EMERGENCY FUEL PLANNING FRAMEWORK

Washington State Homeland Security
Region 6 Critical Infrastructure Working Group

March 31, 2022

Contents

Administrative Handling Instructions

1. The title of this document is Fuel Planning Framework
2. The information in this Framework is Unclassified.

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Executive Summary

Regional petroleum fuel supply planning and coordination was identified as a priority by the Region 6 Critical Infrastructure Working Group (CIWG) following several interdependencies exercises and workshops over the past decade. Washington State maintains the fifth largest crude oil refining capacity in the nation, despite zero in-state oil production. Refineries use crude oils delivered via pipeline from Canada or from port facilities. Infrastructure supporting the delivery of crude to refineries and refined products to market includes pipelines, storage and distribution terminals, port facilities, rail, and road. Workshops and surveys were conducted for this framework development to provide a baseline on current capabilities and provide stakeholders with a better understanding of how Washington State fuel supply plans will be integrated into local planning efforts.

The timeline for those plans has been extended, but this framework will initiate King County planning that will feed into upcoming state fuel supply planning efforts. The Framework outlines the purpose and scope of this initiative, specific hazards related to the fuel critical infrastructure, and demographics of King County, with planning assumptions and considerations for King County Office of Emergency Management (KCOEM) Disaster Fuel Supply Planning.

A major outcome from the planning project is the Geospatial Information System (GIS) mapping tool that was created in coordination with the King County GIS office. The tool provides KCOEM staff with a snapshot of current fuel asset locations and capacities. Additional map layers can be used to overlay current power outages, and live transportation status maps provide the steady state and situational awareness of impacts to the liquid fuel supply system. The GIS tool is live and can now be used for planning and exercise purposes. This Framework provides recommendations to King County on next steps for fuel planning and coordination.

Alternative fuels and longer-term needs should be considered for future planning. Dependence on the energy system for battery charging and fuel cell technology will become more commonplace in the near future, and plans will need to address those changes. This will be important for continuity of operations as more and more state and local governments convert to electric powered vehicles. Lastly, of significant note, this planning process was conducted during the COVID-19 pandemic which led to several limitations with meeting and conducting in-person workshops and interviews.

Purpose

The purpose of the Fuel Project and Planning Framework is to provide guidance to King County Office of Emergency Management (KCOEM) on how to anticipate, prepare for, and respond to regional liquid fuels shortages before state and federal resources arrive. Petroleum for the purpose of this framework includes transmission pipelines for petroleum (gasoline, diesel, jet fuel, crude oil), terminals and refineries, and their owners and operators. This

framework will take into consideration the need for fuel and related resources that may be outside the geographical boundaries of King County. Coordination between other jurisdictions and the Washington State Energy Office will be necessary to ensure the amount of needed fuels can be supplied to critical assets. Damage assessment and situational awareness of impacted services to the regional distribution system is also addressed through GIS tools developed for this project. The goal for KCOEM and its partners is to address emergencies and disasters related to fuel shortages and resource requests. This Framework highlights the need to collaborate between infrastructures and state and federal resources to address the region's priorities and help inform them so they can develop appropriate continuity planning based on need. The framework intends to provide the King County Office of Emergency Management with tools and considerations to help prioritize fuel resources based upon the specific emergency being faced at the time.

Scope

The scope covers King County and assists emergency fuel managers in understanding the dependencies and interdependencies that exist between the various infrastructures. The Framework is intended to help identify, coordinate, and prioritize which infrastructures-public and private-should have priority access to the fuels that are available. This project is coordinated by King County OEM CIWG in partnership with the Washington State Department of Commerce and City of Seattle fuel planning efforts to inform what the priorities will be in a fuel emergency. The scope covers King County and assists emergency fuel managers in understanding the dependencies and interdependencies that exist between the various infrastructures. GIS tools are used to establish a baseline assessment of the current capacity of King County's distribution system. Past work and the GIS baseline assessment have also been factored into the fuel system. Even with this Framework in place, there will be a need for additional pre-disaster planning and preparations related to fuel disruptions and resupply.

<u>Homeland Security Region 6</u>

Washington State has organized into 9 separate Homeland Security Regions. Geographic King County is considered Washington State Homeland Security Region 6. The King County Office of Emergency Management resides within the Department of Executive Services, and during an emergency activation reports directly to the County Executive. KCOEM provides staff support to the King County Emergency Management Advisory Committee (EMAC). Committee membership includes Tribal nations, cities, special purpose districts, the Port of Seattle, Utilities, county departments, public safety, EMS and hospital organizations, building officials, the American Red Cross and private sector representatives.

King County Office of Emergency Management serves unincorporated King County, coordinates County Agencies and other regional jurisdictions. By ordinance, the office also serves as "the coordinating entity for cities, county governmental departments, and other appropriate agencies during incidents and events of regional significance." The following cities of Algona, Auburn, Beaux Arts, Bellevue, Black Diamond, Bothell, Burien, Carnation, Clyde

Hill, Covington, Des Moines, Duvall, Enumclaw, Federal Way, Hunts Point, Issaquah, Kent, Kirkland, Maple Valley, Medina, Mercer Island, Milton, Newcastle, North Bend, Pacific, Redmond, Renton, Sammamish, Seattle, Shoreline, Skykomish, Snoqualmie, Tukwila, Woodinville and Yarrow Point are served by their respective Offices or Departments of Emergency Management or designated personnel.

King County Fuel Assets and Demographics

Washington State has the fifth highest oil refining capacity of any state. Refineries use crude oils delivered via pipeline from Canada or from port facilities. Infrastructure supporting the delivery of crude to refineries and refined products to market includes pipelines, storage and distribution terminals, port facilities, rail, and road. As of 2021, there are five refineries in Washington State with a joint capacity of 651,700 b/d[1]. The refineries of Cherry Point, Shell Anacortes, Marathon Anacortes, Ferndale, and U.S. Oil all contribute to the regional fuel supply. These facilities source crude oil from the Bakken region in the United States, Alberta's oil sands, and Alaska's North Slope. Supplies from these refineries go to markets in the Puget Sound and entire West Coast, as well as foreign markets.

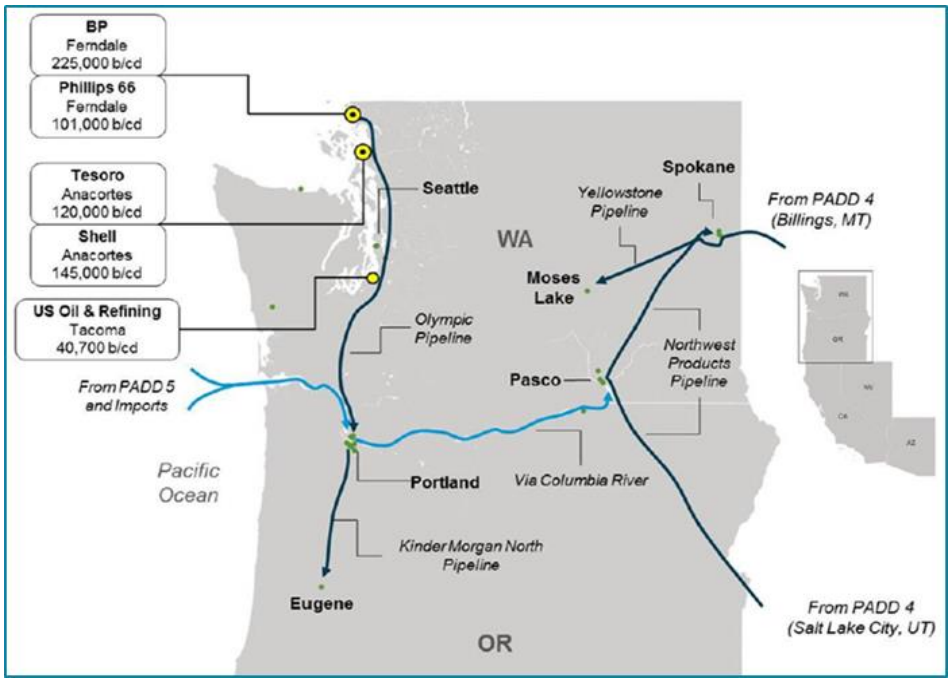

Figure 1. Map of Washington State Fuel Supply Chain

Washington has 25 petroleum terminals distributed around the state. In general, fuel terminals receive product by pipeline and are used to fill fuel trucks for localized delivery. Roughly 76% of terminals in the state have the capacity to distribute supplies via truckload. Some terminals are multi-modal, with 50% of terminals capable of distributing fuel via marine systems, and 39% are able to receive and send product via railway.

[1] https://www.eia.gov/dnav/pet/pet_pnp_cap1_dcu_nus_a.htm

The Cascade Mountain range effectively divides the fuel distribution system of the state. There is no pipeline infrastructure connecting the eastern and western regions. Negligible amounts of refined product are moved across the mountains via truck or rail, but this is considered infeasible. Because of this, the State Energy Office considers Washington State to have two fuel supply chains with considerations unique to each. Washington is among the top 10 states in the nation in jet fuel consumption due to the several large U.S. Air Force and U.S. Navy installations located on both the west and east sides. In 2019, Washington consumed 19,013,000 barrels of jet fuel and 114,000 barrels of aviation gasoline[2]. To help support this demand, three out of five in-state refineries produce jet fuel. The International Seattle-Tacoma Airport has a direct fuel delivery pipeline, and the rest of the regional airports receive fuel via truck delivery.

The Puget Sound regional counties of King, Kitsap, Pierce, and Snohomish consume approximately 1 billion gallons of gasoline and 220 million gallons of diesel annually. Petroleum fuels are supplied to King County and all of Western Washington via the Olympic Pipeline, the sole pipeline that comes from the petroleum refineries in Whatcom County. These lines provide gasoline, diesel, and aviation fuels. There is no other source for these fuels to be supplied to the region in quantity. There is one other small refinery in the area, but their production is very limited in comparison to the fuels delivered via the Olympic Pipeline. This illustrates the need to coordinate fuel planning around the Puget Sound because of the interconnections.

King County is not connected to the larger eastern U.S. pipeline network. Refineries are supplied with crude oil by rail and non-redundant pipelines from Canada. Emergency responders, critical infrastructure, and the economy are all reliant on the fuel supply system with limited redundancy available during major to catastrophic disasters. Western Washington's refined fuels are supplied via the Olympic Pipeline which travels along the I-5 corridor down to Oregon. There is no redundant pipeline that can mitigate the loss of this pipeline, and trucking could only supply limited resources in a disaster. Major storage terminal facilities along this corridor include Harbor Island at the Port of Seattle and Swissport at SeaTac Airport. In neighboring Pierce County, U.S. Oil has refining capabilities and potentially could receive shipments via marine waterways, but this would still not address the supply disruption that could occur in a catastrophic disaster. Demands from Western Washington and Oregon will create prioritization challenges on the supply availability of fuel due to potential damage to one or more pipelines.

For the purpose of this Framework, it is important to understand the terms and references of the fuel supply chain.

- **Refinery** - is an industrial process plant where petroleum (crude oil) is transformed and refined into useful products such as gasoline (petrol), diesel fuel, asphalt base, fuel oils, heating oil, kerosene, liquefied petroleum gas.

[2] CISA, "Region X Petroleum Profile, (March 9, 2020).

- **Pipeline** - is a linear piece of infrastructure designed for the long-distance transportation of a liquid or gas through a system of pipes. It is typically used to move large amounts of product to a market area for storage and consumption.
- **Terminal** - an industrial facility for the storage and distribution of oil, petroleum, and other refined products to retailers. Terminals may be connected to pipelines or may be in close proximity to refineries.
- **Distribution** - Finished products generally spend little time in the tank farms of an oil terminal. Most terminals are designed to get tanker trucks filled and, on the road again as quickly and safely as possible. Each tanker is typically divided into multiple compartments, so that different grades of gasoline can be loaded — in the United States, diesel is never carried in the same tanker vehicle as gasoline, so an entirely different tanker is used to deliver diesel fuel.

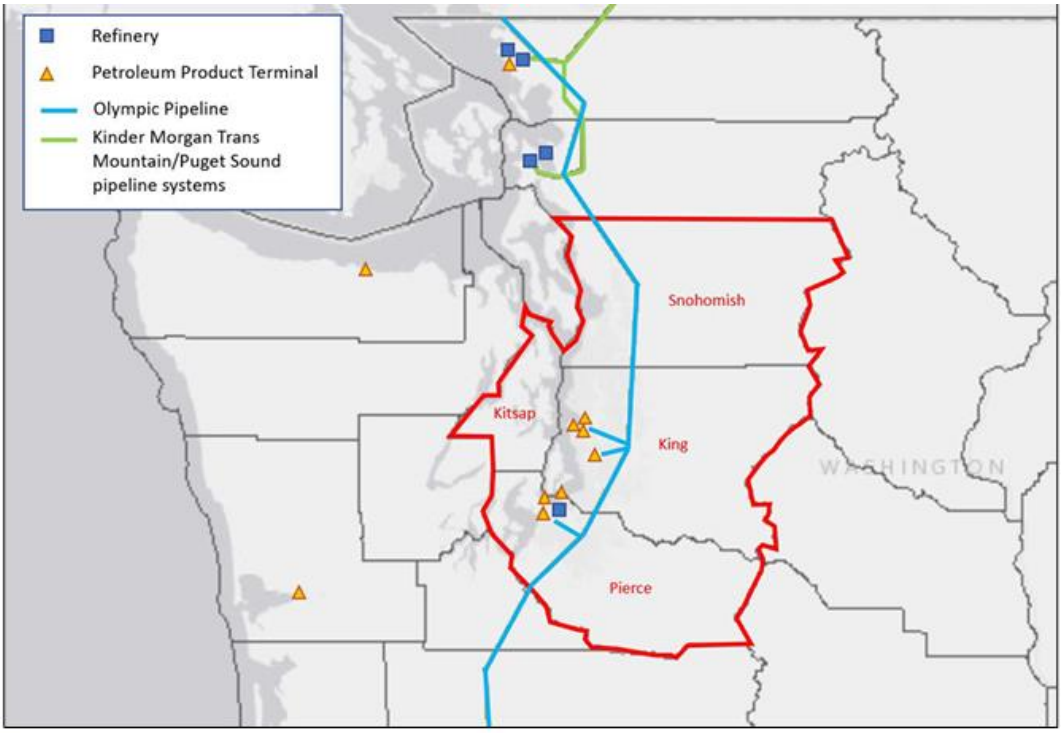

Figure 2. Map of Petroleum Infrastructure in the greater Puget Sound Region (red outline), Source EIA

Demographics

King County is home to an estimated 2.25 million people with an average density of 913 people per square mile. All but about 200,000 of those residents live in one of the county's 39 cities and towns.

Two-thirds (66.2%) of King County residents identify as white, and another fifth (19.70%) identify as Asian American. Nearly ten percent (9.9%) are Hispanic or Latino, 7% are African American, and nearly 2% are American Indian, Alaska Native, or Native Hawaiian or other Pacific Islander. About 5% of residents identify as two or more races.

Over half (52.50%) of King County residents over age 25 have a bachelor's degree, and 93% have a high school degree. Currently 70% of residents over age 16 participate in the labor market, with a median household income of $94,974, though 7.7% of residents are at or below the federal poverty line. Just over half (56.7%) of King County households are homeowners, with a median home value of $745,000.[3]

Threats and Hazards

Crude oil is the main component in the process of making liquid fuels (gasoline, diesel, and jet fuel). All of the crude oil refined in the region originates outside Washington State. Oil is shipped to the refineries from various transportation modes. Refineries depend on rail, maritime, and pipeline shipments of crude oil. If these transportation routes are disrupted or destroyed, refineries will not be able to produce liquid fuels for the region. The threats and hazards identified are based on the 2020 King County Regional Hazard Mitigation Plan.

The fuel supply chain within and connected to Washington State is dynamic and subject to fluctuation. Any significant bottleneck in the supply of fuel resources or sudden increase in demand could cause disruption, often caused by delivery interruption from natural or human-caused hazard incidents, meteorological events, infrastructure equipment failure and accidents, or simply inadequate fuel supply to meet demand. King County Regional Hazard Mitigation Plan Risk Assessment covers 8 natural and 6 human caused hazards.[4]

- Avalanche
- Earthquake
- Tsunami
- Volcano
- Landslide
- Wildfire
- Flood
- Severe Weather

[3] 2020 data - https://www.census.gov/quickfacts/kingcountywashington

[4] https://kingcounty.gov/depts/emergency-management/emergency-management-professionals/regional-hazard-mitigation-plan.aspx

- Hazardous Materials
- Health Incident
- Terrorism
- Civil Disturbance
- Cyber Incident
- Dam Failure

Storage terminals provide nodes for distribution of liquid fuels in the region. These large holding tanks provide ease of access for fuel distributors to deliver liquid fuels to area stations and maritime shipping assets. Some critical nodes of the fuel supply system in Western Washington are located in higher risk areas that could be impacted by various hazards. Distribution from terminals and refineries relies on pipelines and specialized trucks.

Catastrophic Disruption

The most likely scenario to impact the whole Pacific Northwest fuel supply chain is an earthquake. Washington State has several active fault lines which could cause severe or catastrophic disruptions to refineries and distribution infrastructure. Figure 3 below indicates several large fault lines which intersect the I-5 corridor.

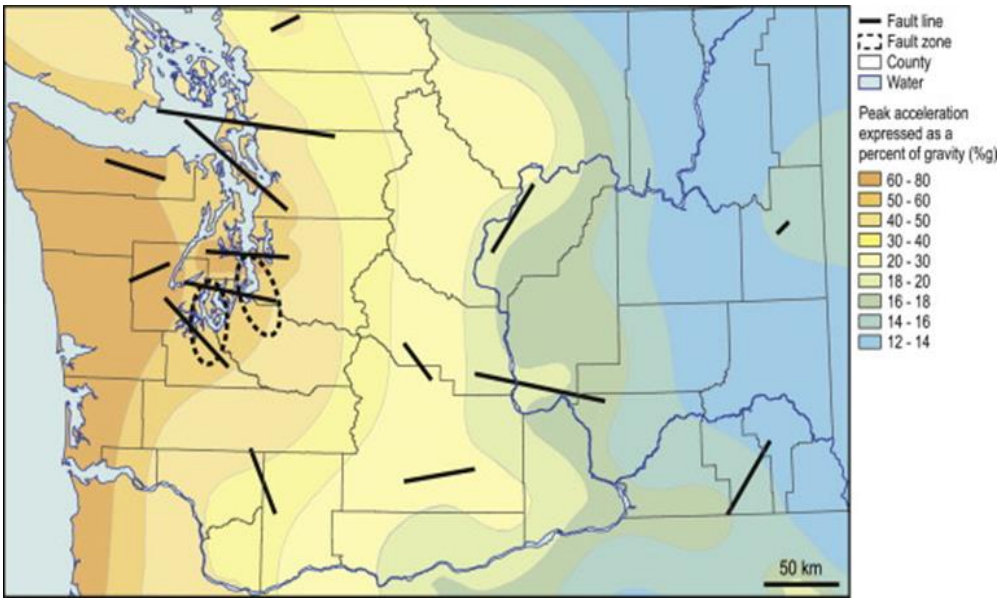

Figure 3. Probabilistic Seismic Hazard Map for Washington, Petersen Et Al., (2011).

Earthquake/Liquefaction

There is a cumulative 20% chance of a catastrophic Cascadia Subduction Zone or Seattle Fault earthquake affecting King County in the next 50 years. The above projection does not include the risk of a deep fault earthquake such as the 2001 Nisqually earthquake, which has

an estimated 84% chance of recurrence over the next 50 years. A catastrophic earthquake of this magnitude would destroy infrastructure and disrupt petroleum distribution services. It is estimated 75% of bridges within King County would be inoperable for at least one to three months immediately following a catastrophic earthquake, which could cause further delays in restoring service.

Port facilities and the airport are two of the primary fuel storage sites for the region, though there are additional storage facilities with limited capacity. Past seismic research has shown that port and airport facilities are located in potential liquefaction zones that could impact their integrity and usage. Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other rapid loading. Liquefaction occurs in saturated soils, that is, soils in which the space between individual particles is completely filled with water. When liquefaction occurs, the strength of the soil decreases, and the ability of a soil deposit to support foundations for buildings and bridges is reduced. The two largest storage facilities are located in known liquefaction zones that could eliminate or disrupt their usage.

Liquefaction has been found to cause far more damage to underground pipes and conduit systems than ground movement. This was noted in the Christchurch Earthquakes of 2010 and 2011. It is important to consider that most, if not all, current supply, storage, and distribution systems will be impacted from a major earthquake. Damage assessment will need to be executed, and it will take time to restart the system. Direct impacts from earthquakes may include damage to structures like buildings, pipelines, roadways, and bridges. Secondary impacts from earthquakes are common and can include tsunamis, seiches, and landslides.

Figure 4. Satellite Image of Harbor Island, Google

Cybersecurity

Information technology systems are integrated into critical infrastructures across the U.S., including the fuel distribution infrastructure in King County. Systems like Supervisory Control and Data Acquisition (SCADA)[5] allows industrial organizations to monitor, gather, and process real-time data on their facilities, controlling processes locally or at remote locations. Although these systems are relatively secure and safe, they have been compromised in recent years by cyber criminals.

The 2021 ransomware attack on the Colonial Pipeline halted 5,500 miles of pipeline for six days, disrupting a major fuel distribution source for the East Coast. This event was a real-world example of the cyber threat posed by bad actors. The Olympic Pipeline that runs through King County is similarly at risk of attack by cyber threats.

[5]https://www.whitehouse.gov/briefing-room/statements-releases/2021/07/28/national-security-memorandum-on-improving-cybersecurity-for-critical-infrastructure-control-systems/

Additionally, the increasing need for viable telecommunications is also important for remote accessing critical infrastructure for industrial control systems. The inability to have remote access to these fuel distribution points could cause severe safety risks and disrupt service.

Power Outage

Mechanical pumps are a key component of providing fuel to a region, moving product through large underground pipelines or to a neighboring fueling station. Without power or emergency backup power, mechanical pumps will fail and the ability to dispense fuel will be limited to handheld fuel containers, manual pumps, and larger gravity tanks. With limited workarounds and supplies of emergency fuel for power generation, there will be major disruptions to services. Restoring power after a wide-area outage can be difficult, as power stations need to be brought back on-line.

Local fueling stations will have difficulty processing credit cards without power. Washington State does not mandate gas stations to plan and equip for emergency power so there would be limitations on supplying fuel even manually. There are potential locations that have the specialized connections (pigtails) for mobile generators to provide power but those are limited.

Flooding and Coastal Inundation

Several major fuel storage racks are located in the King County flood zones, making the supply of diesel and gasoline vulnerable to flooding. These storage facilities provide fuel for local gas stations across the region. While the likelihood is low, a tsunami or seiche could potentially impact Harbor Island facilities and properties with water inundation. (See Figure 4) Likewise, the main jet fuel pipeline that supplies SeaTac Airport is located within the Green River Valley, which is susceptible to flooding. In case of flooding or water inundation, pump stations will become inundated with water and cause the transport of jet fuel to cease. This will impact air traffic within the region and will limit the ability to refuel in sites through the western parts of the county.

The most catastrophic scenario is an earthquake on the Cascadia Subduction Zone (CSZ) off the coast which has the potential to cause severe shaking, tsunami inundation, and liquefaction that will impact a large portion of the Pacific Northwest and cause long-term supply chain disruption. (See Figure 5 below)

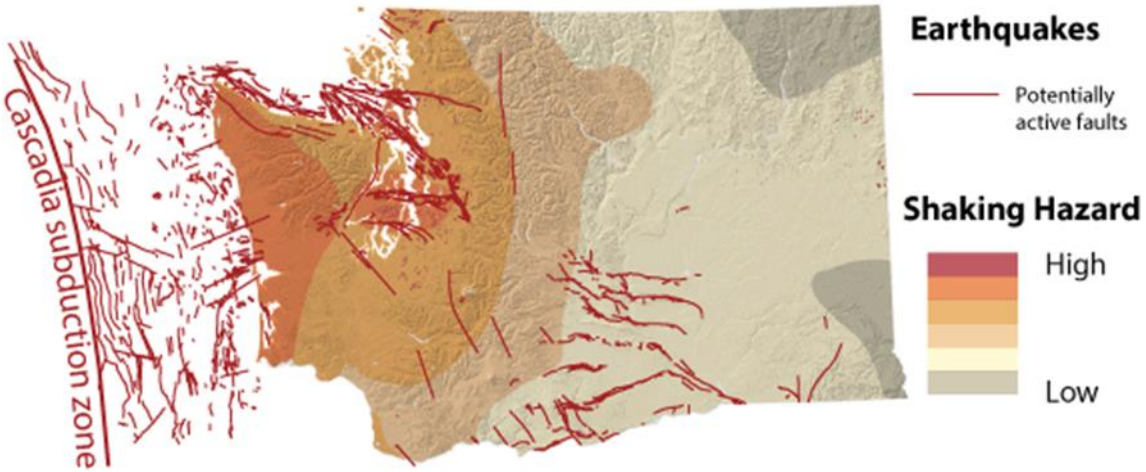

Figure 5. Impacts of The Cascadia Subduction Zone (DNR, 2007)

The United States Geological Survey (USGS) has estimated that there is an 84% chance of a magnitude 6.5 or greater deep earthquake over the next 50 years. The CSZ is capable of extreme energy release upon fault rupture, resulting in ≥M8 earthquakes, large tsunamis, liquefaction, lateral ground displacement, landslides and rock falls, floods, and fires. A CSZ incident would be catastrophic to the Pacific Northwest's fuel supply and distribution system (see Figure 5). All five of Washington's refineries are located along coastline and are within tsunami inundation zones. Each facility would likely experience structural damages, marine dock failure, pipeline system breaks, HAZMAT spills, and fires. Restoration of the fuel supply chain after a CSZ event would likely take several months.

Authorities and Disaster Activation

The following legal documents provide King County and its partners with the authority to conduct and/or support emergency operations. When dictated by the situation, additional ordinances or other emergency regulations may be enacted by King County authorities through emergency proclamations. It will be necessary to review potential changes to state executive authorities and the Washington State Energy Emergency Management Program Office can provide updates to RCWs and WACs for the county.

- Washington State RCW 38.52.070 - Local organizations and joint local organizations authorized — Establishment, operation — Emergency powers, procedures.
- Washington State RCW 43.06.220 State of emergency—Powers of governor pursuant to proclamation.
- Washington State RCW 43.21 G and F, State Energy Office-Defines the roles and responsibilities for the State Energy Office, including their role in implementing policy during energy emergencies.

- Washington Advisory Code (WAC) 194, Commerce, Department of (Energy)- Provides guidance from Commerce on Energy issues including Emergency Petroleum Allocation Act rules and WA state curtailment plan for electric energy.
- King County Code 12.56 Emergency Powers.
- King County Code 12.52 Emergency Powers.
- King County Comprehensive Emergency Management Plan[6].
- Additional authorities to consider include local municipal and special purpose district ordinances and regulations.

Emergency Support Function 12 is designed to bring an all-of-government approach to stabilize critical infrastructure functions, minimize health and safety threats, and efficiently restore and revitalize systems and services to support a viable, resilient community.

ESF 12 provides for the effective use of available electric power, natural gas, and petroleum products required to meet essential needs and to facilitate restoration of energy systems affected by an emergency or disaster by orchestrating the energy stakeholders, activities, and services provided under the primary Core Capability of Infrastructure Systems.

KCOEM Activation and Operations

The King County Emergency Operation Center (KCEOC) is organized to align with the National Incident Management System (NIMS) standards. Any execution of a fuel emergency would occur through the KCEOC and be managed by ESF 12.

KCOEM Activation levels and definitions:

- **Steady State**: No anticipated incident or event. Denotes regular day-to-day KCOEM operations and monitoring by a designated Duty Officer.
- **Enhanced**: Incident or event is monitored by Duty Officer(s) and additional KCOEM staff as needed.
- **Partial**: Incident or event requires staffing of the Emergency Operations Center by KCOEM staff and activation of one or several ESFs, including select King County departments and partner agencies.
- **Full**: Incident or event requires fully staffed EOC by KCOEM and activation of many of the ESFs, including other King County Departments and partner agencies.

Coordination with the State and across county, city, special purpose districts and sub-county jurisdictions is necessary for a coordinated response and requesting resources.[7] The KCOEM, through the EOC, coordinates laterally and facilitates operations activities with neighboring jurisdictions, as well as up to the State Emergency Operations Center (SEOC), which is managed by the Washington Emergency Management Division (EMD). The KCEOC

[6]https://kingcounty.gov/depts/emergency-management/emergency-management-professionals/comprehensive-emergency-management-plan.aspx

[7] State Fuel Request will be created and coordinated between ESF 12 & EMD & distributed when available- TBD

coordinates with cities, special purpose districts and other sub-county jurisdictions and is the link to the SEOC.

The GIS tools and resources available through the KCEOC could be utilized at all levels of activation. The KCEOC has full GIS capability and a representative from KCGIS is part of the activation group. The goal is to provide personnel with situational awareness and resources to address any fuel disruption for the county. Additionally, planning and exercise coordination will need to be developed over time, but this Framework works to build on the current level of awareness.

Planning Assumptions

The following points describe the underlying assumptions that guided the development of this Fuel Supply Disruption Framework.

- Fuel prioritization will be necessary for organizations that have life safety function(s) that are essential to the health, welfare, and safety of the region.
- Increase in demand may cause the current system in place to be overwhelmed and unable to meet the region's needs.
- MOAs, emergency fuel contracts and regulation waivers may have to be used to provide available resources.
- Coordination with federal, state, and private sector resources will be necessary to return service to the region.
- Current memorandum of understandings (MOUs) and fuel contracts may not be executed because of the lack of fuel available for local distributors.
- In a major or catastrophic disaster interdependent critical infrastructures may be damaged and unable to operate and recover quickly to provide processing and distribution of fuel.
- Locally available fuel assets services and supporting resources may be limited during the initial days and weeks of the event.
- Single or multiple critical infrastructures across different geographic areas will need to coordinate for resumption of operations.
- Disruptions to services could be minor, major, and/or catastrophic.

Summary of the Framework Planning Process

This Framework incorporates government and community resources and needs into the planning efforts that support liquid fuel resources for the region. The team held two workshops, conducted a survey, and enlisted the support of the King County GIS to develop the Framework with support from regional stakeholders and federal and state partners. A diverse set of public-private sector organizations participated in the framework development. The participants included: King County departments, local cities, utilities, critical infrastructure owner operators, emergency responders, municipal airport, regional transit authority, and fire districts that service several cities in Region 6.

Participating Organizations

- Cybersecurity Infrastructure Security Agency (CISA)
- City of Bellevue
- City of Kirkland
- City of Newcastle
- City of Renton
- City of Seattle
- King County Department of Natural Resources and Parks (DNRP)
- King County Facilities Management/Building Operations
- King County GIS
- King County International Airport
- King County Metro Transit
- King County OEM
- MultiCare Health System
- Odyssey International Services
- Pacific Northwest Economic Region (PNWER)
- Puget Sound Energy
- Region 6 Critical Infrastructure Working Group (CIWG)
- Seattle Public Utilities
- South King Fire
- Tacoma Public Utilities
- Washington State Department of Commerce - State Energy Office
- Washington State Department of Transportation
- Washington State Emergency Management Division
- Washington State Fusion Center
- Westin Building Exchange

The fuel prioritization process depends on how to determine which organizations provide functions essential to the health, welfare, or safety of the region. FEMA Community Lifelines Toolkit provides guidance on effectively incorporating lifelines into emergency response.[8] Coordination may be needed to rank these functions in the event of fuel shortages varying in severity and duration. In order to prepare for a fuel supply emergency, it is important to understand facilities, personnel, equipment, and resources requiring fuel to perform mission essential functions for each critical infrastructure sector. This includes having a general understanding of minimal fuel requirements and system interdependencies. Stakeholders provided insight to current operations, below are areas of significant note that were identified through this stakeholder input:

- Very few organizations in King County have more than four days of onsite emergency fuel available. Onsite fuel storage capacity varied among these organizations, with most in the range of having enough fuel for 24-60 hours of operation.

[8] https://www.fema.gov/emergency-managers/practitioners/lifelines

- Available fuel estimates are developed based on steady state operations. The unknown factors related to a major or catastrophic event could lead to more fuel drawdown or the inability to access the fuel supply. Conservation measures may need to be reviewed and tested.
- Several organizations provide critical life safety functions to the region. All participating organizations provide some type of role in emergency response.
- Baseline asset mapping will provide critical situational awareness and information to emergency response plans.
- Some organizations operate with no contracts in place for additional fuel in the case of an emergency.

The qualitative and quantitative information available from stakeholders shows that more planning and exercising is necessary to understand their baseline fuel use and need for resupply. As more organizations complete their fuel assessments, it will provide insight to the estimated emergency fuel use in King County. Regional organizations also indicated few had emergency plans in place to obtain fuel from different sources during an emergency.

Agencies, organizations, and businesses have a wide variety of baseline fuel requirements that depend on their facilities, transportation, and equipment which supports business as usual operations. The majority of organizations rely mainly on diesel and unleaded gasoline for a variety of emergency response vehicles, with some fuel used for emergency power generation. Likewise, in emergency situations, their fuel requirements are unique and dependent on these variables. The dynamic nature of disasters will impact how organizations maintain operations and request resources.

Additionally, critical infrastructures that use emergency fuel to maintain operations indicated much different needs than response organizations. Their fuel usage is completely for providing critical services on site. It was noted that these organizations had roughly one to two days worth of diesel reserved but had contracts in place to obtain additional resources in case of an emergency or prolonged power outage.

Overall, research showed a wide range of fuel needs and contingency plans throughout King County, demonstrating that a coordinated plan connecting distributors and users of different types of fuels would benefit many organizations and help them maintain continuity of operations in the event of a natural disaster or other fuel emergency.

Tools and Resources

The Framework process brought together various organizations to learn how the Washington State Department of Commerce Energy Emergency Management Office is encouraging county level plans to engage fuel management stakeholders. The purpose of this planning effort is to coordinate broader statewide and regional fuel planning work and inform King County agencies about their fuel needs during a shortage or disruption. Stakeholders can receive a baseline overview of how fuels are delivered and distributed throughout the state by main

sources of Washington's petroleum supply chain i.e. maritime, rail, freight, and pipelines. The Energy Emergency Management Office developed and maintains an Emergency Fuel Planning Guide and Fuel Needs Assessment Tool for local jurisdictions.

State planning and prioritization has identified the Mission Essential Functions (MEFs) as the tool to categorize and determine the fuel needs. The Fuel Needs Assessment Tool developed by the State (see Appendix C) is designed as a replicable process that can be used to collect pertinent information about current baseline fuel use for MEFs to estimate emergency fuel use, for emergency fuel planning and management purposes. The tool is designed to support local situational awareness on fuel capacity as well as provide informed resource requests to state and federal partners for estimating fuel for MEFs during an emergency impacting the petroleum fuel supply.

The Assessment Tool is intended to provide emergency fuel planners with an assessment of fuel needs for both vehicles and equipment, and identify and map fuel assets of a county including emergency generation capacity. The tool is designed to provide fuel planners with the required pertinent information that will create the estimated fuel needs. Fuel planners will be able to track current emergency power generation and map existing fuel distribution centers. All of these components of the assessment tool will provide a necessary assessment of fuel needs. The tool also asks organizations to identify what kinds of contracts they may have with fuel haulers.

Recognizing the distinction between missions and supporting activities will help organizations correctly identify their MEFs. Many day-to-day functions known as Primary Business Functions (PBFs) support MEFs but are not actually MEFs themselves. Mission Essential Functions cannot be disrupted without serious consequences while a supporting activity could be briefly suspended. The distinction between a MEF and a PBF might heavily depend on the duration and timing of the emergency. For example, some Primary Business Functions like purchasing, payroll, or maintaining service vehicles could become a MEF if the incident continues. An organization will likely have more PBFs than MEFs.

Example Chart of MEFs and PBFs	
Missions (Mission Essential Functions)	**Supporting Activities (Primary Business Functions)**
Fire Suppression	Manage human resources
Maintain transportation infrastructure	Provide IT support
Provide medical care	Provide travel services
Provide safe water supply	Peform legal review
Continue to provide power to the public	Trash service
Perform health inspections	
Continue to provide classes (University)	

Stakeholders can use the assessment tool to learn how to identify their organization's MEFs, determine how long they can operate with fuel on-hand, and develop an inventory of all vehicles and equipment and the types of fuels they use.

WA State Fuel Planning Toolkit Plan Action Priorities

To ensure consistency in the State's collective response to fuel emergencies the State has developed Nine Priority Actions and Priority Guidelines for Fuel Allocation that should be implemented in all of the nested plans (state agencies, tribes, counties, cities, special purpose districts, etc.)

Establish detailed standard operating procedures (SOPs) for each activity you expect to be conducted while your fuel contingency plan is in effect. Identify mechanisms for accessing situational awareness information with the State and other regional partners. Identify various communication strategies that are being employed for disseminating important information to all stakeholders. Consider using Washington state's Nine Priority Action Items as an organizational structure for the operational section of the plan.

The actions are the following:

- Action 1: Notification, Activation and Authorities
- Action 2: Situational Awareness and Information Coordination
- Action 3: Damage Assessments
- Action 4: Assessment of Fuel Needs and Determination of Priorities
- Action 5: Outside Assistance
- Action 6: Fuel Conservation Measures
- Action 7: Temporary Waivers
- Action 8: Fuel Allocation
- Action 9: Recovery

State Process for Prioritizing Fuel Allocation Action 8

The Washington State Energy Emergency Management Office (EMMO) is responsible for administrative procedures in regards to fuel allocation during emergencies, as established by the Emergency Petroleum Allocation Act, WAC 194-14. Washington State does not currently maintain a set-aside fuel stockpile program due to existing limitations. Instead, available fuel will be allocated based on a pre-identified priority basis utilizing statewide core capabilities.[9]

Fuel allocation will be based on the pre-determined prioritization guidelines outlined in Section 4 of the toolkit focused on determining Fuel Needs. During an emergency impacting the normal distribution of the state's fuel supply, local jurisdictions can use the state-approved resource request form found in WebEOC.

[9] Fuel Planning Toolkit - Washington State Department of Commerce found at https://www.commerce.wa.gov/growing-the-economy/energy/energy-emergencies/fuel-planning-toolkit/

WA State Fuel Allocation Priorities			
Priorities	**First**	**Second**	**Third**
	Emergency Response & Lifeline Critical Infrastructure	Critical Infrastructure, Facilities, & Essential Services	Community Functionality/ Hardship
Definition	"Emergency response" is any systematic action to mitigate the impact of an unexpected or dangerous incident on human life, property, and the environment. "Essential services" include those services which, if interrupted, would endanger the life, health or personal safety of the population.	Systems and/or facilities, whether physical or virtual, so vital to the state that the incapacity or destruction of such systems/facilities would have a debilitating impact on security, economic security, public health or safety. Critical infrastructure includes: Water, Agriculture & Food, Public Health, Emergency Services, Telecommunications, Energy Transportation, Banking & Finance, Shipping, Chemical & HazMat	· This is intended for general public use including retail gas fueling stations for communities experiencing a hardship not related to life safety and/or life sustaining service. · The hardship must be more than mere inconvenience and the inability to pay for fuel must not be the only factor. · Undue hardship is determined on a case-by-case basis via an application and appeals/oversight process

Core Capability	· Operational Coordination · Public Information & Warning · Critical Transportation · Fire Management & Suppression · On-scene Security, Protection, & Law Enforcement · Operational Communications · Public Health, Healthcare, and Emergency Medical Services	· Infrastructure Systems · Environmental Response/ Health and Safety · Logistics and Supply Chain Management · Public Health, Healthcare, and Emergency Medical Services	· Community Resilience · Health and Social Services

Priority 1: Emergency Response & Lifeline Critical Infrastructure

First priority in an emergency goes to actions which mitigate the impacts of an incident human life, property, and the environment. Fuel will go to essential services called “Lifeline Critical Infrastructure” which, if interrupted, would endanger the life, health, or personal safety of state residents. Lifeline Critical Infrastructure include the following:

- Operational Coordination
- Public Information & Warning
- Critical Transportation
- Fire Management & Suppression
- On-scene Security, Protection, & Law Enforcement
- Operational Communications
- Public Health, Healthcare, and Emergency Medical Services

Priority 2: Critical Infrastructure, Facilities & Essential Services

Second priority goes to general critical infrastructure which are systems or facilities that are vital to public security, safety, health, and economic wellbeing. Sectors include water & wastewater, agriculture and food systems, public health, emergency services,

telecommunications, energy, transportation, banking and finance, postal and shipping, and hazardous materials control.

Priority 3: Community Functionality, Hardship

Community need is the third tier of prioritization for fuel allocation, and is intended for the general public and retail gas fueling stations serving communities experiencing undue hardship. The hardship must be more than mere inconvenience and the inability to pay for fuel must not be the only concern. Community allocation will be determined on a case-by-case basis, supported by an appeals/oversight process.

<u>GIS Fuel Asset Mapping</u>

In order to understand King County's baseline fuel capacity, the project team worked with King County GIS to develop an interactive map of fuel asset locations. The mapping tool includes fuel stations, bulk terminals, Washington State Department of Transportation fuel sites, and electric vehicle charging stations. The mapping tool provides additional functionality through layers that can provide real time transportation status as well as power outage overlays. This tool is designed to be used by the King County Emergency Operations Center as a resource for both planning and response during a potential fuel emergency.

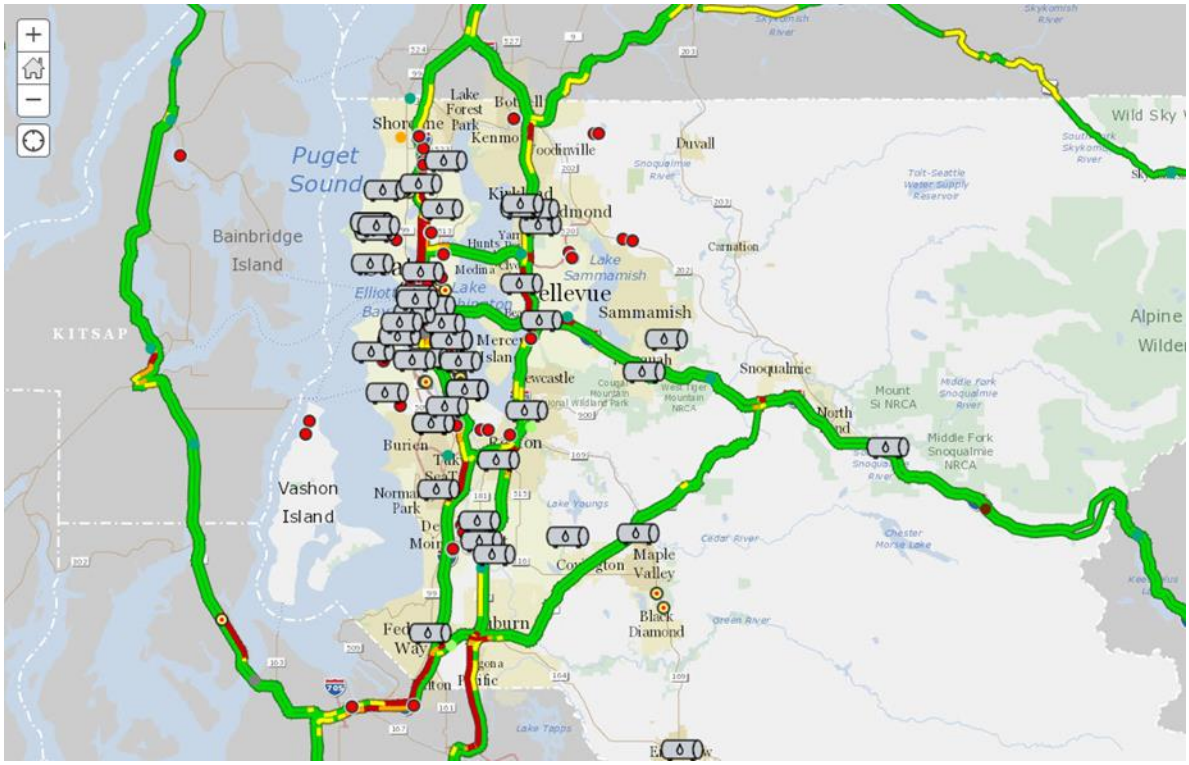

Figure 6. Snapshot of King County Fuel Mapping Tool, ESRI

King County GIS identified 473 gas stations and 49 storage and distribution facilities in the county. Standard Operating Procedure development and usage will be led by the KCOEM. This mapping initiative eventually will be hosted by the State Energy Office on a timeline to be determined.

Fuel Contracting Best Practices

The City of Seattle put in place a process for developing and implementing its own fuel contract. In writing its contract, the city emphasized ease of requesting fuel, access to a large network of distributors, and uninterrupted fuel supply during an emergency.

Organizations intending to contract for its own fuel supply should be familiar with their distributors' emergency response plans and how its contract will fit in with the broader distribution strategy in a fuel shortage.

It was noted that if organizations do not have their own fuel contracts in place they will be subject to the state distribution plan in case of an emergency and may not immediately receive enough fuel to maintain operations, or be compelled to buy fuel on the spot market typically at inflated prices.

For more information on tools and resources, review the appendices of the Framework.

Recommendations

The Framework planning revealed a broad range of fuel uses, emergency plans, and storage capabilities around King County. In the event of a disaster, it will be imperative to know where and how different fuels are stored, which agencies might experience critical shortages, and who is responsible for key response functions in a given situation. Additional data collection will need to be undertaken in the future to inform regional fuel contingency plans. The following are a list of recommendations from the research conducted:

- Assign KCOEM staff to lead planning effort, resource requesting, and prioritization process[10].
- Integrate a timeline with the State Energy Office and Region 6 CIWG on next steps for resource requests and fuel asset mapping initiative.
- Develop and share best practices on siting of underground and aboveground fuel storage tanks to be functional in the event of a disaster and whether they will be accessible by road.
- Inventory portable fuel tanks that could, for example, be filled at storage tanks and transport fuel countywide.
- Establish central or mobile fueling locations that could be part of the community points of distribution (CPOD) initiative of the RCPGP.

[10] A timeline for the state plan has been delayed, and a coordination process will need to be developed.

- Train KCOEM staff on GIS tools and SOP usage.
- Encourage organizations to establish emergency fuel contracts. Agencies eligible for FEMA disaster assistance should ensure that their contracting procedures are FEMA compliant.
- Request that best practices on emergency fuel contracting be shared with fuel planners.
- Investigating additional fuel storage within the county as part of the planning process.
- Expand the GIS tool to include other neighboring counties.
- Encourage Fueling Stations to have backup power.
- Provide the requested information to WA State Energy Office's State Fuel Needs Assessment Tool.

Next Steps

Action Step 1	Action Step 2	Action Step 3	Action Step 4	Action Step 5	Action Step 6	Action Step 7
Determine remaining data need for Assessment Tool	Train KCEOC staff on GIS Tool	Initiate outreach to King County stakeholders on Fuel Contracting best practices	Complete Fuel Plan for King County	Coordinate with the State Energy Office once state plans are completed	Exercise plans and corrective action plans	Revise Plan

Considerations for long-term resilient energy strategies

Organizations are actively working toward transition to alternative fuel systems to reduce greenhouse gas emissions (GHG). The move away from traditional liquid fuels will require new plans and procedures for ensuring delivery of MEFs. The Fuel Needs Assessment Tool includes a table that looks at how those changes will affect the need for liquid fuels through an ongoing basis as organizations continue to transition to low- or no-emission energy sources.

Distributed energy resources are areas that fuel planners may consider:

- Microgrids - A microgrid is a group of interconnected loads and distributed energy resources that acts as a single controllable entity with respect to the grid. It can connect and disconnect from the grid to operate in grid-connected or island mode.
- Energy storage - Energy storage is the capture of energy produced at one time for use at a later time to reduce imbalances between energy demand and energy production.
- Solar plus batteries - Solar plus batteries are a device that reserves energy for later consumption that is charged by a connected solar system.
- Hydrogen fuel cells - A fuel cell uses the chemical energy of hydrogen or other fuels to cleanly and efficiently produce electricity. If hydrogen is the fuel, the only products are electricity, water, and heat.

- Fuel cell backup generators - A backup power system is used to provide energy when the primary source fails.

Organizations that have been traditional fossil fuel users with the onset of new innovations in vehicle electrification there is an increased demand to transition from liquid fuels for day to day operations. Agencies and infrastructures are moving to electrification as a solution to GHG emissions. This transition will need to be included in future resilience planning as new technologies become commonplace. How these new technologies will be more resilient and withstand disasters will be paramount to how jurisdictions respond and recover.

Acronyms

CIWG	Region 6 Critical Infrastructure Working Group
CPOD	Community Points of Distribution
EIA	U.S. Energy Information Administration
EMD	Washington State Emergency Management Division
ESF	Emergency Support Functions
GHG	Greenhouse Gas Emissions
GIS	Geospatial Information System
KCEOC	King County Emergency Operation Center
KCOEM	King County Office of Emergency Management
MEFs	Mission Essential Functions
MOUs	Memorandum of Understandings
NIMS	National Incident Management System
PBF	Primary Business Functions
RCW	Revised Code of Washington
SCADA	Supervisory Control and Data Acquisition
SEOC	Washington State Emergency Operations Center
WAC	Washington Administrative Code

Appendix A: Request Procedures and Form

Local Fuel Request Procedure

1. Washington State Emergency Operations Center Logistics Section will monitor fuel need requests through WebEOC or other resource management process in alignment with the Incident Command System (ICS). They may initially direct resource requestors to vendors on the State Master Contract.

    a. The Logistics Section will notify ESF-12 when fuel is requested by emailing wa.energyem@commerce.wa.gov

    b. ESF-12 will track these requests so as to keep situational awareness on regions of poor fuel supply or access to fuel.

2. If local jurisdictions are unable to receive sufficient fuel via the State's vendor contacts, Logistics will direct the requesting party to ESF-12.

3. ESF-12 will ask the local jurisdiction to fill out the Emergency Fuel Request Form and return it to wa.energyem@commerce.wa.gov

    a. The Emergency Fuel Request Form can be found in Appendix A

4. ESF-12 will be responsible for the approval and rejection of fuel allocation requests.

    a. Submitted requests will be validated for completion, authenticity, and cross-checked to eliminate duplicates.

    b. ESF-12 will work with applicants to receive complete information and identify sites or conditions suitable for fuel delivery.

    c. Submitted requests may be denied for the following reasons:

        i. Request fails to meet mission critical priorities

        ii. Unavailability of fuel

        iii. Unable to deliver fuel to requested location

        iv. Request met through mutual aid

        v. Duplicate request

Appeals Process for Denial of Fuel Request. *The process by which applicants can formally appeal an Emergency Fuel Request denial is being developed.*

Payment for Emergency Fuel. Payment for fuel will be the provided by the recipients. The exception to this responsibility is, if a federally declared disaster makes FEMA Public Assistance Cost Share Program available, wherein FEMA would cover 75% of the costs and state, county, and tribal entities are responsible for the remaining 25%.

Jurisdiction should use the Standard ICS 213 RR form with the Washington State Fuel Request Form found in the next two pages. This form was drafted in alignment with WAC 194-14-040 and the National Association of State Energy Officials' (NASEO) recommendations.

RESOURCE REQUEST MESSAGE (ICS 213 RR)

	1. Incident Name:			**2. Date/Time**		**3. Resource Request Number:**	
Requestor	**4. Order** (Use additional forms when requesting different resource sources of supply.):						
	Qty.	Kind	Type	Detailed Item Description: (Vital characteristics, brand, specs, experience, size, etc.)	Arrival Date and Time: Requested	Arrival Date and Time: Estimated	Cost
	5. Requested Delivery/Reporting Location:						
	6. Suitable Substitutes and/or Suggested Sources:						
	7. Requested by Name/Position:			**8. Priority:** ☐ Urgent ☐ Routine ☐ Low		**9. Section Chief Approval:**	
Logistics	**10. Logistics Order Number:**					**11. Supplier Phone/Fax/Email:**	
	12. Name of Supplier/POC:						
	13. Notes:						
	14. Approval Signature of Auth Logistics Rep:					**15. Date/Time:**	
	16. Order placed by (check box): ☐ SPUL ☐ PROC						
Finance	**17. Reply/Comments from Finance:**						
	18. Finance Section Signature:					**19. Date/Time:**	
	ICS 213 RR, Page 1						

Washington State Department of Commerce

STATE FUEL ACTION PLAN

WA Fuel Request Form

Please complete all sections to ensure timely processing of fuel requests.

Requestor Information

1. Date (mm/dd/yyyy): **2. Time (2400 format):** **3. Is this an initial request or update?** Initial Update	**4. Requester Name (First/Last):** **5. Requester Title:** **6. Requester Contact Information:** Email: Work #: Mobile/Duty #: Other:	**7. Name of Requesting Agency (if an ESF, please include ESF #):** **8. Type of Requesting Agency:** ESF Primary State Agency County Emergency Management Agency Federally Recognized Tribal Government Other (specify)

9. Priority Determination (Select Mission Essential Function(s) this fuel request supports by checking all that apply):

Emergency Response & Lifeline Critical Infrastructure:	Critical Infrastructure, Facilities & Essential Services:	Community Functionality/Hardship:	Other Mission Essential Functions (Please Specify):
Operational Coordination Public Information & Warning Critical Transportation Fire Management & Suppression On-Scene Security Protection & Law Enforcement Operational Communications Public Health, Healthcare, & EMS	Infrastructure Systems Environmental Response, Health & Safety Logistics & Supply Chain Management Public Health, Healthcare, & EMS	Community Resilience Health and Social Services	

10. Please provide a brief justification for the fuel request:

Fuel Request

11. Fuel Type & Quantity (Indicate which fuel(s) are requested, and the amount in gallons needed)

Unleaded Gasoline	gallons	Aviation Gas	gallons
Diesel	gallons	Jet Fuel	gallons
Jet Fuel	gallons	Other:	gallons

12. Site Storage Capacity in gallons (if no storage, use "0" gallons):

Unleaded Gasoline	gallons	Aviation Gas	gallons
Diesel	gallons	Jet Fuel	gallons
Jet Fuel	gallons	Other:	gallons

13. Current Fuel Burn Rates (if not using fuel type, use "0" gallons):

Unleaded Gasoline	gallons	Aviation Gas	gallons
Diesel	gallons	Jet Fuel	gallons
Jet Fuel	gallons	Other:	gallons

Delivery Details*

14. Delivery Site Address:

15. Site Contact (First/Last):

16. Point Person Title:

17. Contact Information:

Email:

Work #:

Mobile/Duty #:

18. Typical Fuel Vendor Name:

19. Vendor Point Person:

20. Contact Information:

Email:

Work #:

Mobile/Duty #:

21. Delivery Methods (indicate all accessible methods):

Fixed Wing (Airplane)

Rotary Wing (Helicopter)

Road

Rail

Waterway

Pipeline

22. Backup Power Capabilities:

Onsite Generator

Onsite connection for hook-up generator

None

If none, is there a manual pump onsite?

Yes No

23. Site Access Restrictions (indicate all applicable):

Perimeter Fencing

Security

Incident-related damages (if yes, please include a damage assessment with request).

Other

24. Notes (Please provide any additional information regarding fuel, the delivery process, etc.):

* Note for local jurisdictions: If your fuel request requires distribution amongst several delivery sites or Fuel Points of Distribution (FPODs), please duplicate the second page as necessary and provide additional context in the Notes section regarding amounts and location.

Appendix B: Web Resources

Resources and References

King County

https://kingcounty.gov/~/media/depts/emergency-management/documents/plans/CEMP/King_County_CEMP_Base_Plan_2020_02_17.ashx?la=en

https://www.remi.com/wp-content/uploads/2019/11/859-Puget-Sound-Regional-Transportation-Fuels-Analysis.pdf

OEM Fuel Sites - ArcGIS - Request access from KCEOC

Washington State

https://mil.wa.gov/asset/5bac1790e2d29

https://mil.wa.gov/asset/611439d8574f2

https://www.commerce.wa.gov/growing-the-economy/energy/energy-emergencies/fuel-planning-toolkit/

https://www.commerce.wa.gov/growing-the-economy/energy/energy-emergencies/

National/Federal

https://training.fema.gov/emiweb/is/icsresource/assets/ics%20forms/ics%20form%20213rr,%20resource%20request%20message%20(v3).pdf

https://www.fema.gov/sites/default/files/2020-07/Federal_Continuity_Directive-2_June132017.pdf

https://www.fema.gov/emergency-managers/practitioners/lifelines

https://www.energy.gov/emergency-response

https://www.eia.gov/dnav/pet/pet_pnp_cap1_dcu_nus_a.htm

https://www.energymarketersofamerica.org/

Appendix C: WA State Fuel Needs Assessment Tool

The following slides are available from the WA State Energy Office[11]

Contact Information

Your Name	
Position Title:	
Agency Name:	
Department:	

Does your organization have these plans or contracts and do they address emergency fuel requirments?

	Yes	No	Location	How often Updated?	Are you willing to share it with State Energy Office?
Fuel Management Plan					
Emergency Fuel Contract					
Operations/Business Continuity Plan					
Other:					
State Agencies: Do you actively particiapte in the Governors iCOOP workgroup?					*If you answered "Yes" above, please send to elizabeth.king@commerce.wa.gov*

[11] https://www.commerce.wa.gov/growing-the-economy/energy/energy-emergencies/fuel-planning-toolkit/

Mission Essential Functions

Guidance on how to identify your Mission Essential Functions

What is a Mission Essential Function (MEF)? They are the limited set of agency and jurisdictional level government functions that must be continued throughout, or resumed rapidly after, a disruption of normal operations. MEFs are functions that cannot be deferred during an emergency or disaster.

How do we identify our Mission Essential Functions? An agency or jurisdiction should first look at the statutory requirments assigned to it by law. MEFs can also be componets of the agency or jurisdiction's mission statement or strategic plan. MEFs are typically something unique that the agency or jurisdiction does, such as provide a product or service to the public, another agency, or some other external body.

What's the difference between a MEF and a Primary Business Function (PBF)? Many of an agency's or jurisdiction's day-to-day functions (often known as Primary Business Functions) support MEFs but are not actually MEFs themselves. Recognizing the distinction between missions and supporting activities may help an agency correctly identify its MEFs. Mission Essential Functions cannotbe disrupted without serious consequences while a supporting activity could be briefly suspended. The distinction between a MEF and a PBF might heavily depend on the duration and timing of the emergency. For example some Primary Business Functions like payroll, janitorial service, or maintaining service vehicles could become an essential function if the incident continues. You may likely have more PBFs than MEFs. Note them on the next page.

FEMA has developed the Continuity Guidance Circular 2018 for specific guidance on the process of the identification of MEFs. Click this cell to open the link.

Example Chart of MEFs and PBFs

Missions (Mission Essential Functions)	Supporting Activities (Primary Business Functions)
Fire Suppression	Manage human resources
Maintain transportation infrastructure	Provide IT support
Provide medical care	Provide travel services
Provide safe water supply	Peform legal review
Continue to provide power to the public	Trash service
Perform health inspections	
Continue to provide classes (University)	

List of Mission Essential Functions:

[Agency / Jurisdiction Name]:

	Missions (Mission Essential Functions)		Supporting Activities (Primary Business Functions)
1	*Fire Suppression*	1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	
9		9	
10		10	
11		11	
12		12	
13		13	
14		14	
15		15	
16		16	
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19		19	
20		20	
21		21	
22		22	
23		23	
24		24	
25		25	
26		26	
27		27	
28		28	
29		29	
30		30	

Mission Essential Functions

Based on the mission essential functions you identified in 2a Missions tab please fill out the table below.

Please provide the following information about your vehicle fuel needs. For more information on mission essential functions (MEFs), pleave visit the 2a. Missions tabe for more information.

		How long do you anticipate your agency's vehicle fleets will be able to sustain the following levels of operations IN THE ABSENCE OF OUTSIDE FUEL deliveries (e.g. other agencies, fuel wholesalers, etc.)								Stand-by Mode (able to begin mission essential function with short notice)							
MEF #	MEF Title	0-24 hrs	24-48 hrs	48-72 hrs	3-7 days	7-14 days	14-21 days	Greater than 21 days	Other	0-24 hrs	24-48 hrs	48-72 hrs	3-7 days	7-14 days	14-21 days	Greater than 21 days	Other
1	*Fire Suppresion*			*X*													
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	
23																	
Other																	

Vehicle Fuel Needs

Please provide the following information about your vehicle fuel needs. For more information on mission essential functions (MEFs), pleave visit the 2a. Missions tabe for more information.

Equipment Category	Vehicle Purpose (*MEF*)	How many of this type of vehicle	Prefered Type of Fuel	Alternative Type of Fuel	Vehicle Fuel Tank Capacity (gallons)	Weekly Refueling (gallons)	Minimum Quantity of Fuel in Vehicle (gallons)	Special Considerations
Fire Engine	*MEF 1 Fire Suppresion*	*30*	*DSL*	*ultra-low sulfur highway diesel*	*30*	*1000*	*5*	*in standby mode vehicle comsues 1 gph of fuel*

Equipment Fuel Needs

Please provide the following information about your equipment fuel needs. For more information on mission essential functions (MEFs), pleave visit the 2a. Missions tabe for more information.

Equipment Category	Equipment Purpose (*MEF*)	How many of this type of equipment	Prefered Type of Fuel	Alternative Type of Fuel	Equipment Fuel Tank Capacity (gallons)	Consumption Rate (gallons per hour)	Special Considerations
chain saw	*MEF 1 Fire Suppresion*	*30*	*UNL*		*2*	*0.3*	*equipment requires replenishment of bar oil to operate*

Existing Fuel Locations

Please indicate which of the following fuel locations your agency regularly obtains fuel and fill in as much missing information as possible. Additional lines for adding locations are at the bottom, if appropriate. Please use a separate line for each type of fuel obtained at a single facility. Facilities may include governement owned depots, fuel wholesalers, or fuel retailers. If fuel is delivered to your agency (e.g. pipeline or truck), indicate the original point of fuel as the "fue facility" and the pipeline operator or trucking company as the "fuel delivery method"

Place 'X' next to locations identified as an FPOD	Fuel Facility Operator	Street Address	City	Zip	Emergency Contact No.	Hazard Vulnerabilities of Fuel Facility	Backup Power for Facility Pumps	Restricted to Private Account	Fuel Type	Fuel Storage Type	Storage Capacity (gallons)	Quantity On-Hand (gallons)	Fuel Delivery Method	Fuel Delivery Frequency	Longitude (X)	Latitude (Y)	Source

Fuel Haulers

Please provide the name of the fuel haulers that you use if applicapable

Fuel Hauler Name	Street Address	City	Zip	Emergency Contact No.	Fuel Truck Capacity (gallons)	Do you have an emergency fuel contract (yes/no)
Fuel Operator, LLC	*111 Fuel Lane*	*Lincoln City*	*97222*	*444-444-4444*	*11,500*	

Existing Fuel Locations

Please indicate which of the following emergency back-up fuel generator locations your jurisdiction has either permanently installed at a critical facility, on a flatbed, or other wise mobile. Fill in as much missing information as possible. Additional lines for adding locations are at the bottom, if appropriate. Please use a separate line for each type of generator at a single facility. This assessment is for identified Critical Facilities for your jurisdiction and identified Mission Essentail Functions.

Place 'X' next to locations that are permanent installations	Equipment Purpose (MEF)	Facility Operator	Street Address	City	Zip	Emergency Contact No.	Hazard Vulnerabilities of Fuel Facility	Generator MW Capacity	Fuel Type	Fuel Storage Type	Fuel Storage Capacity (gallons)	Average Quantity On-Hand (gallons)	Fuel Delivery Method	Fuel Delivery Frequency	Longitude (X)	Latitude (Y)	Source

Energy Resilience

Are there any planned initiatives or improvements (e.g. facility expansion, new equipment, new or additional operations, energy efficiency initiatives) that will significantly increase or decrease your baseline fuel use or supply? Include this as an attachment. It is important info, but doesn't fit here from a user friendliness perspective. Include 'planned changes' as a column in later tables.

Resource	Fuel Use Expected To	Describe Why (e.g., facility expansion, new equipment, new or additional operations, energy efficiency intiatives)	Fuel Type	When Will This Occur	Amount of Add'l Fuel Use For		
					Baseline Use	Emergency Use	Baseline Supply
Transportation	*Increase*	*Increasing number of fleet vehicles by 25%*	*Gasoline*	*Next 6 mos*	*250 gallons*	*450 gallons*	