenue loss?

- Up to 1 day
- Up to 1 week
- Up to 2 weeks
- Up to 1 month
- We would not suffer severe revenue loss even if this situation persisted for over a month

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Suppose that communication lines (internet access, landlines, cell phone reception etc.) were disrupted following a disaster. How long could this be tolerated before the business suffered severe revenue loss?

- Up to 1 day
- Up to 1 week
- Up to 2 weeks
- Up to 1 month
- We would not suffer severe revenue loss even if this situation persisted for over a month

Suppose that structural damage prevented you from operating out of your main facility in Everett. How long could this be tolerated before the business suffered severe revenue loss?

- Up to 1 day
- Up to 1 week
- Up to 2 weeks
- Up to 1 month
- We would not suffer severe revenue loss even if this situation persisted for over a month

What percentage of your workforce would be able to telecommute in the event of a disaster without resulting in severe revenue loss?

What do you believe is the biggest threat to your business following a disaster?

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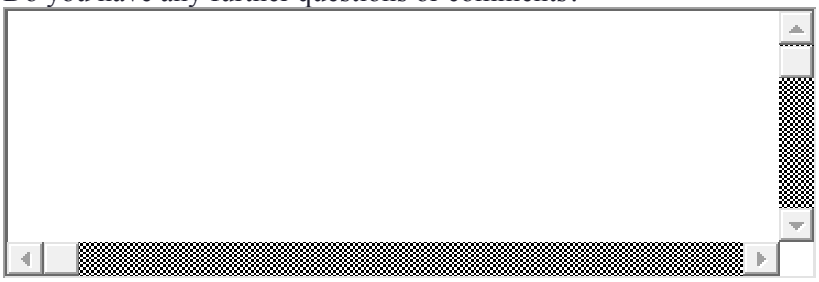
Do you have any further questions or comments?



If you would like to receive information about the plan's progress, please leave your email address below.

Submit

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