

Introduction

Transportation systems available in King County include air, rail, water and road. All of these systems and supporting transportation resources provide services on a national, regional and local basis and are critical to local, regional, national and international commerce. While highway traffic accidents are a daily occurrence, transportation accidents with impacts to local commerce or resulting in transportation diversions are fairly rare.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Hazard Identification

King County is a transportation hub in the northwest. Major highways, air transportation, railroad operations and a deep water marine port all exist in King county.

Highways: Privately owned vehicles and local bus services traveling on area freeways, highways and roads provide the primary means of transportation for individuals in King County. The principal north-south arterials are Interstate 5 and Interstate 405. Interstate 90, which connects Seattle with Spokane and points east, is the most heavily traveled east-west corridor. US Highway 2 crosses the Cascade Mountains in northeast King County at Steven’s Pass. The two Floating Bridges over Lake Washington link Seattle to the eastern portion of the county as well as eastern Washington, Idaho, Montana and other states.

Air Transportation: The largest airport in King County, for both passenger and cargo traffic, is the Seattle-Tacoma International Airport, where domestic and international service is provided by several major airlines. Sea-Tac is the largest airport in Washington and was ranked 18th in the United States for passenger carriage in 1998.⁵³

⁵³ Washington State Department of Transportation Aviation Division Report on the Economic Impacts of Seattle-Tacoma International Airport,
<http://www.wsdot.wa.gov/aviation/EconImpacts/NWR/SeaTac.pdf>

Sea-Tac generates substantial economic impacts to the region, as shown by the total combined direct output of on-airport tenants and general aviation and air carrier visitors, which was approximately \$11.6 billion. Additionally, these expenditures were responsible for approximately 94,952 jobs, generating \$1.8 billion in wages. Sea-Tac also provides numerous secondary impacts to the King County area through visiting passengers and airport-dependant firms, accounting for 22,486 jobs and posting wages of \$1 billion. The total employment impact of Sea-Tac stands at approximately 146,245 jobs earning \$3.6 billion, while the sum total impact of economic activity was \$16.9 billion.⁵⁴

Rail Transportation: Rail Carriers in this area include Burlington Northern and the Union Pacific for freight traffic, and Amtrak for passenger travel. North-South railways travel along the coastline though much of King County. East-West rail traffic primarily uses Steven's Pass, traveling a 7-mile tunnel through the Cascade Mountains. Sounder commuter rail service is initially providing one-way service during peak hours between Tacoma and Seattle on weekdays, while service will eventually be expanded to operate along the entire 82-mile track between Everett and Lakewood.⁵⁵

Marine Transportation: As with other modes of transportation, there are both passengers and cargo transported in King County. The Washington State Ferry System provides the primary means of marine passenger transport in our region with four ferry terminals located in the County jurisdiction. In 1995, 1256 different ships made 3,619 calls to Puget Sound ports either through the Straits of Juan de Fuca or the Straits of Georgia.⁵⁶

Washington State Ferries is the largest ferry transit system in the United States and one of the busiest, carrying over 25 million riders in 2003, and is the largest transit system in Washington State, second only to King County Metro. Commuters make up about 50% of the annual ridership, as exemplified by the busiest commuter route, Bainbridge to Seattle, where 20,000 people are carried in an average day.⁵⁷ Additional water transport systems exist with the Port of Seattle and numerous private marine facilities located on Puget Sound, Lake Union and Lake Washington, which provide services and docking facilities for marine cargo and tanker traffic.

⁵⁴ Washington State Department of Transportation Aviation Division Report on the Economic Impacts of Seattle-Tacoma International Airport,

<http://www.wsdot.wa.gov/aviation/EconImpacts/NWR/SeaTac.pdf>

⁵⁵ Pierce County Department of Emergency Management, Hazard Identification and Vulnerability Assessment, Technological Hazards: Transportation Accidents,

<http://www.co.pierce.wa.us/pc/abtus/ourorg/dem/techaz.htm>

⁵⁶ Washington State Office of Marine Safety, Vessel Entries and Transits for Washington Waters, 1995, p B2.

⁵⁷ Washington State Ferries: An Introduction to the Largest Ferry System in the Nation,

<http://www.wsdot.wa.gov/ferries/pdf/WSFLargest.pdf>

Transportation Impacts

The Puget Sound region is vulnerable to all types of transportation emergencies. Growth in this region will continue to increase the risk of transportation accidents.

Highways: King County is likely to experience an increase of accidents along our highways as congestion increases. Many accidents involve rain, high speeds, and heavy traffic. These conditions are certainly not unique, as rain and fog are common, especially during the winter months, while heavy traffic and high speeds are common throughout the year. The bridges in King County play an important role in commerce and in the daily commute. Thanksgiving Day weekend in 1990, a span of the I-90 floating bridge over Lake Washington sank. While the span was replaced and a second bridge built, traffic patterns were disrupted for two years.

Air Transportation: The Puget Sound region is vulnerable to two types of major air transportation accidents. One is a crash involving a large passenger aircraft, while the other is an airplane crash causing casualties on the ground. Despite the large number of planes flying over heavily populated areas, the number of crashes killing or injuring non-passengers is quite small. In general, crashes are most likely to occur within five miles of an airport, typically along flight paths. The area within a five mile radius of airports in the Puget Sound region are heavily populated and therefore could result in a mass casualty event if a plane crashed in these areas, even if the plane itself was not a passenger aircraft. Weather is a significant factor in these air transportation accidents. Down bursts, thunderstorms, and ice are the primary weather-related events that increase risk.

Sea-Tac Airport is becoming as congested as some of the nation's major airports including Chicago's O'Hare and New York City's Kennedy airports. Currently, King County International Airport averages 400,000 flights per year while Sea-Tac is reaching its design capacity with 350,000 flights per year.⁵⁸ The proximity of King County International Airport's flight path also increases the risk. The flight paths for these two airports overlap, increasing the risk of mid-air collisions. With the completion of a third runway, congestion will be reduced, but the total volume of flights over Seattle will probably increase, offsetting some of the benefits of the reduced congestion.

Rail Transportation: An accident involving an Amtrak train traveling through Washington State could result in a mass casualty incident. However, the greatest risk associated with freight trains is a spill of hazardous materials.⁵⁹ Nevertheless, with the development of Sound Transit, King County's railway vulnerability will

⁵⁸ City of Seattle Emergency Management, Human Caused Disasters: Aircraft Accidents Resource Section, http://www.cityofseattle.net/emergency_mgt/hazards/aircraftAccidents.htm

⁵⁹ Transportation accidents involving hazardous materials releases and spills are discussed in a separate HIVA section.

increase, as new hazards may present themselves with the continued growth of this light rail service.

Marine Transportation: In addition to the Puget Sound itself, the region contains many smaller bodies of water. These areas are vulnerable to shipping and boating accidents, as well as those involving ferries. Ferry accidents could result in a mass casualty incident that may be difficult to address, though the United States Coast Guard has the primary responsibility for safety and rescue on the open waterways. Major emergencies associated with freight vessels though, are more likely to result from spills or collisions with passenger vessels.

History of Events

Highway Accidents: King County has averaged around 117 traffic fatalities during the past nine years.⁶⁰ Past history also shows the potential for major incidents, like a 42 car pileup that occurred in 1996, closing southbound Interstate 5 for four hours, and was responsible for 23 injuries and one death.

Marine Accidents: It is fortunate that the Puget Sound region has not experienced a major incident involving a Washington State Ferry, but with an examination of the history of near misses, one can see that potential for a fatal accident does exist. For example, two incidents in 1994 involved a ferry running aground off Orcas Island, as well as a ferry colliding with a pleasure craft while attempting to dock.⁶¹ Additionally, in the case of freight vessels, a Canadian Study that examined past collisions, accidents, and groundings in the Straits of Juan de Fuca, found that 56% involved bulk carriers, 12% involved container vessels, 12% involved passenger vessels and 18% involved tankers. Tankers are currently the most heavily regulated, as the Exxon Valdez oil spill in Alaska caused Washington State to pass strict regulations on their usage.

Air Accidents: There has not been a major air accident in the Puget Sound region in recent history. However, accidents in other parts of the country allow us to examine the potential vulnerabilities we face in this area. In 1995 there were 175 deaths associated with large scheduled airline traffic and 732 deaths associated with general aviation flights. King County is at risk for these threats, as the region experiences extensive air traffic of both these types. SeaTac airport handles most of the scheduled airline traffic while King County International Airport/Boeing Field handles most of the general aviation traffic. A relatively minor commercial air traffic accident occurred when a Dash 8 commuter plane lost control after landing at SeaTac International Airport. It crashed into the terminal building causing some damage but no deaths or service disruptions.

⁶⁰ Washington Traffic Safety Commission, 1993-2001: Fatalities by County, <http://www.wtsc.wa.gov/stats/Table3.pdf>

⁶¹ Taken from 1997 King County Hazard Identification and Vulnerability Assessment.

Rail Accidents: The Puget Sound region has not experienced a major rail accident in recent history, however recent examples point to the potential for this hazard to occur in King County. For example, a massive landslide in nearby Snohomish County pushed five freight cars into Puget Sound, knocking out 100 yards of track. Railroad-related fatalities, on the other hand, are generally the result of people walking on or near railroad tracks. A 1994 statistic gathered that almost 75% of railroad-related deaths were attributed to such a situation.⁶²

Past Mitigation Efforts

The source and location of transportation accidents can vary widely but the response is typically the same. Response is focused on determining the presence or absence of hazardous materials and then assisting the injured. Local emergency managers should work with transportation planners to mitigate current risks associated with major transportation corridors. Additionally these agencies should work together when planning new infrastructure such as the Regional Transit Authority or a third runway at SeaTac Airport to minimize associated risks.

For any type of transportation accident, mitigation involves first and foremost, the following of safety guidelines as well as using caution in unusual conditions or situations. Inspections required on a regular basis on carriers, as well as infrastructure like highways, airports, railroad, or marine systems must be carried through as required by the regulations in place in order to prevent transportation incidents. In addition, as new technology comes into being or new information is gathered as to the cause of transportation accidents, regulations on safety and maintenance need to be updated.⁶³

Additionally, local media outlets, as well as King County Department of Transportation take care to keep the public updated of transportation-related emergencies and resulting highway, airport, rail, or ferry delays and closures. The Regional Public Information Network (RPIN) also provides the public with a central source for breaking news by providing links to information being released by a variety of agencies and organizations in central Puget Sound, including those incidents involving transportation accidents.⁶⁴ Citizens can subscribe to RPIN to stay abreast of breaking transportation news and other regional alerts.

⁶² Taken from 1997 King County Hazard Identification and Vulnerability Assessment.

⁶³ Pierce County Department of Emergency Management, Hazard Identification and Vulnerability Assessment, Technological Hazards: Transportation Accidents, <http://www.co.pierce.wa.us/pc/abtus/ourorg/dem/techaz.htm>

⁶⁴ Regional Public Information Network (RPIN), <http://www.govlink.org/rpin/>