



Maryland
Energy
Administration

Maryland Liquid Fuels Plan

PUBLIC VERSION

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This report was prepared for the Maryland Energy Administration by its technical assistance contractor, ICF Resources, LLC, under the guidance and the direction of the Maryland Energy Administration including stakeholder feedback from other state agencies.

Should any maintenance changes be required to the liquid fuel plan in the future, these changes will be noted in Appendix E: Plan Maintenance & Record of Changes.

Glossary of Acronyms

AAA: American Automobile Association
BOC: Business Operations Center
BWI: Baltimore/Washington International Thurgood Marshall Airport
CBOB: Conventional gasoline blend stock for oxygenate blending
CESER: Office of Cybersecurity, Energy Security and Emergency Response
CIKRs: Critical infrastructure and key resources
CISA: Cybersecurity and Infrastructure Security Agency
COMAR: Code of Maryland Regulations
CRISP: Cybersecurity Risk Information Sharing Program
DDoS: Distributed Denial of Service
DFO: Distillate fuel oil
DGS: Maryland Department of General Services
DHS: Department of Homeland Security
DNS: Domain name system
DOC: Director on Call
DOE: U.S. Department of Energy
DoS: Denial of Service
DOT: Department of Transportation
EGCC: Energy Government Coordinating Council
EIA: Energy Information Administration
EMAC: Emergency Management Assistant Compact
EOP: Executive Office of the President
EPA: U.S. Environmental Protection Agency
ESF: Emergency support function
FBI: Federal Bureau of Investigation
FEMA: Federal Emergency Management Agency
FERC: Federal Energy Regulatory Commission
FMCSA: Federal Motor Carrier Safety Administration
HAZMAT: Hazardous materials
HOS: Hours of service
HSIP: Homeland Security Infrastructure Program

IRS: U.S. Internal Revenue Service
ISOs: Independent system operators
IT: Information technology
JIC: Joint Information Center
LPG: Liquid petroleum gas
LPG: Liquefied petroleum gas
MAPDA: Mid-Atlantic Petroleum Distributors Association
MAPGA: Mid-Atlantic Propane Gas Association
MCAC: Maryland Coordination and Analysis Center
MDE: Maryland Department of the Environment
MDEM: Maryland Department of Emergency Management
MDOT: Maryland Department of Transportation
MEA: Maryland Energy Administration
MED-EVAC: Medical evacuation
MEMA: Maryland Emergency Management Agency
MIEMAC: Maryland Intrastate Emergency Management Assistance Compact
MitM: Man-in-the-middle
MJOC: Maryland Joint Operations Center
MS-ISAC®: Multi-State Information Sharing and Analysis Center
NAAs: No action assurances
NASEO: National Association of State Energy Officials
NGLs: Natural gas liquids
NPGA: National Propane Gas Association
NSC: National Security Council
NTAD: National Transportation Atlas Database
OPEC: Organization of the Petroleum Exporting Countries
OT: Operational technology
PHMSA: Pipeline and Hazardous Materials Safety Administration
Ppm: Parts per million
PSC: Maryland Public Service Commission
Psi: Pounds per square inch
RBOB: Reformulated gasoline blend stock for oxygenate blending
RFG: Reformulated gasoline

RFO: Residual fuel oil

RVP: Reid vapor pressure

SCADA: Supervisory control and data acquisition

SCF: State coordinating function

SCIRRs: State Critical Information Reporting Requirements

SEOC: State Emergency Operations Center

SLTT: State, local, tribal and territorial

SQL: Structured query language

TEPPCO: Texas Eastern Products Pipeline Company

TSA: U.S. Transportation Security Administration

ULSD: Ultra-low sulfur diesel

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Introduction

Petroleum products account for more than a third of the energy consumed within Maryland, playing an important role in commerce and public health through their use in transportation, industry, heating, and electricity. The state has over 1,800 retail gas stations and multiple primary terminals for transportation fuels, with more than 3.1 billion gallons of petroleum products consumed annually, primarily for transportation (e.g., gasoline including ethanol, diesel and jet fuel).¹ Residents use distillate fuel oil, or DFO, (8% of Maryland households) and propane (3% of households) as their primary source of heating.² **Critical Infrastructure and Key Resources (CIKRs)** within the state often depend on liquid fuels for normal operation and during emergency events.

Maryland is entirely dependent on liquid fuel imports from outside the state to meet in-state demand, meaning it is susceptible to supply chain disruptions occurring both in and out of state, including international events. Events affecting refineries, pipelines, and other infrastructure in states as distant as Texas or Louisiana could have major impacts on Maryland's petroleum supply. Understanding the state's supply chain, anticipating how it may be impacted during events and proactively fostering relationships with key

federal, state and private sector stakeholders are crucial elements of Maryland's fuel preparedness.

This Liquid Fuels Emergency Plan is designed to be a resource for the Maryland Energy Administration (MEA) to use when planning for and responding to liquid fuel disruptions. The plan identifies key stakeholders for fuel demand and supply within the state and provides resources for MEA, including outlining supply chain vulnerabilities from threats such as weather and malicious actors. It also establishes potential actions the state can take to plan for and respond to emergencies impacting the liquid fuel supply chain. The Liquid Fuels Emergency Plan focuses solely on liquid petroleum products and does not address other sources of energy used within the state, such as natural gas, coal, nuclear and renewable generation.

How to Use This Plan

This document is arranged into five sections, some of which have accompanying appendices with additional information. Although there is value in reading through this entire document during pre-event planning and preparedness activities, each section is designed to stand alone, and users can

MEA Statutory Requirements³

Md. Code Ann., State Government § 9-2005 - Energy emergencies

The Administration shall have the following additional duties and responsibilities concerning the state's preparedness for, and management of, general energy emergencies and shortfalls:

- (1) to prepare contingency plans for mitigating the impact of any severe shortage of fuel resources, including middle distillate oil, motor gasoline, residual fuel oil, and propane gas, on various classes of consumers.
- (2) to work with the United States Department of Energy in preparing and training for an energy emergency response.
- (3) to maintain communications, including computerized electronic communication, with the United States Department of Energy and with neighboring states to obtain and share energy data pertaining to energy emergencies.
- (4) to collect, analyze, evaluate, and maintain on a proprietary basis to preserve the confidentiality of its source, data related to managing any energy emergency or shortfall.

reference sections directly as needed during an event. The plan contains the following sections which have been coupled with a high-level summary of the contents:

- **[Section 1: Fuel Supply](#)** provides an overview of how fuel is delivered to Maryland, organized by transportation mode.
- **[Section 2: Fuel Demand](#)** provides an overview of fuel consumed in the state, typical storage volumes, and key facts by fuel type.
- **[Section 3: Fuel Supply Vulnerabilities](#)** outlines types of threats to fuel supply, highlighting Maryland's critical energy infrastructure and potential impacts from disruptions.
- **[Section 4: Fuel Supply Emergency Planning and Response](#)** describes federal, state, local government, and private sector roles during fuel disruptions, organized by organization. Includes a description of federal and state waivers that may be granted by these agencies.
- **[Section 5: Liquid Fuels Crisis Communications Planning and Implementation](#)** includes agencies' roles and responsibilities for internal and external communications.

In addition to the aforementioned sections, the plan has five appendices that provide supplemental information. These appendices include the following:

- **[Appendix A: Contact Lists](#)** provides a listing of contacts across state, federal, and local governments.
- **[Appendix B: Maryland Fuel Infrastructure Background Information](#)** includes maps of the Colonial Pipeline and Maryland's fuel infrastructure.
- **[Appendix C: State Waiver Library](#)** has example templates of fuel waivers from previous events.
- **[Appendix D: Resources](#)** includes a listing of key resources used in making this report.
- **[Appendix E: Plan Maintenance & Record of Changes](#)** provides a location to note any maintenance-related changes to the Liquid Fuels Plan, such as updates to contact lists.

Section 1: Fuel Supply

U.S. refiners rely on complex supply chains to move crude oil and other refinery feedstocks to their facilities from upstream producing areas in the U.S. and abroad. Once transported to refineries, crude oil is refined into finished petroleum products, such as gasoline, diesel, jet fuel (i.e., kerosene), residual fuel oil (RFO) and propane. Refineries in the U.S. are typically located in areas with access to crude oil supply and are heavily concentrated along the Gulf Coast. Most refineries rely on various transport modes – primarily pipelines, marine vessels and railcars – to transport finished products to downstream markets.

Fuels are delivered to bulk terminals by pipeline, marine vessel, railcar or truck and stored in large tanks before being loaded onto distribution trucks (with appropriate blending of ethanol and

additives for gasoline) for delivery to retail stations, heating oil distributor storage depots and end users. Some heating oil distributors store fuel at local depots that receive railcars or trucks. Heating oil is then transported on smaller trucks to end users like residential and commercial customers. Jet fuel is typically stored on-site in storage tanks at airports (typically called airport fuel farms), although additional jet fuel can also be stored at nearby bulk terminals.

Some propane is produced at petroleum refineries, but most U.S. propane is produced from natural gas liquids, or NGLs, which are liquid components recovered during natural gas processing. NGLs are separated into purity products, including propane, ethane and butane at fractionation facilities. After fractionation, propane (also called liquefied petroleum gas) is compressed and stored as a liquid. Typically, propane is moved from fractionation facilities by pipeline, truck, rail or barge to bulk propane terminals or directly to distributor storage depots. From distributor sites, the propane is transported by smaller trucks, known as bobtail trucks, to end users like residential and commercial customers.

Definitions

Gasoline: Also known as finished gasoline; a mixture of volatile hydrocarbons blended into a fuel suitable for use in spark-ignition engines. Typically, is a mixture of motor gasoline blending components, ethanol and small quantities of additives.

Motor Gasoline Blending Components: Naphthas used for blending into finished motor gasoline including reformulated gasoline blend stock for oxygenate blending (RBOB) and conventional gasoline blend stock for oxygenate blending (CBOB).

Distillate Fuel Oil: Petroleum fraction including diesel fuels, ultra-low sulfur diesel (ULSD) and fuel oils, used in on-highway diesel engines, railroad locomotives, agricultural machinery, space heating, and electric power generation; abbreviated as DFO.

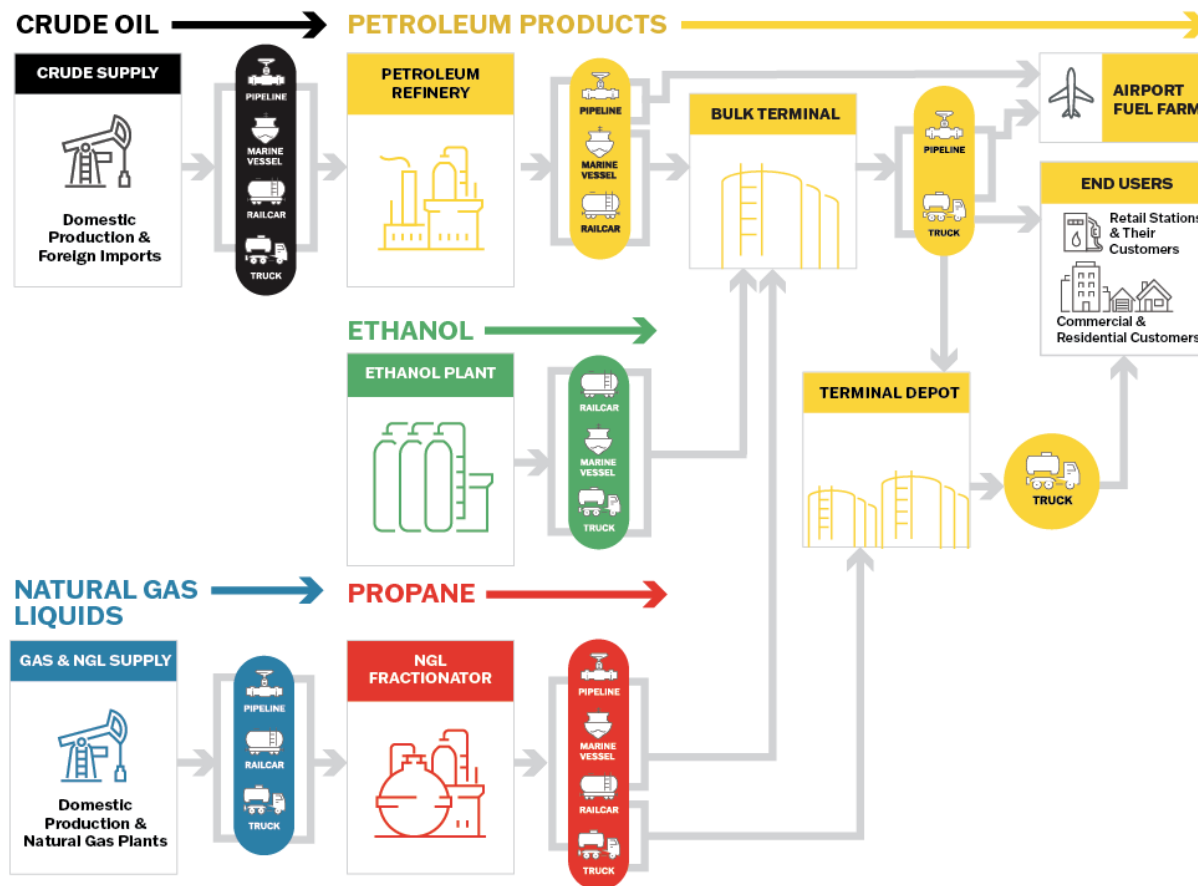
Kerosene: A light petroleum distillate which is mainly used and known as jet fuel, intended for commercial and military aircraft.

Residual Fuel Oil: A general classification of heavier petroleum oils used in electric power generation, vessel bunkering and industrial purposes; abbreviated as RFO.

Propane: Hydrocarbon extracted from natural gas or refinery gas streams which is a gas at standard conditions. Also known as liquefied petroleum gas (LPG).

Ethanol: Biofuel produced from biomass feedstocks and used principally for blending into motor gasoline as an oxygenate or octane enhancer.

Exhibit 1: Liquid Fuels Supply Chain¹



Most gasoline contains ethanol, a biofuel primarily produced from corn in the Midwest. Ethanol is used to oxygenate fuel. Its inclusion reduces air pollution and boosts octane. Ethanol typically does not move from production facilities by pipeline but is instead mainly transported by rail, barge or truck to either bulk petroleum terminals or terminals that are ethanol rail hubs. Rail is primarily used to move ethanol produced in the Midwest to bulk petroleum terminals and large ethanol distribution hubs.

Ethanol is stored in separate tanks from gasoline blendstock at terminals and is blended into finished gasoline over the terminal rack (i.e., the loading facility for tanker trucks) as it goes into trucks for distribution to retail stations. The most typical blend is 10% ethanol and 90% gasoline blendstock. Although a very small amount of gasoline is sold without ethanol for off-road and hobby uses, the gasoline blendstock coming from refineries has an insufficient octane level to be sold without ethanol. There are also some flex fuel vehicles that take higher blends of ethanol called E85. For this reason, the ethanol supply chain is also a critical area of focus for Maryland’s liquid fuel plan.

¹ Ethanol is only blended into gasoline at the bulk terminal rack. It is not blended into any other liquid fuels.

Below are some of the roles in the liquid fuels supply chain:

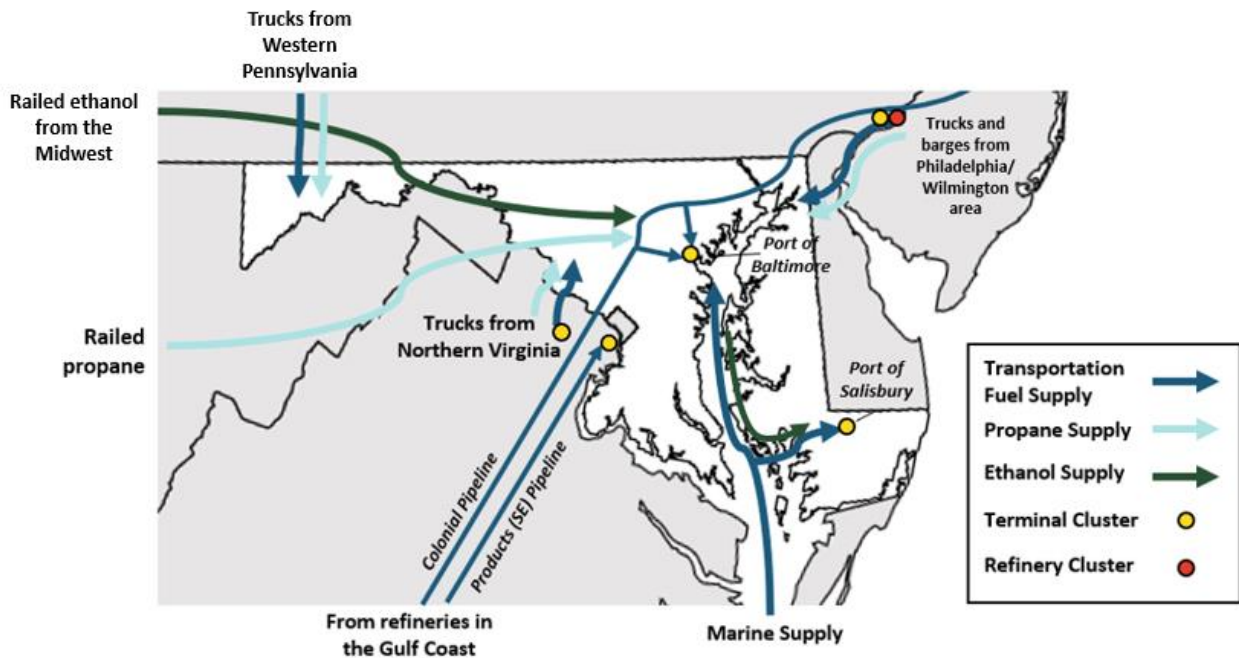
- **Fuel suppliers** bring fuel on a bulk basis into the terminals. Typically, they can be **refiners** or **traders** who produce, purchase or import fuel batches or blendstocks and ship fuel via marine, rail cargo or by pipeline. They can sell fuel at the terminal rack or to another marketer at the terminal.
- **Terminal owners** can be refiners, pipeline companies, or other midstream logistics companies. The terminal owner may store fuel entirely owned by themselves, but more often they store products that are owned by multiple other parties.
- **Fuel marketers** own the fuel at the terminal and market the fuel to be sold over the terminal rack.
- **Fuel distributors** arrange for fuel to move to the various end users via truck. They own the fuel from the terminal rack to the retail station. They may own retail stations or be contracted by **retail station owners** to purchase fuel on their behalf. Sometimes fuel distributors outsource the trucking to a third party called a **carrier** if they do not have their own fleet of trucks.

Different companies have different business models. Each may operate under just one role, or they may be vertically integrated with multiple roles within the supply chain.

Overview of Maryland Supply Chain

Maryland has no recoverable crude oil reserves or production. There are no petroleum refineries in the state. Transportation fuels (i.e., gasoline, diesel, and jet fuel) mainly arrive in Maryland either by pipeline from refineries in the U.S. Gulf Coast region or by vessel from domestic or foreign sources. The Colonial Pipeline originates in Houston, Texas and runs through Maryland before reaching its terminus in Linden, NJ. It delivers refined products, including motor gasoline, kerosene/jet fuel, home heating oil and diesel fuel, to delivery points in Maryland, including to Baltimore/Washington International Thurgood Marshall Airport (BWI) and the bulk storage terminals clustered in Baltimore (see [Exhibit 2](#)). Several bulk terminals in Baltimore Harbor that are connected to Colonial Pipeline also are equipped to receive marine deliveries of refined petroleum products by tanker or barge. Smaller ports like the Port of Salisbury also receive small vessels and barges of refined product. Much of the marine traffic moves from locations in Delaware and New Jersey through the Chesapeake and Delaware Canal, which connects the Delaware River to the Chesapeake Bay.

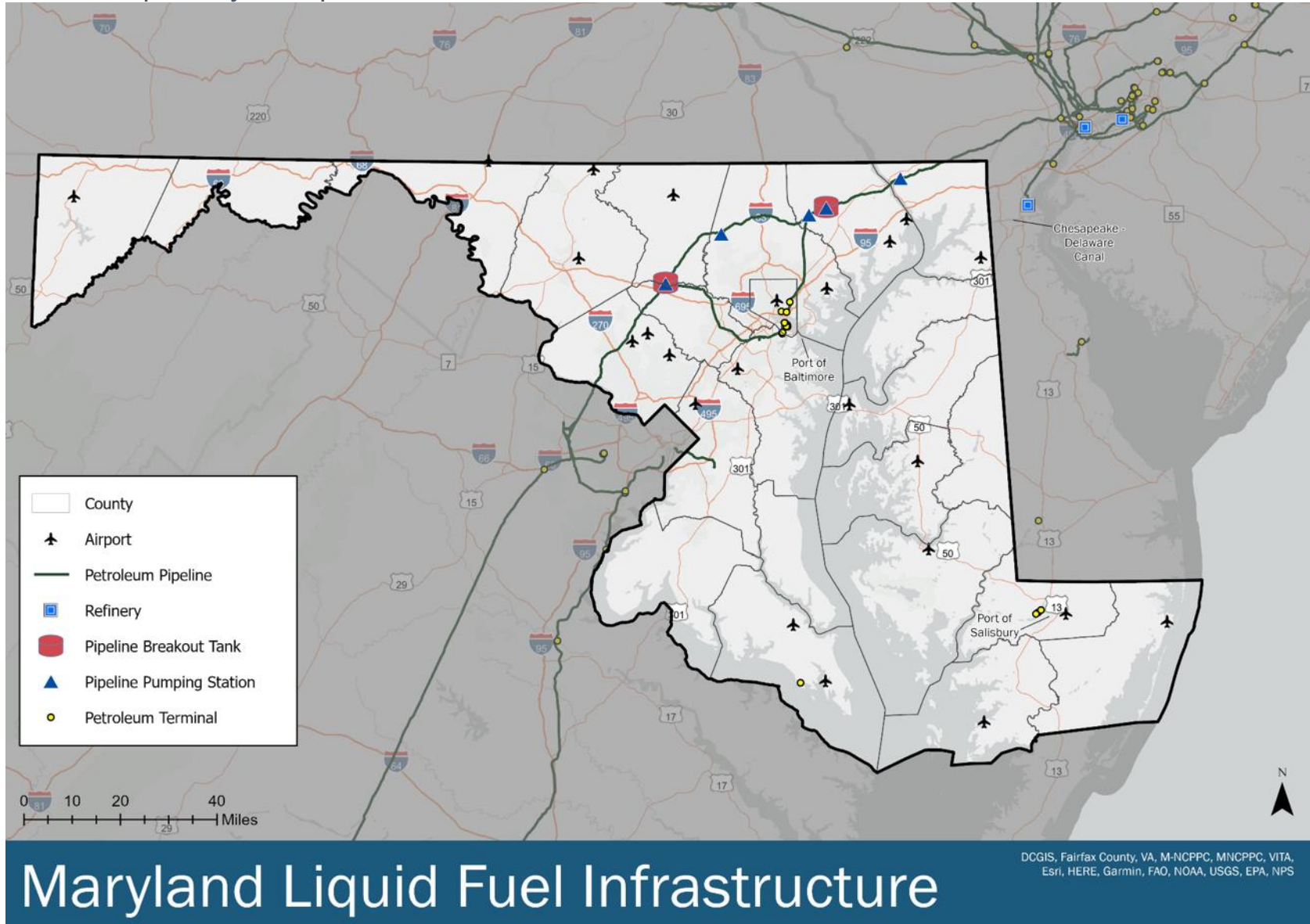
Exhibit 2: Product Supply in Maryland



Propane is delivered by rail and marine import to the bulk storage terminals at the Baltimore hub and to propane distributor depots within the state. Additionally, some propane is transported by tanker truck from out of state (mainly from the Marcus Hook Industrial Complex near Philadelphia, PA) to secondary propane distributor depots. From these terminals, smaller bobtail trucks move propane out to end users.

Ethanol is delivered by rail to several terminals in Baltimore. It is then either blended with gasoline at these terminals or trucked to other terminals in the state that do not receive ethanol by rail. Ethanol is also delivered by barge from Baltimore to terminals at the Port of Salisbury.

Exhibit 3: Map of Maryland Liquid Fuel Infrastructure



Supply Profiles

Liquid fuel supply for motor gasoline, ethanol, DFO, kerosene, RFO, and propane are summarized individually below. Where possible, these summaries outline where the fuel is produced, how it is transported to the state, distribution modes within the state, and specific vulnerabilities and threats to each fuel supply.

[Appendix C](#) contains descriptions of the various datasets used in the supply analysis.

Pipeline

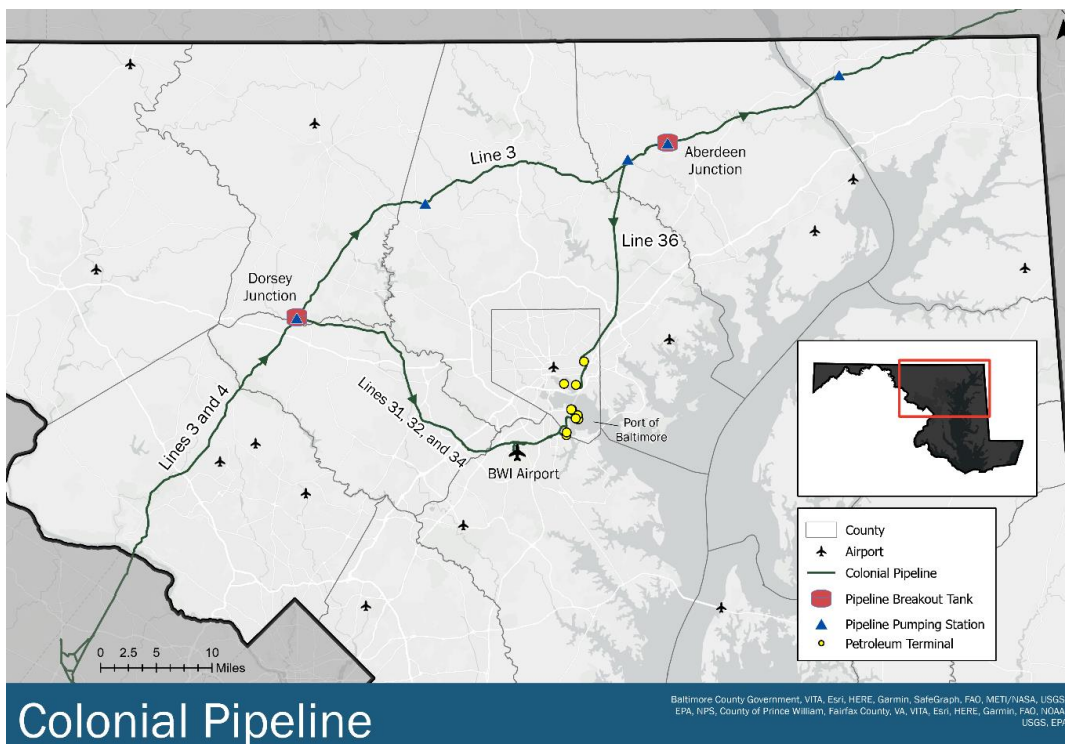
- The Colonial Pipeline is the most significant source of transportation fuels into Maryland, providing 65 to 75% of overall state transportation fuel supply. The line originates at refineries in Texas and Louisiana and passes through Maryland before terminating in the New York Harbor region.
- The Colonial Pipeline operates two parallel lines in Maryland, Lines 3 and 4, with respective capacities of 37 million gallons per day and 21 million gallons per day of mixed products (including gasoline, distillate, and jet fuel). Line 4 terminates at Dorsey Junction, in Woodbine, MD, while Line 3 continues northeast terminating in Linden, NJ, part of the New York Harbor area.
- Four spur lines branch off Colonial Pipeline to serve Baltimore markets. Lines 31, 32 and 34 originate at Dorsey Junction and deliver to terminals on the south side of the Harbor and BWI, and Line 36 originates at Aberdeen Junction to deliver to terminals on the north side of the Harbor. Pump stations at these sites are critical for the movement of fuel into the Baltimore region.

Baltimore-Washington International Thurgood Marshall Airport (BWI)

- The airport has about 8 days of fuel supply when full.
- BWI's primary source of jet fuel supply is Colonial Pipeline Spur Line 34, which splits off from the Colonial Mainline system at Dorsey Junction.



Source: Pixabay



Waterborne

- The largest port in the state is the Port of Baltimore. At the Port of Baltimore, gasoline and distillate marine deliveries from Delaware and Pennsylvania, as well as gasoline imports from foreign producers, supplement Colonial Pipeline shipments. Most terminals in the Baltimore Harbor can receive marine cargos. The Port of Baltimore received 1 million gallons per day of gasoline and 70,000 gallons per day of distillate via marine vessel in 2019, although values have varied widely in recent years. Much of this volume travels through the Chesapeake and Delaware Canal connecting the Delaware River to the Chesapeake Bay.
- When Colonial Pipeline shuts down, marine supply is the best alternative into Baltimore. In the aftermath of the 2021 Colonial Pipeline ransomware attack and shutdown, two tankers were diverted from other destinations to provide fuel to the Baltimore area.
- The Port of Salisbury on the Eastern Shore also receives barges of conventional gasoline and distillate. In 2019, the port received over 400,000 gallons per day of gasoline and 100,000 gallons per day of distillate. The terminals at the port supply a large portion of fuel for Maryland’s Eastern Shore.

Products Supplied via Waterborne Traffic at the Port of Baltimore in 2019 (gallons per day)				
	Gasoline	Distillate	Kerosene	Total
Domestic Inbound	844,872	68,880	109,704	1,023,456
Foreign Imports	157,080	0	0	157,080
Total	1,001,952	68,880	109,704	1,180,536

Source: U.S. Army Corps of Engineers Waterborne Commerce Statistics Center, 2019

Trucking

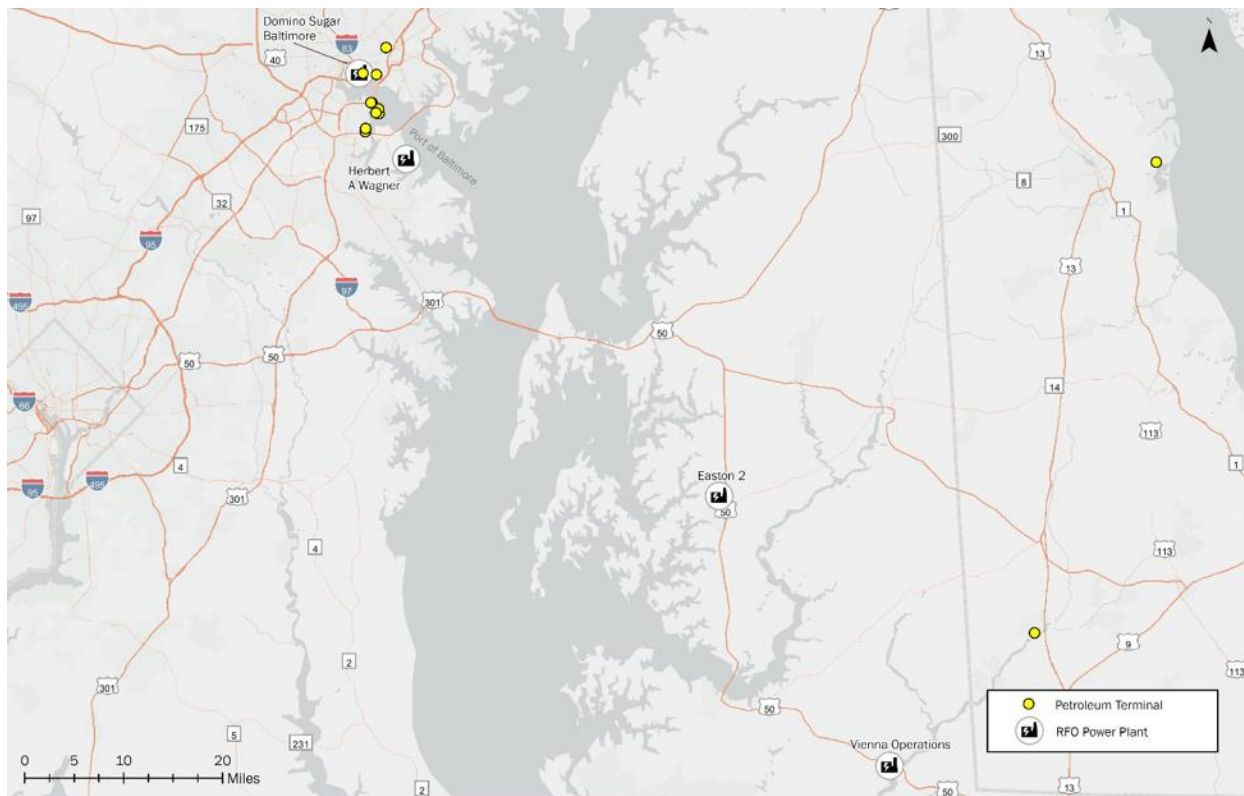
- Trucks move gasoline and diesel from the Baltimore Harbor terminal cluster to retail stations and truck stops across the state. Heating oil is also trucked from the terminals to heating oil depots across the state. Other off-road diesel is trucked to various end user storage sites, such as railyards and agriculture facilities.
- Jet fuel can be brought into terminals in Baltimore Harbor and then trucked to BWI as a backup to their primary pipeline supply.
- End users in western Maryland receive some transportation fuel trucked from Pennsylvania bulk terminals along the Buckeye Laurel Pipeline and from the Pittsburgh area.
- Eastern Maryland is partially supplied with fuel trucked from the Delaware City refinery in Delaware, as well as two refineries located outside Philadelphia. Together, the three refineries have approximately 22 million gallons per day crude oil capacity, and the Philadelphia-area cluster also operates as a marine import hub. Additionally, some Maryland retail stations near Washington, D.C. may receive product from terminals in Virginia supplied either via Colonial Pipeline or Kinder Morgan's Products (SE) Pipeline.

Ethanol

- Much of the ethanol used in Maryland is transported by unit trains, where the train typically carries only one type of commodity on CSX rail lines from Midwest ethanol production facilities into the Kinder Morgan Baltimore Transload Terminal. The ethanol can be temporarily stored there. Then the ethanol is either piped to the neighboring Citgo Baltimore Terminal or trucked to other terminals in Maryland.
- Ethanol is also sent by rail directly into other terminals in Baltimore.
- Ethanol is barged into the Port of Salisbury for use at terminals in the area. These barges typically originate in the Philadelphia, PA and Delaware City, DE areas.

Waterborne

- Around 88,000 gallons per day of residual fuel oil (RFO) were received into the Port of Baltimore in 2019. RFO comes from Delaware and Pennsylvania via small vessels or barges.
- Some of the RFO goes to the terminals within the Baltimore Harbor cluster to be used to supply vessels with bunker fuel.
- The majority of RFO is used and stored at a few power plants in the state. Most RFO can be barged and received via docks at the power plants.



Residual Fuel Oil Power Plants

VITA, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

Rail

- Most propane is brought into Maryland by rail car on CSX lines into the Baltimore terminal cluster and various propane terminal locations in the state.

Trucking

- Propane is regularly trucked on transport tanker trucks from the Marcus Hook Industrial Complex near Philadelphia, PA, to terminals in Maryland. Marcus Hook is a large natural gas liquids fractionation facility for NGLs out of the Appalachian production region. Additionally, some propane is trucked to Maryland from various delivery terminals along Enterprise Products Partners' TE Products Pipeline (TEPPCO) which brings propane up from the Gulf Coast.
- Propane can be trucked from as far away as Apex, NC, which is the termination point of the Dixie Pipeline from the Gulf Coast, especially when there are supply constraints in the Philadelphia area.
- Propane is trucked from the propane terminals to consumers on smaller bobtail trucks.

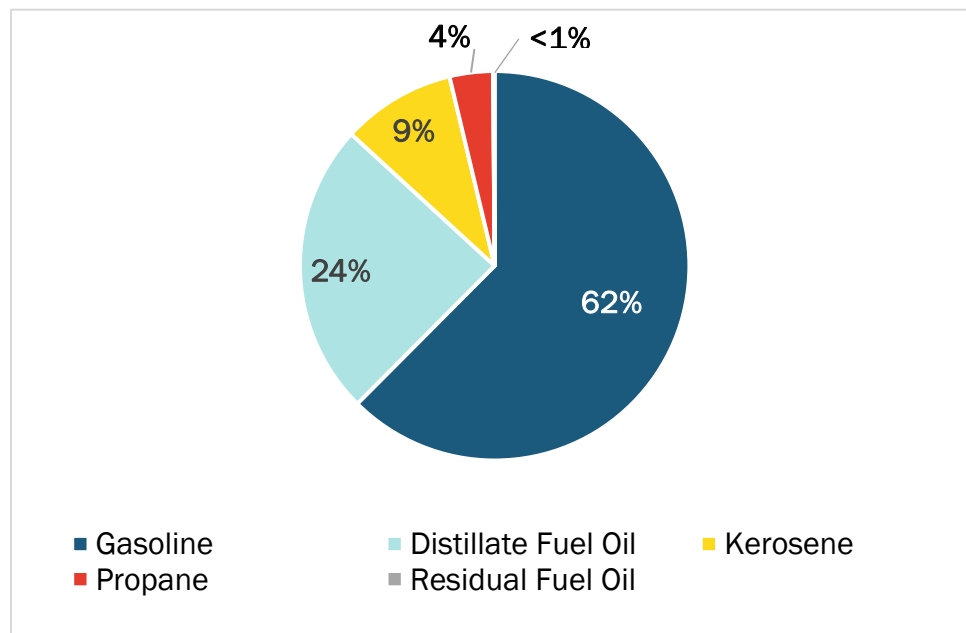
Waterborne

- Propane can be barged into terminals at the Port of Baltimore.

Section 2: Fuel Demand

In 2019, approximately 3.1 billion gallons of liquid fuels were consumed within the state of Maryland. These petroleum products include motor gasoline blended with ethanol, distillate fuel oil (DFO, also referred to as diesel), residual fuel oil (RFO), propane, and kerosene (including jet fuel). Among other uses, these fuels power motor vehicles, heavy machinery and farm equipment, airplanes, power plants and marine vessels. They provide heat to residential homes across the state and fuel for backup power generators during power outages, and they support hospitals, local governments, emergency responders and other critical sectors. An uninterrupted supply of these fuels is crucial to Maryland’s economy and public safety.

Exhibit 4: Annual Fuel Consumption in Maryland by Fuel Type



Motor Gasoline with Ethanol	Distillate Fuel Oil	Kerosene/Jet Fuel	Propane	Residual Fuel Oil
<ul style="list-style-type: none"> • Motor vehicles • Recreational boats • Equipment and tools • Small emergency generators 	<ul style="list-style-type: none"> • On- and off-highway vehicles • Equipment and machinery (including Farm Sector) • Backup power generation • Residential home heating 	<ul style="list-style-type: none"> • Jet Fuel: <ul style="list-style-type: none"> • BWI Airport • Martin State Airport • Other county, municipal, and regional airports 	<ul style="list-style-type: none"> • Home heating • Agricultural uses such a crop drying • Commercial uses 	<ul style="list-style-type: none"> • Electric power generation • Vessel bunkering

Source: Energy Information Administration (EIA) [SEDs data](#) and [Prime Supplier Sales](#)

Maryland followed the overall U.S. trend in 2020 as fuel demand was altered by COVID 19. As such, the summary represents 2019 which is the latest “normal” year of demand.

As shown in [Exhibit 5](#), in Maryland, most of the transportation sector’s energy demand is met by liquid fuel (mainly gasoline, diesel and jet fuel). A little over a quarter of energy consumption in the industrial sector is fueled by liquids. Energy generated by liquid fuels in the commercial and residential sectors is likely primarily used for the heating of homes and businesses. Fuel in these sectors is also used to power backup generators. Electric power generation has shifted away from liquid fuel in favor of natural gas and a growing share of renewable sources.

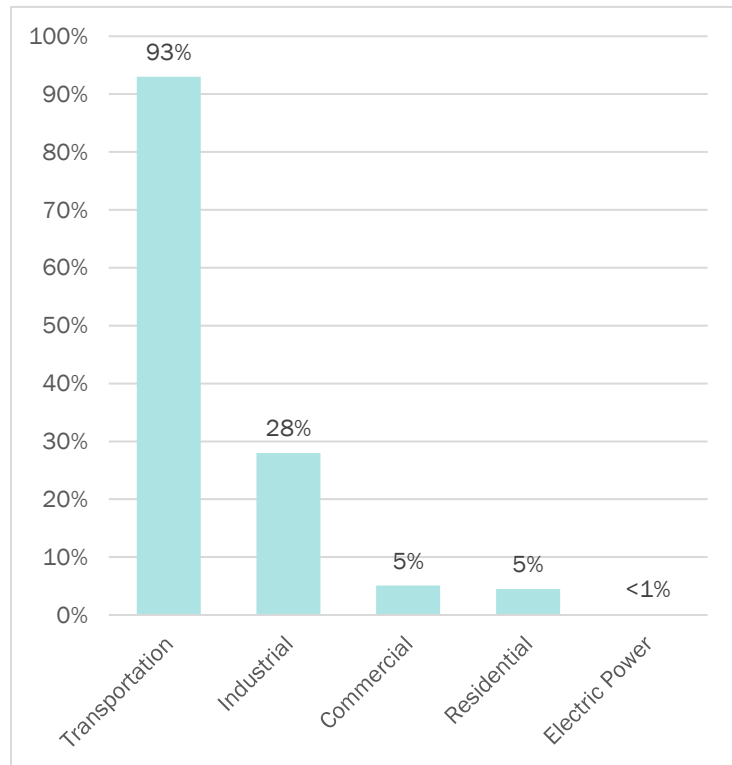
Demand for some of these fuels varies seasonally. Consumption of heating fuel such as distillate and propane increase in winter months, with stocks of these fuels building in advance of the heating season. Demand for gasoline and jet fuel peaks in the summer during vacation season, and stocks similarly build up to the peak demand period. Jet fuel demand also sees marginal increases during the winter holiday season.

This section contains individual summaries of Maryland demands for motor gasoline, DFO, RFO, propane, and kerosene. Where possible, these summaries outline the amount of product consumed or sold within the state, the stocks held within the state throughout the year, how the fuel is used within the state, and key information about each fuel.

The Energy Information Administration (EIA) is the primary data source for these demand analyses. EIA is an independent agency within the U.S. Department of Energy (DOE) that conducts industry surveys to compile statistics on energy supply and consumption. Appendix C contains descriptions of the EIA datasets used in the demand analysis.

For all analyses and graphs, 2019 is used as the reference year for annual volumes. 2020 volumes are included on graphs for context, although supply and demand trends were atypical due to the impacts of the COVID-19 pandemic. All five-year ranges in the demand documents cover the years 2015 through 2019.

Exhibit 5: Share of Maryland’s Energy Demand Met by Liquid Fuels by Sector in 2019

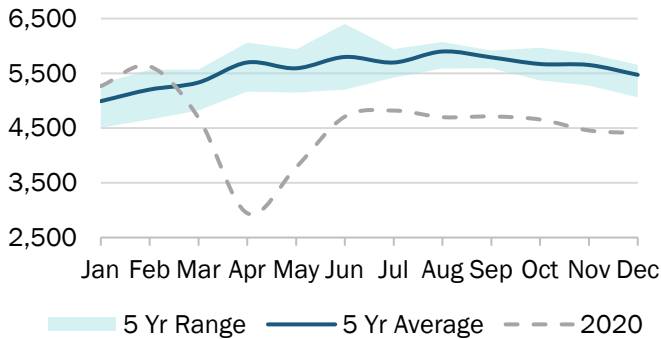


Maryland followed the overall U.S. trend in 2020 as fuel demand was altered by COVID 19. As such, the summary represents 2019 which is the latest “normal” year of demand.

5.3 million gallons per day of gasoline were sold in state on average **in 2019**. (EIA)

Motor Gasoline Sales

Thousand Gallons per Day

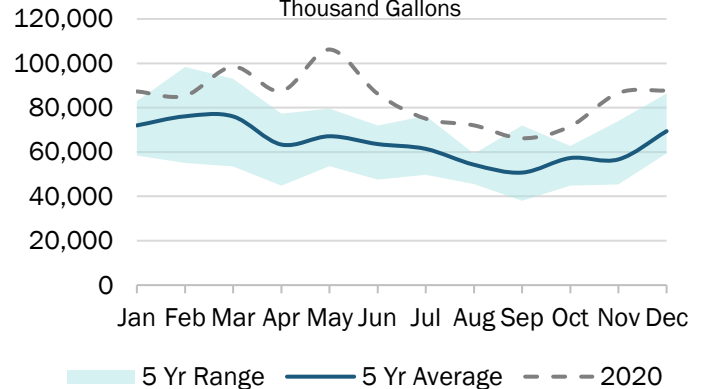


*Motor gasoline sales volume includes gasoline blending components and ethanol. Does not include aviation gasoline, which is used in piston-engine propeller aircraft. (EIA)

There were on average **70 million gallons** of gasoline stored at terminals in state **in 2019**, approximately **two weeks of supply**. (EIA)

Motor Gasoline Blending Component Stocks at Terminals

Thousand Gallons

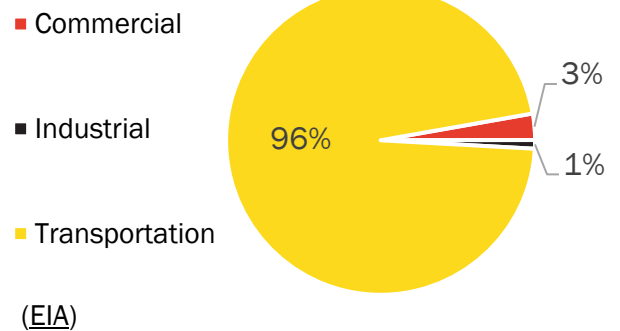


*Stocks data for motor gasoline includes reformulated gasoline blend stock for oxygenate blending (RBOB) and conventional gasoline blend stock for oxygenate blending (CBOB). (EIA)

Gasoline Demand

- Gasoline is primarily a transportation fuel used in motor vehicles. Other uses of gasoline include recreational boats, small aircraft, equipment and tools, and some small emergency electricity generators.
- Gasoline demand tends to peak annually in the summer driving months, as people travel to Maryland's beaches, state parks, and other vacation spots from Memorial Day weekend through Labor Day weekend. Holiday weekends throughout the year are also times of high demand. In 2019, summer demand (May through September) averaged 5.5 million gallons per day, while demand the rest of the year averaged 5.2 million gallons per day.
- Stocks of gasoline tend to draw down during the summer and build again in the fall and winter.
- In 2019, there were approximately three weeks of gasoline supply stored across the U.S.

Motor Gasoline Use by End Sector in 2019



(EIA)

Maryland followed the overall U.S. trend in 2020 as fuel demand was altered by COVID 19. As such, the summary represents 2019 which is the latest "normal" year of demand.

Gasoline Fuel Specifications

- Finished motor gasoline is comprised of gasoline blending components (e.g., RBOB, CBOB), additives, and ethanol to meet fuel regulations and emission requirements.
- Ethanol is stored separately at terminals and is either in-line blended or splash blended into delivery trucks. Most gasoline sold in Maryland contains 10% ethanol to meet renewable fuel standards. The inclusion of ethanol also boosts octane. Some higher ethanol blends are sold at select retail stations. ([MDE](#))
- The composition of gasoline sold at retail stations varies both geographically and seasonally due to federal and state gasoline fuel specification requirements outlined in the [Code of Maryland Regulations 03.03.05](#). The types of gasoline include reformulated and conventional, and are primarily differentiated through the fuel's Reid Vapor Pressure (RVP), a measure of volatility.
 - **Conventional gasoline:** Conventional gasoline is sold as a summer or winter blend, depending on the season. Low volatility conventional "summer gasoline" is sold June through mid-September to reduce emissions and improve air quality. Summer gasoline has an RVP of 9.0 pounds per square inch (psi). Higher RVP fuel is allowed in during the winter months as shown on the schedule below. Around 10% of gasoline sold in Maryland is conventional.
 - **Reformulated gasoline (RFG):** RFG is formulated to reduce ozone in urban areas and is required to be sold in 13 Maryland counties year-round. RFG does not exceed an RVP of 7.4 psi during summer months. A waiver would be required to sell conventional gasoline in an RFG area. Around 90% of gasoline sold in Maryland is reformulated.



RFG Requirements by County

EPA

Maryland RVP Requirements for Gasoline by Month

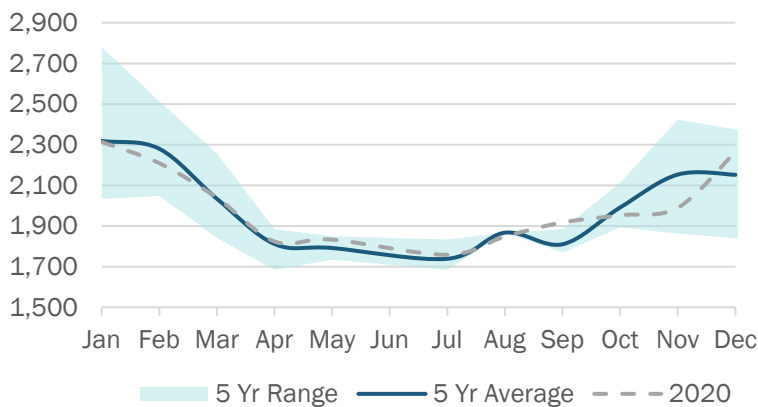
MONTH	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC
Maryland RVP Requirement	15.0 psi	15.0 psi	13.5 psi	13.5 psi	9.0 psi	9.0 psi conventional gasoline	7.4 psi RFG	7.4 psi RFG	11.5 psi	13.5 psi	13.5 psi	15.0 psi

Approximately **2 million gallons per day** of distillate were sold on average **in 2019**. (EIA)

There were on average **62.1 million gallons** of distillate stored at terminals in state **in 2019**, approximately **one month of supply**. (EIA)

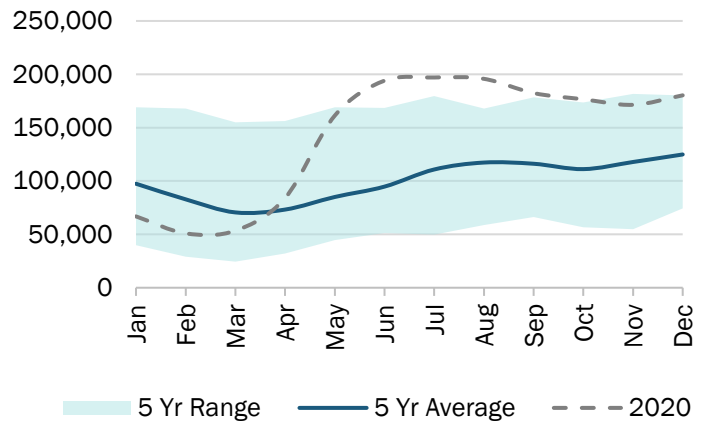
Distillate Fuel Oil Sales

Thousand Gallons per Day



Distillate Fuel Oil Stocks at Terminals

Thousand Gallons



*Missing June data has been estimated. (EIA)

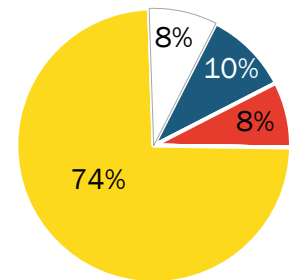
*There are also “consumer stocks” held by heating oil distributors, power plants and gas stations, and stored at individual homes and businesses not included in this chart. **Stocks do not include biodiesel. (EIA)

Distillate Fuel Specifications and Taxation

- Distillate fuel is separated into two categories for tax purposes: on-highway and off-highway use. In Maryland, on-road diesel and home heating oil are virtually identical fuels. As of 2019, all fuel oil used for home heating in Maryland is required to contain no more than 15 parts per million (ppm) sulfur, aligning the sulfur content with the federal requirement for ultra-low sulfur diesel (ULSD).
- On-highway diesel fuel (“clear diesel”) is subject to motor fuel taxes levied by the U.S. Internal Revenue Service (IRS) and the State of Maryland.
- Off-highway diesel used in machinery, agricultural vehicles, and heating oil is also called “dyed diesel,” because a red additive is added to indicate the fuel cannot be legally used in on-road vehicles.

Distillate Fuel Oil Use by End Sector in 2019

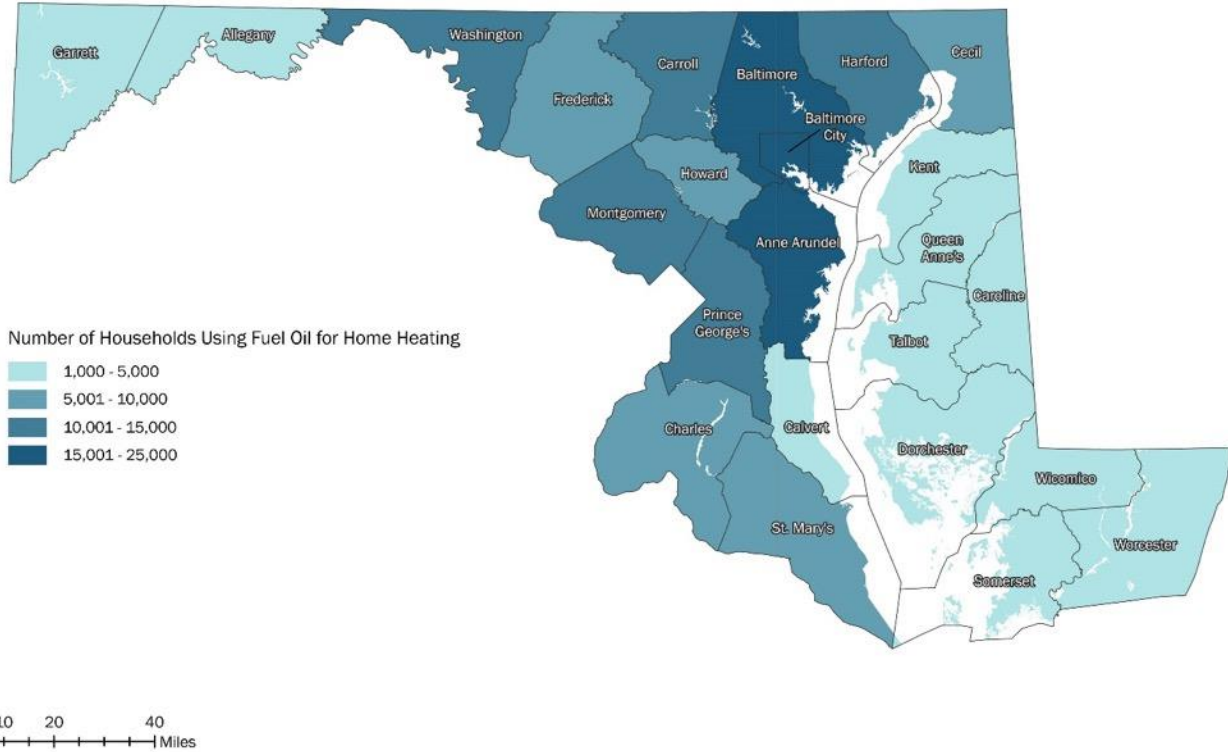
- Residential
- Commercial
- Transportation (On-Highway)
- All Other



(EIA)

Distillate Demand

- Distillate fuel oil is used in vehicles, machinery, power plants, backup generators and other equipment, as well as for space heating. No. 2 distillate, the only distillate sold in the state, is used in trucks, automobiles, locomotives and heating systems. Distillate fuel oil used for power generation is primarily used on peak demand days during the winter months by dual-fuel power plants on interruptible gas supply contracts. (EIA)
- Maryland consumes nearly three-quarters of distillate for on-highway transportation with the remainder consumed for residential and commercial space heating and other applications.
- Distillate fuel sales peak in the winter months because of increased heating demand. Stocks typically build in the late summer and fall in preparation of increased winter demand.
- Approximately 8% of Maryland households, or about 187,000 homes, use fuel oil as their primary source of space heating. (U.S. Census Bureau)



Fuel Oil Use for Heating by County

U.S. Census Bureau (2019). American Community Survey 1-year Estimates [Table B25040]. Retrieved from https://data.census.gov/cedsci/table?q=B25040&_lang=en&_allgeo=US24-240500000&tid=ACSDT1Y2019.B25040.

Distillate Fuel Oil Use for Home Heating		
County	Number of DFO Households	% of Total Households
Allegany	2,921	11%
Anne Arundel	21,763	10%
Baltimore	25,195	8%
Baltimore City	11,054	5%
Calvert	3,689	12%
Caroline	2,204	18%
Carroll	13,684	23%
Cecil	7,757	21%
Charles	8,154	14%
Dorchester	2,356	18%
Frederick	9,747	11%
Garrett	3,511	28%
Harford	12,127	13%

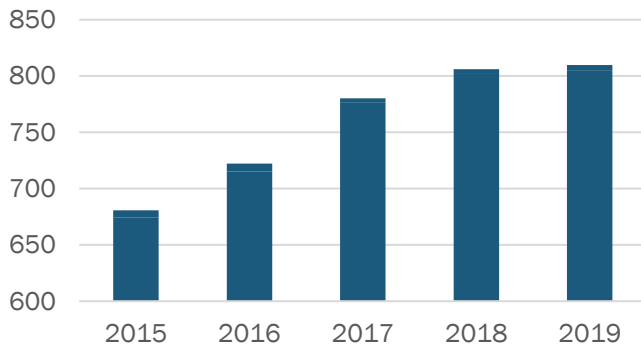
Distillate Fuel Oil Use for Home Heating		
County	Number of DFO Households	% of Total Households
Howard	5,606	5%
Kent	1,666	21%
Montgomery	11,471	3%
Prince George's	12,421	4%
Queen Anne's	2,955	16%
St. Mary's	8,036	20%
Somerset	1,260	15%
Talbot	2,092	12%
Washington	10,906	19%
Wicomico	4,233	11%
Worcester	1,854	8%
Maryland	186,662	8%

(U.S. Census Bureau)

805,000 gallons per day of kerosene were consumed in state **in 2019**, essentially all in the form of jet fuel. (EIA)

There were on average **3.1 million gallons** of kerosene stored at terminals in state **in 2019**, about **4 days of supply**. (EIA)

Kerosene Consumption
Thousand Gallons per Day

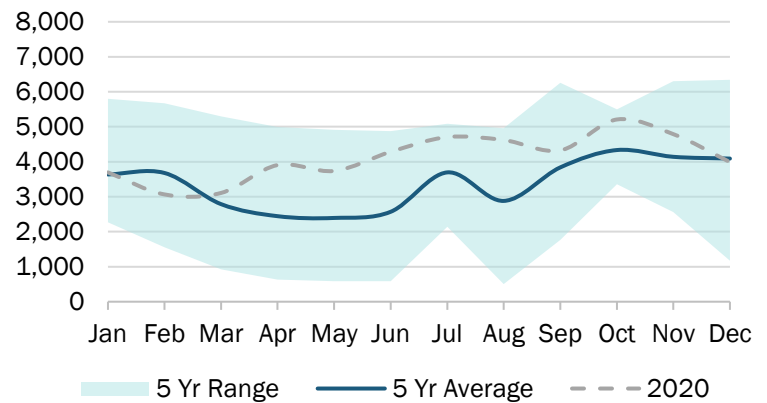


*Non-military uses only. (EIA)

Kerosene Demand

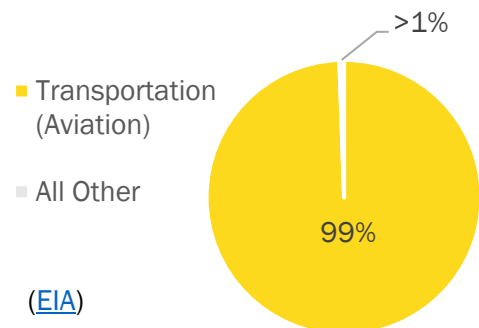
- Jet fuel makes up 99.5% of Maryland's kerosene consumption. The remaining 4,000 gallons per day of kerosene are used in residential applications, such as space heaters, cook stoves, and water heaters.
- There are 33 public-use airports in Maryland, two of which (Baltimore-Washington Thurgood Marshall International Airport, or BWI, and Martin State Airport) are run by the state.
- BWI consumed approximately 730,800 gallons per day of jet fuel in 2019, according to industry group Airlines for America, or 91% of total Maryland jet fuel consumption.
- Martin State Airport handles private and corporate aircraft and is the headquarters for the Aviation Division (MED-EVAC) of the Department of State Police, the Helicopter Unit of the Baltimore City Police, and the Aviation and Marine Units of the Baltimore County Police.
- A full list of county, municipal and regional airports is available on the [state government's website](#).
- Jet fuel is also consumed in the state at military bases, including Joint Base Andrews. The Department of Defense most commonly uses an aviation fuel called JP-8, which is slightly different in composition from the Jet A fuel used for commercial and general aircraft. Note that military jet fuel volumes are not reported to EIA and are not included in the above data.

Kerosene Stocks
Thousand Gallons



*Does not include stocks held at airports. (EIA)

Kerosene Use by End Sector in 2019



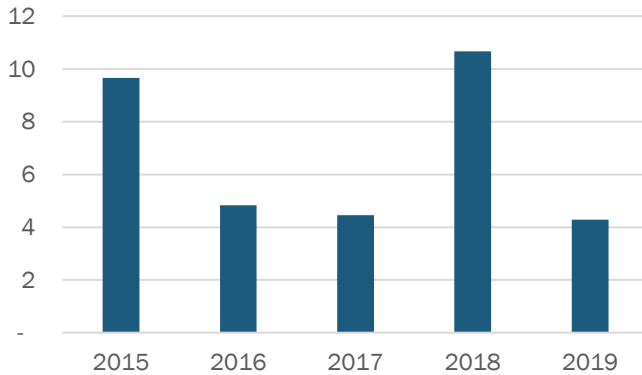
(EIA)

Maryland followed the overall U.S. trend in 2020 as fuel demand was altered by COVID 19. As such, the summary represents 2019 which is the latest "normal" year of demand.

11,700 gallons per day of residual fuel oil were consumed in state **in 2019**. (EIA)

There were on average **18.2 million gallons** of residual fuel oil stored at terminals in state **in 2019**. (EIA)

Residual Fuel Oil Consumption
Million Gallons per Year

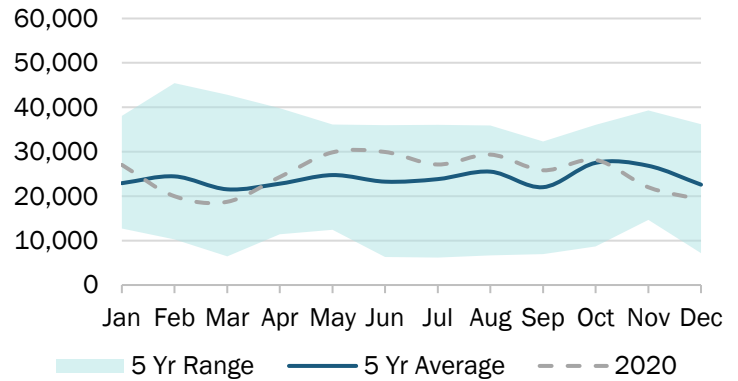


(EIA)

Residual Fuel Oil Demand

- Residual fuel oil (RFO) is primarily used in Maryland for electric power generation. These power plants tend to be older generating units turned on as needed to help meet power demand.
- Sales of RFO in Maryland can vary significantly from year to year but have generally been trending downward over time due to cleaner power generation and other environmental regulations. (EIA)
- As of 2020, regulations on sulfur emissions also [limit](#) RFO use for vessel bunkering.

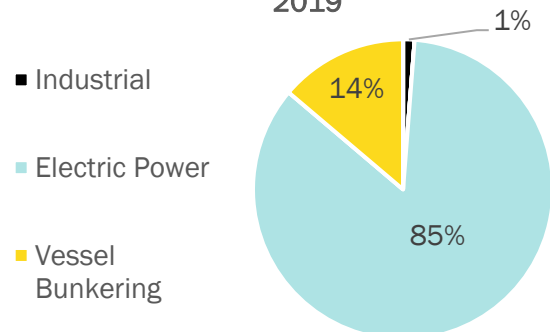
RFO Stocks at Terminals
Thousand Gallons



*Does not include stocks held at consumer sites, such as power plant tanks or vessel bunkering facilities. (EIA)

Source: [EIA 860](#) and [EIA 923](#)

Residual Fuel Oil Use by End Sector in 2019

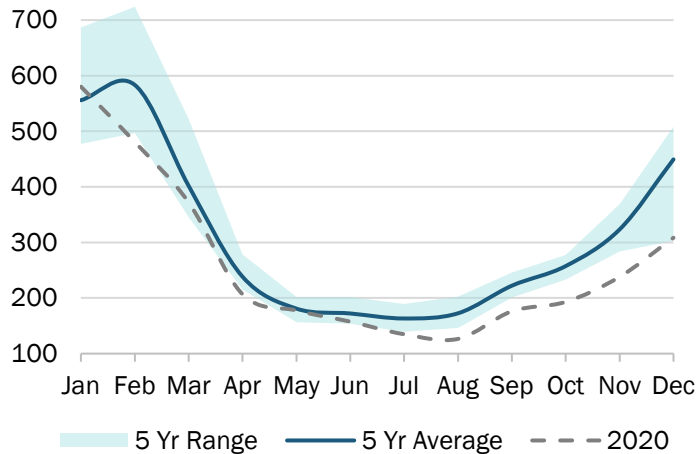


(EIA)

Maryland followed the overall U.S. trend in 2020 as fuel demand was altered by COVID 19. As such, the summary represents 2019 which is the latest “normal” year of demand.

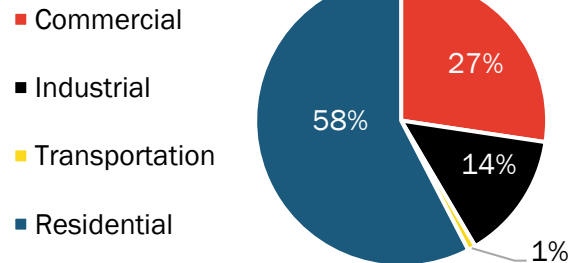
512,000 gallons per day of propane were sold at bulk terminals in Maryland in February 2019, the peak month for propane sales for that year. (EIA)

Propane Sales
Thousand Gallons per Day



(EIA)

Propane Use by End Sector in 2019



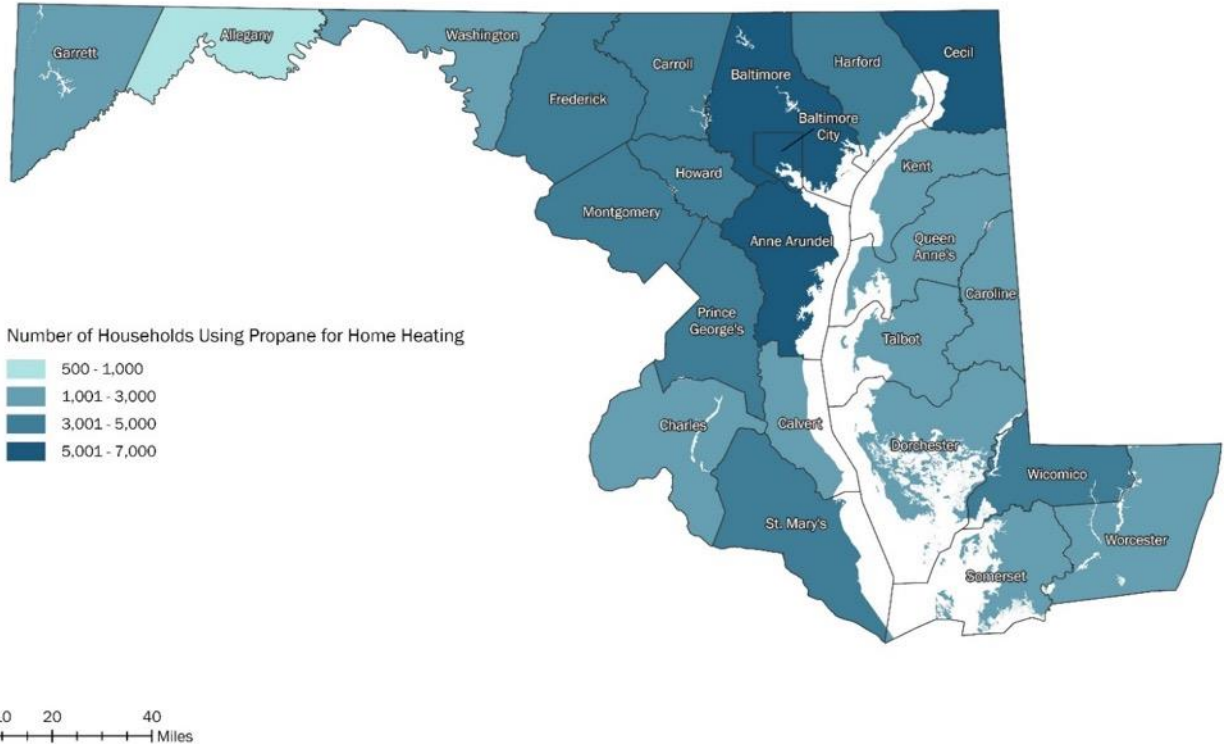
*Industrial may include some non-propane hydrocarbon gas liquids.

**Agricultural use is included in the industrial sector. (EIA)

Propane Demand

- Propane is used primarily for heating, cooking and agricultural uses. Approximately 3% of Maryland households, or about 76,000 homes, use propane as their primary source of space heating. (U.S. Census Bureau)
- Propane demand is highly seasonal with minimal demand in summer for cooking, increased demand in the fall from agricultural use, and peak demand in the winter months from home heating.
- Nationally, demand for propane for agricultural use increases in the early fall during particularly wet years, when propane heaters are used to dry crops after harvesting. This increased demand for propane in agricultural states can be felt nationally in higher prices and lower supply available for residential heating heading into the winter months. Propane may also be used for space heating in buildings housing livestock.
- Propane stocks build in the summer and early fall months ahead of heating season. However, because large quantities of propane are stored in secondary (distributor) storage sites for which volumes are not tracked by EIA, it is difficult to estimate how much propane is stored in the state at a given time.

Maryland followed the overall U.S. trend in 2020 as fuel demand was altered by COVID 19. As such, the summary represents 2019 which is the latest “normal” year of demand.



Propane Use for Heating by County

U.S. Census Bureau (2019). American Community Survey 1-year Estimates (Table B25040). Retrieved from https://data.census.gov/cedsci/table?q=B25040&g=0400000US24240500000&tid=ACSDT1Y2019_B25040

Propane Use for Home Heating		
County	Number of LPG Households	% of Total Households
Allegany	784	3%
Anne Arundel	6,068	3%
Baltimore	6,828	2%
Baltimore City	2,771	1%
Calvert	2,077	6%
Caroline	1,779	15%
Carroll	3,332	5%
Cecil	6,720	18%
Charles	2,101	4%
Dorchester	1,520	12%
Frederick	3,485	4%
Garrett	1,884	15%
Harford	4,764	5%

Propane Use for Home Heating		
County	Number of LPG Households	% of Total Households
Howard	3,316	3%
Kent	1,626	20%
Montgomery	4,855	1%
Prince George's	3,574	1%
Queen Anne's	3,004	16%
St. Mary's	3,153	8%
Somerset	1,523	18%
Talbot	1,470	9%
Washington	2,835	5%
Wicomico	3,973	11%
Worcester	2,876	13%
Maryland	76,318	3%

(U.S. Census Bureau)

Maryland followed the overall U.S. trend in 2020 as fuel demand was altered by COVID 19. As such, the summary represents 2019 which is the latest "normal" year of demand.

Section 3: Fuel Supply Vulnerabilities

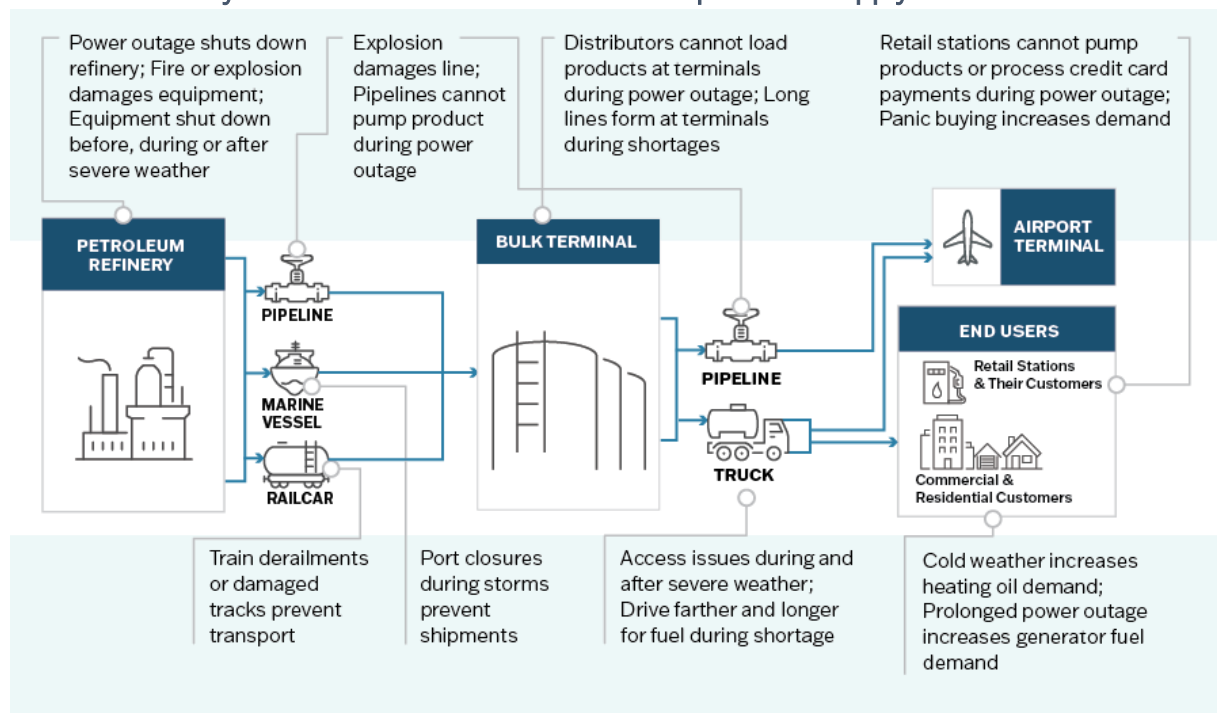
Fuel supply relies on many pieces of the supply chain functioning together. This makes fuel supply vulnerable to disruption from a variety of events. Threats to fuel supply exist and occur within and outside Maryland’s borders in upstream operations (crude oil extraction and transportation) and downstream operations (turning crude oil into refined products) from man-made and natural causes. Each link in the supply chain may shut down for a variety of reasons, including catastrophic weather, cybersecurity events, electric grid failure, terrorist threats, Supervisory Control and Data Acquisition (SCADA) related control system issues and disruptions to product delivery systems, amongst many other reasons.

Regardless of the circumstances, these threats can have significant impacts on Maryland’s fuel supply.

Threats to Fuel Supply

Components of the fuel supply chain, including production wells, refineries, pipelines, marine vessels, railcars, terminals and trucks, are all susceptible to **physical damage**, either accidental or due to sabotage, that can disrupt the flow of fuel. [Exhibit 6](#) illustrates how elements of the downstream supply chain can be impacted by some of these disruptions.

Exhibit 6: Non-Cyber Threats to the Downstream Liquid Fuel Supply Chain



Weather events

Extreme weather events are some of the most common and recognizable disruptions, although each brings its own unique challenges. Maryland frequently faces threats from **both winter and tropical storms** but could also face threats from **hurricanes, forest fires and geological incidents – such as earthquakes, landslides and sinkholes** – occurring both within and outside of the state or nation. These types of events pose a variety of threats to both infrastructure and fuel delivery processes.

As a cautionary measure, refineries within a storm's predicted path typically temporarily discontinue operations prior to anticipated high winds to prevent damage to equipment and danger to personnel. Refineries may also shut down or reduce production in advance of unusually cold weather, which can cause damage at refineries. This is particularly true for Gulf Coast refineries, which are not designed to withstand sustained cold weather. Low temperatures can cause product to freeze in pipes, delaying refinery restart timelines while any damage is identified and repaired. Ports typically also close in advance of major storms, temporarily pausing the in- and out-bound traffic of petroleum products.

In addition to extreme weather events, **access issues** caused by debris, flooding, ice or other obstructions on roads may prevent tanker trucks from loading at terminals and refilling retail stations. Damage to port infrastructure after a storm may also delay resumption of port operations. Sunken vessels, floating debris, and oil or chemical spills also may affect port operations. Shoaling, when ports fill up with silt and clay sediment, may prevent large tankers from reaching marine berths and may require dredging.

Power outages

Power outages are most commonly caused by tree branches and other debris impacting power lines during high winds and ice storms. In recent years, extreme heat events and cyberattacks pose an increasing threat to grid stability.

Power outages can disrupt the entire fuel supply chain, depending on their location and duration. Below are some of the consequences of a power outage disruption:

- Refineries are unable to refine product.
- Pipeline pumping stations and remotely controlled equipment are unable to operate without power, so pipelines may shut down.
- Terminals are unable to pump product out of tanks to load into trucks or utilize vapor recovery equipment.
- Retail stations without backup generators cannot pump product from underground tanks into vehicles or process credit card payments.

Other disruptions

It is also possible that disruptions to **domestic and international crude oil production and transportation** could upset the supply of feedstocks and finished fuels. Offshore and onshore drilling rigs could be damaged by an unintended ignition of fuel or by a storm, and international events and geopolitics (such as the Organization of Petroleum Exporting Countries, or OPEC, cutting production rates) could disrupt foreign crude imports. Disruptions to crude oil supply chains generally take longer to be felt at the pump than disruptions to fuel product supply chains, and safeguards like the U.S. Department of Energy's [Strategic Petroleum Reserve](#) are designed to help mitigate the worst impacts of a major crude oil disruption.⁴

On the labor side, **driver shortages** in recent years have increasingly become a limiting factor hindering the timely delivery of fuel. The driver shortage is especially disruptive in conjunction with the threats described above, causing a smaller number of drivers to complete more trips and drive longer hours during shortages. The trucking industry cites an aging workforce and high turnover as contributing factors to this multi-year trend, as well as the fact that drivers must have a hazardous material (HAZMAT) certification required by the U.S. Transportation Security Administration (TSA) to haul liquid fuels.

Cybersecurity threats, vulnerabilities, and physical impacts

Cybersecurity threats pose an increasing risk to the U.S. power grid and to liquid fuel infrastructure. A 2019 report from the Office of the Director of National Intelligence highlighted that adversary nations already possess the capabilities to impact energy infrastructure, and this threat is expected to continue to grow.

The overall extent and severity of the physical impacts from a cyberattack can vary widely. At one end of the spectrum, a successful cyberattack may briefly disrupt internal company systems without impacting power or fuel delivery to customers. On

the more extreme end, a cyberattack can directly damage physical infrastructure or infiltrate control systems to disrupt energy delivery. The Stuxnet computer virus, for example, was reportedly used in the 2009-2010 timeframe to destroy Iranian nuclear centrifuges by increasing turbine speed and causing the machines to physically degrade.⁶ Even when a cyberattack does not directly disrupt energy delivery, a company may still choose to shut down or scale back operations as a security precaution. This is what happened during the May 2021 Colonial Pipeline cyberattack, when the company shut the pipeline for six days to scan systems for additional infiltrations.

Cyberattacks fall largely into two categories: those that target **information technology (IT)** systems and those that target **operational technology (OT)** systems. IT systems include the software, networks, databases, or platforms used to control, manage, transmit and store data. IT attacks that compromise these systems can lead to unauthorized disclosure, alteration of information or impaired data availability. A ransomware or other IT attack on an energy-related company's headquarters or data server could limit their ability to access or keep company data private, complete financial transactions, access internal company software or maintain a public-facing website. An IT attack can also limit the company's ability to provide its services to customers by reducing the company's visibility into its processes.

OT systems include the hardware and software, especially industrial control systems (such as SCADA) that manage and control equipment, machinery and other physical infrastructure (e.g., turbines, substations, or pipeline compressors and pumping stations). OT attacks that compromise these systems can damage or destroy physical infrastructure, injure personnel, cause environmental damage, lead to unauthorized information disclosure or disrupt energy delivery.

Cyber attackers do not need to directly attack or shut down OT systems to create disruptions. Sometimes, an attack on IT systems alone can shut down the business functions of the targeted

Office of the Director of National Intelligence⁵

Statement for the Record, January 2019

Worldwide Threat Assessment of the U.S. Intelligence Community

“At present, China and Russia pose the greatest espionage and cyberattack threats, but we anticipate that all our adversaries and strategic competitors will increasingly build and integrate cyber espionage, attack, and influence capabilities into their efforts to influence U.S. policies and advance their own national security interests...

- China has the ability to launch cyberattacks that cause localized, temporary disruptive effects on critical infrastructure—such as disruption of a natural gas pipeline for days to weeks—in the United States...
- Russia has the ability to execute cyberattacks in the United States that generate localized, temporary disruptive effects on critical infrastructure—such as disrupting an electrical distribution network for at least a few hours—similar to those demonstrated in Ukraine in 2015 and 2016. Moscow is mapping our critical infrastructure with the long-term goal of being able to cause substantial damage.”

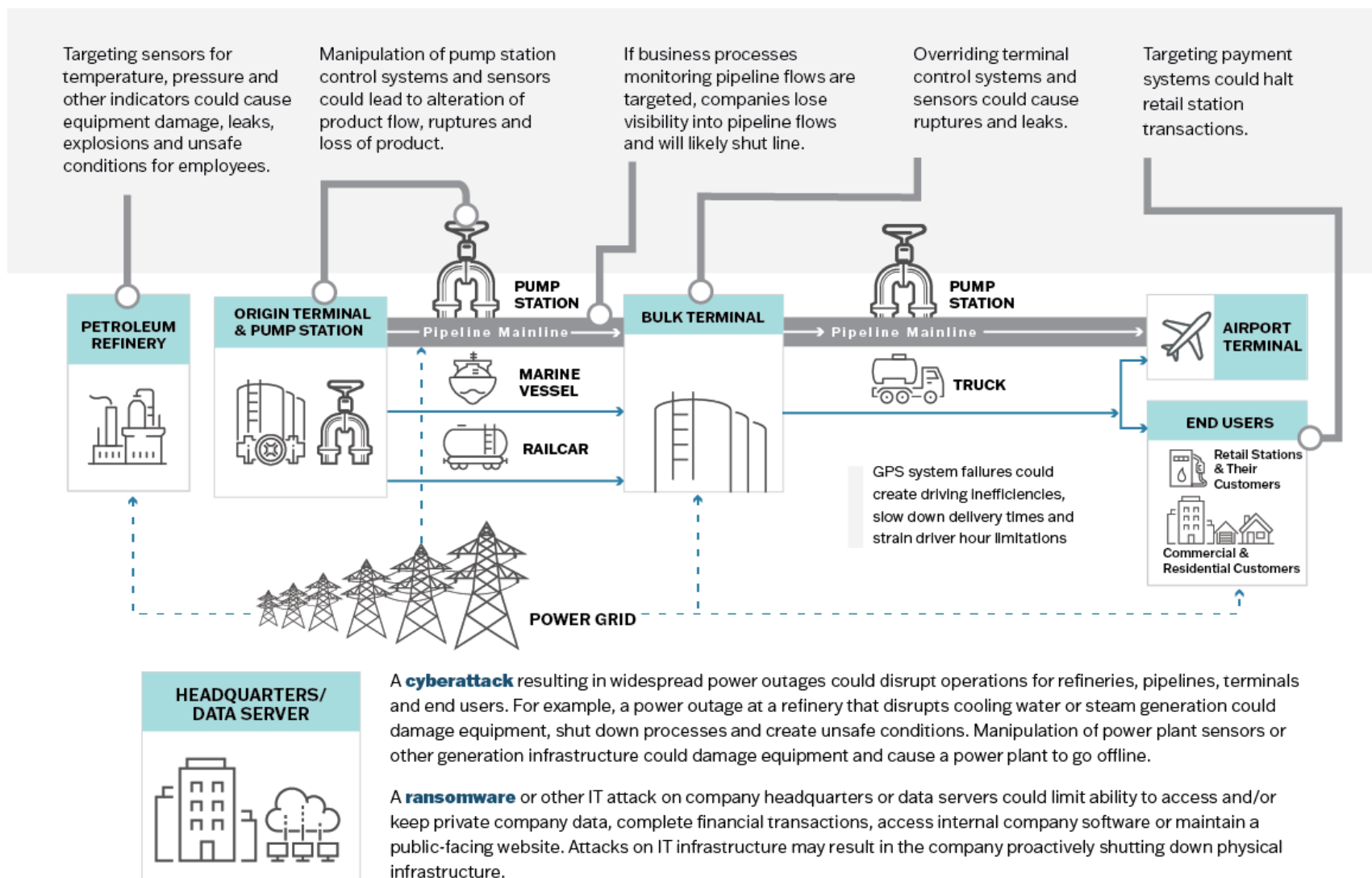
energy company and cause the company to take protective actions that have OT impacts. For example, within the pipeline and terminal interface, IT systems may meter and record when fuel is pushed into the pipeline by a supplier. If this IT program were shut down due to (or as a precaution during) a cyberattack, the pipeline operator would have no visibility of the volumes being transported. Without the ability to track shipments and charge transit fees, the pipeline operator would likely shut down the line, creating a fuel disruption.

Once initiated, physical impacts to the supply chain due to cyberattacks are similar to impacts from non-cyber events that result in pipeline closure, refinery shutdown, etc. For example, a shutdown of Colonial Pipeline will have similar impacts on dependent fuel markets regardless of whether the cause of the shutdown was non-cyber- or cyber-related.

However, operators of critical energy infrastructure may respond differently depending on whether the cyberattack is IT or OT in scope. For example, during an OT cyberattack that results in a power outage in a small geographic area or physical damage or a leak on a single pipeline segment, pipeline operators may be able to segment their pipeline systems to maintain flows in unaffected portions of their systems. However, during an attack on a pipeline company's IT network, the company may not be able to operate their pipeline system at all, aside from manual operations at select locations. As a result, cyber incidents can potentially be longer lasting compared to normal power outage events or leaks.

[Exhibit 7](#) illustrates how cyber threats can impact the liquid fuel supply chain, from refineries to pump stations and ultimately to end users like offices and retail stations. On the electricity side, a cyberattack on a utility could have operational impacts on power generation or power delivery to electric customers that causes blackouts. This could increase the demand for fuel for distributed backup power generation while also disrupting power-dependent aspects of fuel delivery.

Exhibit 7: Examples of Cyber Threats to the Liquid Fuel Supply Chain



Common types of attacks are shown in the table below. The MITRE Corporation, a think tank and research-and-development organization focused on national security, maintains a large database of IT and OT attack tools originally derived from the National Security Agency.⁷

Exhibit 8: Common Types of Attacks

IT Attacks	IT or OT Attacks
Denial of Service Attack	Spyware
Domain Name System Tunneling	Zero Day Attack
Man-in-the-Middle Attack	Destructive Malware
Passive Attack	
Phishing	
Ransomware	
Structured Query Language Injection	

Denial of Service (DoS) Attack

During a Denial of Service (DoS) attack, a targeted host or computer network is flooded with internet traffic, exhausting the host’s or network’s available processing power causing it to crash and preventing legitimate users from accessing network resources and services. A Distributed Denial of Service (DDoS) attack occurs when multiple internet-connected devices coordinate to attack one target. DDoS attacks often leverage the use of a botnet –a group of hijacked internet-connected devices – to carry out large-scale attacks. This type of attack has increased as more and more devices are connected to the internet through the Internet of Things (IoT).⁸

DDos and DoS Examples: March 2019 Attacks on Western U.S. Utilities

In March 2019, DDoS attacks interrupted electrical system operations on internal computer systems in utilities in both Los Angeles County, CA, and Salt Lake County, UT. The attacks did not cause customer outages or disrupt electricity delivery.⁹

An unspecified electricity distribution company operating in Wyoming, Utah and California was hit with an extended DoS attack, which similarly disrupted computer systems but did not cause customer outages or affect grid reliability.¹⁰

Man-in-the-middle (MitM) Attack

An attacker inserts themselves between the communications of two parties in order to intercept or alter those communications without the knowledge of the parties.¹¹

Passive Attack

A system or network is infiltrated, and data is intercepted, but the system or network is not altered.¹²

Phishing

A social engineering attack in which users are lured into providing sensitive information through the

use of seemingly authentic emails, websites, or text messages.¹³

Structured Query Language (SQL) Injection Attacks

The relationship between a webpage and the database that supports it is subverted, typically in order to trick the database into executing malicious code. Similar to a DoS attack, a botnet – a group of hijacked internet-connected devices – can be used to carry out SQL attacks.¹⁴

Ransomware

An ever-evolving form of malware in which malicious code is inserted into a computer system in order to encrypt important files. Attackers then demand a ransom in exchange for decryption. In recent years, ransomware attacks have increasingly targeted state, local, tribal, and territorial (SLTT) government entities.¹⁵ The Colonial Pipeline cyberattack in 2021 was an example of a ransomware attack. Ransomware is becoming an increasingly common threat to critical infrastructure systems, fueled by the rise of cryptocurrency like Bitcoin.¹⁶ Ransomware attacks are often perpetrated by criminal hacking groups, rather than nation states.

2019 Ransomware Attack on Mexican State Oil Company Pemex

In November 2019, a ransomware attack on some of Pemex's computers and servers briefly halted administrative work while the situation was addressed. Internal email systems were inaccessible due to the attack,¹⁷ although Pemex operations remained normal, and oil production and storage were largely unaffected.¹⁸ Media have alternately reported that the ransomware was the Ryuk or DoppelPaymer strain. The ransomware was injected into PEMEX's servers through a phishing email, and the attackers demanded around \$5 million in bitcoin to remove the ransomware from Pemex's system.¹⁹

Zero Day Attack

A software or hardware flaw that is discovered by malicious actors before the software vendor has the chance to publish a patch or update that fixes the vulnerability.²⁰

Destructive Malware

Destructive malware is malicious code that is designed to destroy files or data.²¹ Types of malware attacks include:

- **Spyware**, a software which enables bad actors to transmit and collect data from another computer.
- **Viruses**, computer scripts or code designed to self-duplicate when initiated with intent to corrupt files on the targeted system.
- **Worms**, viruses acting across multiple computers that can damage networks. Worms often do not target the specific computers they pass through.

Domain Name System (DNS) Tunneling

This type of cyberattack compromises a website or webpage by redirecting website traffic to the attacker's server, where a malware program is installed that allows for covert data transfer.²²

Case Study: May 2021 Colonial Pipeline Ransomware Attack and Shutdown

On May 7, 2021, the Colonial Pipeline Company announced it was a victim of a ransomware cyberattack perpetrated by DarkSide, a Russia-linked criminal hacking group. It was later determined that DarkSide had infiltrated Colonial Pipeline Company's network on April 29 by stealing one "inactive" password and that the group stole nearly 100 gigabytes of data from the company.²³

When DarkSide demanded a \$5 million ransom on May 7 to prevent a leak of the stolen data, Colonial Pipeline Company became aware of the hack and immediately began the process of shutting down all four of its system's main pipelines. Although the company quickly paid the ransom and regained access to the hacked systems, the pipeline system remained shut for 6 days as Colonial Pipeline Company swept its networks to determine the extent of the hacker intrusion and to install security software to alert of any follow-on attacks. This incident was the first time in the company's history that Colonial Pipeline Company shut down its entire pipeline system.

Even though Colonial Pipeline Company's infrastructure itself experienced no direct operational impacts from the cyberattack, the company's precautionary shutdown made the event one of the most significant disruptions to East Coast fuel supply in history. With the pipeline system down, roughly 100 million gallons per day of fuels were no longer being delivered to terminals along the system. Additionally, Colonial Pipeline Company-owned storage terminals were shut to distributors as part of the precautionary shutdown, meaning that stored fuel at those sites was inaccessible. Because the Colonial Pipeline system operates on a 5-day shipping cycle, supply impacts took several days to reach dependent markets. Terminal stocks in Southeast markets drew down as the shutdown wore on.

In addition to actual supply impacts to Southeast and Mid-Atlantic markets during the pipeline shutdown, media coverage of the event sparked panic buying, leading to a faster supply drawdown at terminals than would otherwise have occurred.

The federal response to the shutdown included a U.S. Environmental Protection Agency (EPA) fuel specification waiver granted to 12 states (including Maryland) and the District of Columbia.²⁴ The waiver expanded the types of gasoline that could be used in the state, giving distributors more flexibility in sourcing alternative products. The Federal Motor Carrier Safety Administration (FMCSA) also granted interstate hours of service waivers to states (including Maryland) allowing drivers to transport fuel between states for longer hours before a mandatory break.²⁵ The State of Maryland's response included a Maryland Department of Transportation waiver easing intrastate hours of service requirements and weight limits on tanker trucks moving fuel within the state.²⁶

Colonial Pipeline Company reopened its main line on May 12, 2021, although volumes on the line took several days to return to normal. It also took time to rebuild depleted stocks at terminals along the line, especially given continued outages at gas stations even after the line's initial restart.

In the month following the cyberattack, the U.S. Department of Justice was able to recover over half of the ransom paid by Colonial Pipeline Company, becoming the first time a task force devoted to ransomware has been able to recover some ransom money paid to cyberhackers.²⁷

Impact on Maryland Supply Chain

Although Colonial Pipeline is the primary source of liquid fuel into the State of Maryland, Maryland fuel distributors report that they were able to maintain fuel deliveries to customers by drawing supply from terminals in Pennsylvania. These Pennsylvania terminals are primarily supplied from Philadelphia-area refineries. Additionally, Colonial Pipeline was able to operate Line 4 manually, moving product from Greensboro, NC to Dorsey Junction, MD, allowing some product to flow to Baltimore and BWI terminals. To help alleviate the situation, the EPA issued a waiver, relaxing requirements, related to Reid Vapor Pressure (RVP)²⁸ and the use of reformulated gasoline (RFG)²⁹. As a result, fuel could be imported by marine tankers into the state via the Port of Salisbury and Port of Baltimore, and additional higher-RVP fuel could be brought into the state from Pennsylvania. There were no known impacts to flights at BWI during the incident, and the state reported that BWI initiated jet fuel deliveries via tanker truck to supplement stored fuel volumes.³⁰

Fuel Demand Considerations

In addition to the factors outlined above that can reduce the actual *supply* of fuel available to consumers, events can also increase the *demand* for fuel, separately or in conjunction with supply issues.

- **Panic Buying and Hoarding:** Media coverage of a real, perceived, or anticipated fuel shortage may lead to panic buying at retail stations that creates a sudden spike in demand for fuel at the pump, leading to supply shortages if the fuel supply chain – particularly fuel truck drivers – are unable to increase deliveries from terminals to retail sites. For example, in advance of Hurricane Irma in September 2017, the hurricane’s uncertain path led many Floridians to stock up on fuel and “top off” tanks in advance of the storm. This caused significant shortages of fuel at gas stations, hindering evacuation efforts and causing state police to escort fuel delivery trucks to gas stations.
- **Seasonal Demand Cycles:** The time of year in which a supply disruption occurs can significantly change the impact of the disruption. A disruption during low demand periods can allow a region to allocate fuel more easily than during peak demand periods. Companies recognize these demand cycles and often compensate by adjusting stock volumes. Examples of seasonal demand cycles include:
 - Transportation fuel consumption peaks in the summer vacation months.
 - Increased propane consumption in the fall for agricultural use in crop drying, particularly during wet years or in the winter for heating.
 - A sustained cold spell causing a drawdown of heating fuels, which can be compounded by an additional supply disruption.

While some of these demand patterns primarily impact regions outside Maryland, the increased demand from these seasonal events can lead to increased prices in the impacted region and drive product to those markets and away from Maryland markets.

- **Power Plant Fuel Switching:** Some large natural gas customers (e.g., power plants and industrial customers) have interruptible contracts that offer lower natural gas prices in exchange for agreeing to be cut off from natural gas supply during peak demand. Natural gas to these interruptible customers is cut off when the supplying pipeline cannot accommodate all supply nominated into the region. During these peak natural gas demand periods, gas-fired power plants with fuel switching capabilities shift from burning natural gas to diesel fuel oil. Utilities and grid operators may also turn off gas-fired power plants without fuel-switching capabilities entirely and turn on power plants that run on distillate or residual fuel oil. Many of these facilities have fuel stored on-site for this purpose, but there can still be a sudden increase in demand during these periods due to this activity.
- **Power outages:** Power outages, especially prolonged outages across a wide region, create an increase in demand for backup generator fuel. Industrial and other large power customers with backup generators may run out of stored fuel within a few days during a prolonged power outage. Therefore, during multi-day power outage events there may be an increase in demand for diesel and other generator fuels within a day or two as large customers refuel.

Maryland Supply Chain Threats

Maryland is reliant on fuel produced outside the state, and disruptions can occur at any point along the system. Exhibit 9: Major Supply Chain Components and their Threats illustrates key components of the supply chain that, if impacted significantly, would force Maryland industry to try to adjust and find alternatives to mitigate impacts.

Exhibit 9: Major Supply Chain Components and their Threats

Threats to the Maryland Supply Chain			
Supply Chain Element	Description of Criticality	Vulnerabilities	Mitigating Factors
Gulf Coast Refineries	<p>The vast majority of transportation fuel used in Maryland is refined in the Gulf Coast and transported to the state via Colonial Pipeline. Because there are many refineries operating in the Gulf Coast and supplying Colonial Pipeline, a production disruption at any one refinery is unlikely to create significant impacts to Maryland’s fuel supply. However, a regional event impacting operations at multiple refineries could significantly reduce the supply flowing on Colonial Pipeline into the state.</p>	<p>Hurricanes, power outages, winter storms and other cold weather events could all cause shutdowns at multiple Gulf Coast refineries and disrupt the flow of product to Maryland. A major crude oil shortage would also prevent Gulf refineries from producing typical volumes of fuel.</p> <p>At individual refineries, an explosion, fire, equipment malfunction or cyberattack could cause the refinery to go offline, although in most cases the impact would likely be mitigated by other refineries in the Gulf.</p>	<p>Refineries have some product stored on-site that can help alleviate a sudden disruption to production. Product shipments on Colonial Pipeline from the Gulf also take nearly two weeks to travel to Maryland. As long as product is still entering Colonial Pipeline from refinery storage, there will likely be a delay before disruptions to Gulf Coast refineries are felt in Maryland. This delay can allow some time for Maryland energy companies to acquire product from alternative sources.</p>
	<p>Case Study: In August 2017, over a dozen refineries shut due to Hurricane Harvey and pipelines originating in the Gulf Coast were disrupted due to storm damage. Ports in the Gulf that supply crude oil to refineries were also closed in advance of the storm. These disruptions caused EPA to issue regional EPA fuel waivers for 38 states (including Maryland) and D.C.³¹ The waiver allowed the production, sale and distribution of winter gasoline in affected states, effectively expanding the supply of fuel available. Due to this fuel disruption and other hurricane impacts, customers in Maryland saw higher fuel prices.³²</p>		

Threats to the Maryland Supply Chain

Supply Chain Element	Description of Criticality	Vulnerabilities	Mitigating Factors
Colonial Pipeline	<p>A disruption of the Colonial Pipeline system occurring south of Baltimore would significantly impact Maryland’s fuel supply, as terminals would need to rely on existing stocks until additional product could be brought to the state. Additionally, marketers use Maryland terminals to serve customers from southern states with more extreme supply shortages, putting further strain on Maryland’s fuel inventories.</p> <p>A disruption north of Baltimore on the pipeline could possibly impact Maryland’s fuel supply. If deliveries become backed up north of Baltimore without the ability to take fuel off the line, it effectively could back up the entire line.</p>	<p>Physical damage or a leak could shut down the pipeline, and storm damage or proactive closure of line segments before a predicted storm could similarly disrupt the line’s operation. A regional power outage could affect operation of pump stations along the line. A cyberattack could also cause the line to shut by causing equipment damage, power outages, or proactive closure by the pipeline company.</p>	<p>During a Colonial Pipeline disruption, tanker trucks could mitigate impacts in the short term by driving to terminals out of state to procure fuel, although this can put strain on the limited pool of trucks and drivers. Pennsylvania terminals are the most likely alternative source of fuel as they are served by other refineries and pipelines and have been used during past Colonial Pipeline disruptions to secure fuel for Maryland. Terminals in northern Virginia that receive fuel from Kinder Morgan’s Products (SE) Pipeline (PPL) are another alternative source of fuel during a Colonial Pipeline disruption, although there is more demand for this fuel from distributors in other Colonial Pipeline-reliant southern states. Marine shipments to terminals with marine access at the Port of Baltimore would also help supplement lost supply.</p> <p>Additionally, in the event of a Colonial Pipeline outage in which Baltimore terminals remain functioning, fuel can be manually moved from breakout tankage in Dorsey Junction and Aberdeen to Baltimore terminals. This would help mitigate the impacts of the pipeline shutdown in the short term, buying time for alternative supply to be trucked from farther away.</p>

Threats to the Maryland Supply Chain

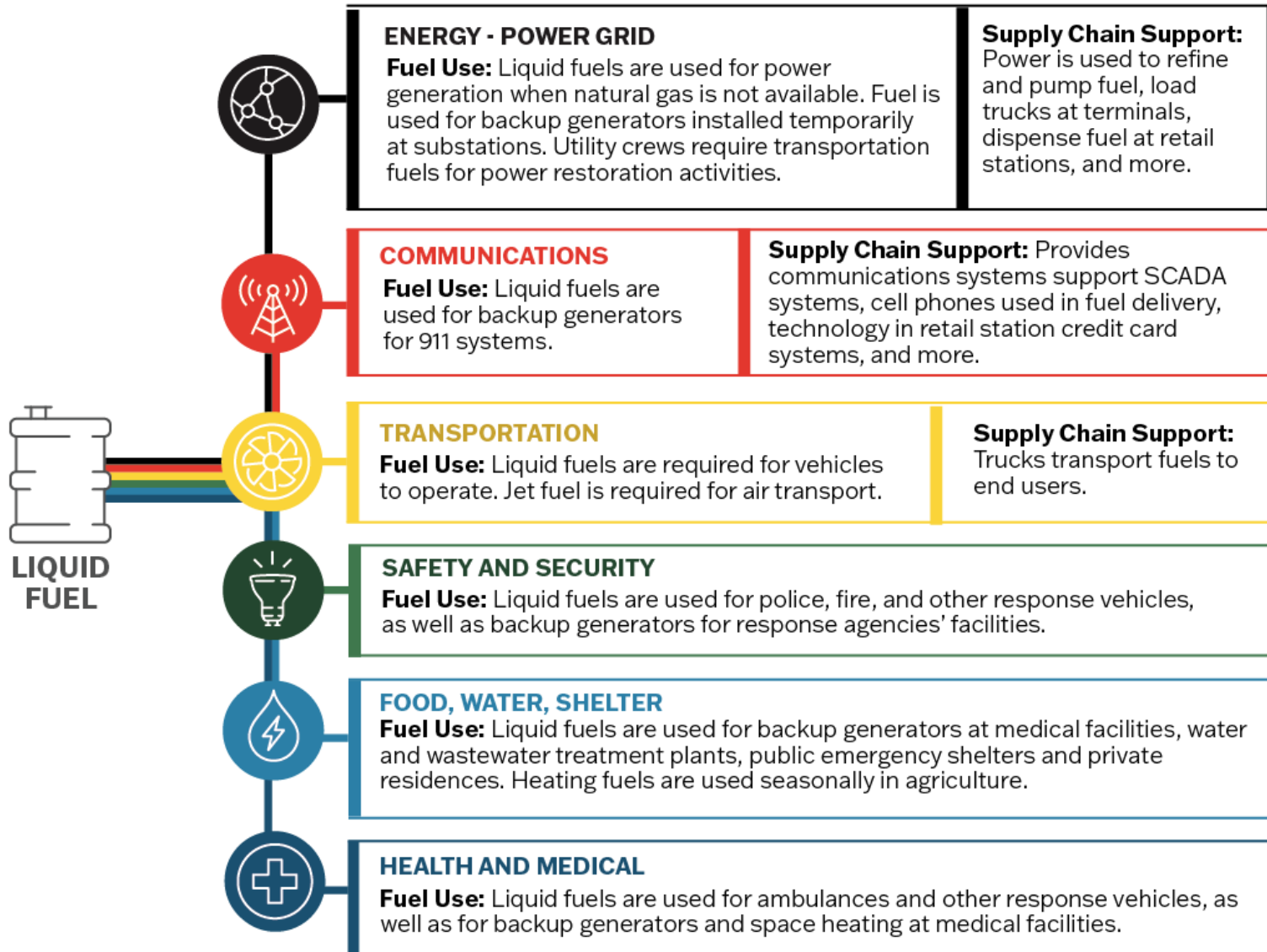
Supply Chain Element	Description of Criticality	Vulnerabilities	Mitigating Factors
Baltimore Terminals	<p>Baltimore is the liquid fuel storage hub for the state, with the vast majority of stored product kept in terminals in the Baltimore harbor region. This storage serves customers within the Baltimore metropolitan region and serves as the distribution point for tanker trucks delivering product to other parts of the state. Ethanol terminals in Baltimore also provide the ethanol to allow gasoline to meet renewable fuel standards.</p>	<p>Any access issues, such as widespread storm debris, that make it difficult to access Baltimore terminals by road could significantly disrupt the distribution of fuel from terminals to retail stations. Power outages could also affect the operation of the terminals, preventing trucks from loading products and receiving product by pipeline or marine vessel.</p>	<p>Within the state of Maryland, there are few alternatives to the Baltimore terminals for liquid fuel storage. Breakout tankage at Dorsey Junction and Aberdeen do not have truck racks, so they cannot be used to distribute products. Instead, tanker trucks would need to refuel from terminals in Pennsylvania, Virginia and other nearby states if all Baltimore terminals were shut.</p>
Port of Baltimore and Port of Salisbury	<p>The Port of Baltimore receives over 1 million gallons per day of gasoline, distillate, kerosene and residual fuel oil shipments in total. However, the port is also important as an alternative to the Colonial Pipeline during fuel disruptions.</p> <p>The Port of Salisbury is the primary supply point for the Eastern Shore. The port receives on average 500,000 gallons per day total of gasoline and distillate.</p>	<p>Debris or other post-storm issues could prevent both marine and truck traffic into and out of the port. Fog or other visibility issues could temporarily close the port, as could an anticipated security threat.</p>	<p>The closure of the Port of Baltimore would be most significant in conjunction with a Colonial Pipeline shutdown, as that port is a primary alternative to Colonial Pipeline shipments. A closure of the Port of Baltimore while Colonial Pipeline is open would not significantly disrupt fuel supply to the state.</p> <p>A closure at the Port of Salisbury, however, would be disruptive with or without a Colonial Pipeline closure. Such a closure would require significant increases in trucking to supply the Eastern Shore.</p>

Impact on Critical Dependent Sectors

There are many interdependencies between the energy sector and other critical infrastructure sectors necessary for the health, safety, and economic security of Maryland. Fuel shortages threaten the operations of critical facilities that depend on a reliable supply of fuel for backup generators. This includes hospitals, nursing homes, local and state government buildings, schools, public shelters and evacuation centers, water- and waste-water treatment plants and more. State- and county-owned fleets, including police, firefighting vehicles and snowplows, as well as ambulance fleets used by local healthcare facilities could also be impacted.

In addition to depending on the energy sector for fuel and power, some of these critical infrastructure sectors also support the energy sector. The communications sector, for example, provides the SCADA systems used in pipelines and other energy infrastructure, and supports the payment systems used at retail stations and the GPS navigation used in tanker trucks. [Exhibit 10](#) shows other key dependencies and interdependencies between liquid fuel and the Federal Emergency Management Agency (FEMA) community lifelines.

Exhibit 10: Critical Dependencies in Fuel Supply Chain



Section 4: Fuel Supply Emergency Planning and Response

During a fuel emergency, multiple stakeholders coordinate, share information and exercise authorities to respond to an event. These stakeholders include representatives from federal and state agencies, local governments, infrastructure owners and operators, critical fuel users, industry associations and nonprofits. Understanding these stakeholders' roles and authorities and knowing who to reach out to within these organizations is an important part of fuel supply emergency planning and response. Establishing relationships with key stakeholders prior to an event helps ensure response efforts proceed efficiently.

This section outlines the roles and responsibilities of each stakeholder during liquid fuel emergencies. The following stakeholders are addressed below:

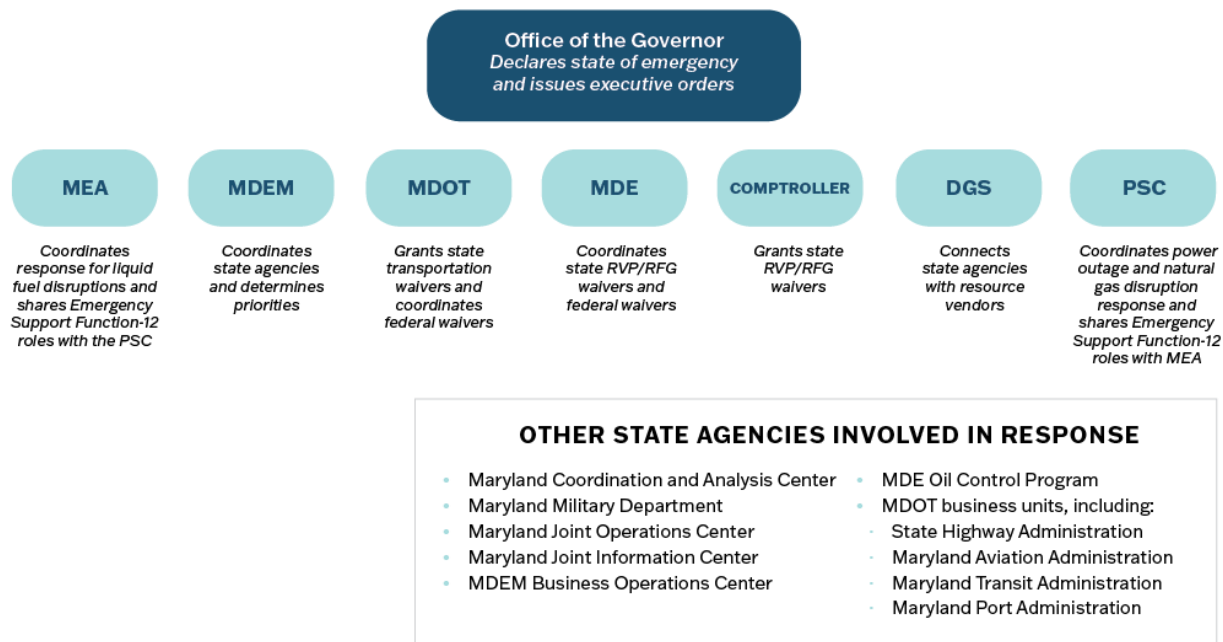
- **[Maryland State Government:](#)** Office of the Governor; Maryland Energy Administration (MEA), Maryland Department of Emergency Management (MDEM), including the Maryland Business Operations Center (BOC), Maryland Department of Transportation (MDOT), Maryland Office of the Comptroller, Maryland Department of the Environment (MDE), and the Maryland Public Service Commission (PSC)
- **[Federal Government:](#)** The White House/Executive Office of the President (EOP), Department of Energy (DOE), Environmental Protection Agency (EPA), Department of Transportation (DOT), Internal Revenue Service (IRS), Department of Homeland Security (DHS), and Federal Bureau of Investigation (FBI)
- **[Local Governments:](#)** Emergency management offices for county governments and the City of Baltimore
- **[Private Sector:](#)** Mid-Atlantic Petroleum Distributors Association (MAPDA), Mid-Atlantic Propane Gas Association (MAPGA), American Petroleum Industry, and the Motor Truck Association (MMTA)

This section also includes information on response actions that each stakeholder can take during fuel emergencies to ensure the timely delivery of fuel to affected communities. These actions include granting waivers at the state and federal level.

Maryland State Government

This section highlights seven state agencies, in addition to the Office of the Governor, that play key roles in fuel emergency response. Several of these state agencies contain additional administrative units within them that have authority over emergency response or are responsible for state-owned fleets. [Exhibit 11](#) provides an overview of these key agencies.

Exhibit 11: Organizational Chart for Response Agencies



Roles and responsibilities

Contact information for each Maryland state government agency described below can be found in [Appendix A](#).

State Agencies Involved in Fuel Disruption Preparedness and Response
<p>Office of the Governor</p> <p>The Office of the Governor has the authority to:</p> <ul style="list-style-type: none"> Declare a state of emergency for a jurisdiction, jurisdictions, or the entire state in response to an event Issue executive orders to expedite fuel delivery to and within the state <p>According to the state’s Consequence Management Operations Plan (2019), a declaration of a state of emergency “allows for expedited resource procurement, waivers of regulations, and other mechanisms aimed at resolving the issue as quickly as possible. A state of emergency can also release emergency disaster funding and may make federal resources available to support the response.”³³</p> <p>The Office of the Governor can issue executive orders, such as authorizing the MDOT Secretary to take emergency measures to respond to fuel emergencies.³⁴ The Office of the Governor coordinates with the relevant state agencies during the declaration process.</p>
<p>Maryland Energy Administration (MEA)</p> <p>The Maryland Energy Administration (MEA) advises the Governor and General Assembly on all energy matters, promoting affordable, reliable and cleaner energy. MEA develops and administers programs and policy to support and expand all sectors of the state’s economy while benefiting all Marylanders. According to Md. Code Ann., State Government § 9-2005, MEA has additional duties</p>

and responsibilities concerning the state's preparedness for "mitigating the impact of any severe shortage of fuel resources, including middle distillate oil, motor gasoline, residual fuel oil, and propane gas, on various classes of consumers".³⁵

In addition, as the primary agencies for Emergency Support Function (ESF) #12, as well as the corresponding State Coordinating Function (SCF) #12, which focuses on energy and fuels, MEA and the Public Service Commission (PSC) cooperate to coordinate response and restoration strategies with one another during power outages. MEA and the PSC jointly monitor utility and energy resources and coordinate on strategic restoration or delivery solutions, in cooperation with partners in the relevant energy sector. PSC has prime responsibility for electricity and natural gas.

Maryland Department of Emergency Management (MDEM, formerly the Maryland Emergency Management Agency, MEMA)

MDEM has "primary responsibility and authority for developing emergency management policies and is responsible for coordinating disaster risk reduction, consequence management, and disaster recovery activities..."³⁶ MDEM:

- Coordinates Maryland state agencies to determine operational priorities³⁷
- Receives information about events from the Maryland Joint Operations Center (MJOC), situational awareness tools, and federal and state agencies

The MJOC is usually first to receive incident notification and information. MJOC staff decide on a course of action and, depending on where it falls within State Critical Information Reporting Requirements (SCIRRs), may notify the MJOC Duty Officer for situational awareness or to coordinate next steps. The Duty Officer is the initial point of contact for state response and coordination to incidents affecting Maryland or neighboring states. The Duty Officer is responsible for activating the State Emergency Operations Center and staff and assumes the role of the incident commander during an activation. During events, an MDEM Director reports directly to the Office of the Governor. If the Duty Officer decides to escalate the response to an event, the Director on Call (DOC) will inform the Governor and provide updates.

As needed, MDEM coordinates with the Maryland Coordination and Analysis Center (MCAC), which is the state's Fusion Center³⁸ and which helps coordinate federal, state and local agencies to gather, analyze and share intelligence information with first responders.³⁹ MCAC is also a member⁴⁰ of the Multi-State Information Sharing and Analysis Center (MS-ISAC®), which provides cybersecurity resources and facilitates information-sharing across state, local, tribal and territorial government agencies.⁴¹

Resource requests between states are coordinated through the Emergency Management Assistant Compact (EMAC), run through the National Emergency Management Agency. MDEM can also contact Maryland counties through the Maryland Intrastate Emergency Management Assistance Compact (MIEMAC).⁴² Examples of resources that may be requested include additional support to help staff the SCF-12 desk.

The Maryland Joint Information Center (JIC) also is a resource for communications monitoring and messaging support during emergencies.

MDEM's Business Operations Center (BOC) also assists with resource requests and resource aid from the private sector (including businesses and volunteer organizations). The BOC is housed within MDEM's State Emergency Operations Center (SEOC) and is responsible for:

- Communicating with the private sector during emergencies⁴³
- Supporting operational resilience and business continuity during emergency events
- Convening private sector representatives during events to brainstorm solutions.

During an event like the Colonial Pipeline cyberattack, in which the incident and response were largely driven by the private sector, the BOC also helped share information originating in the private sector with state government partners.

During an emergency, state agencies can turn to the BOC for resource assistance when all other processes have been insufficient. If MDEM's primary resource management processes cannot help, then BOC may be able to connect MEA or other state agencies with materials or services sourced from the private sector.

Maryland Department of Transportation (MDOT)

MDOT is the lead agency for the "Transportation" State Coordinating Function (SCF) and has the authority and responsibility to:

- Grant [State transportation waivers](#) (hours of service, or HOS, and weight) as necessary to facilitate emergency relief efforts
- Coordinate with the U.S. Department of Transportation (DOT) as needed on
- [Federal transportation](#) waivers
- Coordinate with industry, including the Mid-Atlantic Petroleum Distributors Association, throughout fuel emergencies to understand industry needs for regulatory relief
- Restore and maintain operating conditions on state-owned air, highway, maritime and transit systems, and coordinate with law enforcement and other state and local partners on debris management and infrastructure repair⁴⁴

Industry associations formally request transportation waivers from the state and coordinate informally throughout an event to ensure situational awareness. MDOT-issued waivers are posted on the [DOT's Federal Motor Carrier Safety Administration \(FMCSA\) website](#) shortly after they are granted.⁴⁵

MDOT coordinates with its business units—including the Maryland Aviation Administration, Maryland Transit Administration, and Maryland Port Administration—during events to monitor their fuel needs. Business units have their own contracts in place for alternate fuel supply and are largely self-sufficient during emergencies. All interactions with these business units by other state agencies should be coordinated through MDOT.

Maryland Department of the Environment (MDE)

MDE is the lead agency for the "Environmental Protection" SCF. During events, MDE:

- Works closely with the U.S. Environmental Protection Agency (EPA) to request and coordinate federal fuel waivers, primarily [Federal fuel specification](#) waivers (Reid Vapor Pressure (RVP)/Reformulated gasoline (RFG))
- Coordinates with the Maryland Office of the Comptroller on State fuel specification waivers
- Serves as the intermediary between industry and EPA on waiver requests

EPA waivers are necessary to waive federal RVP/RFG requirements in the summer months. State fuel specification waivers are used to allow EPA waivers to take effect in Maryland when issued and to waive state-specific fuel regulations outside of the summer months.

During a fuel shortage or anticipated fuel shortage, industry representatives, including the Mid-Atlantic Petroleum Distributors Association, reach out to MDE and the Maryland Office of the Comptroller to indicate supply issues. If the disruption appears to meet federal waiver requirements, MDE formally works with EPA to request a federal waiver. In cases of widespread fuel issues, EPA may proactively issue a federal waiver in consultation with MDE.

MDE coordinates federal waiver requests with the Maryland Office of the Comptroller, which is the

regulatory authority for the administration and enforcement of motor fuel quality in Maryland. MDE and the Maryland Office of the Comptroller also coordinate on any state-issued RVP waivers, which are granted by the Maryland Office of the Comptroller.

Within MDE, the Office of Land Management Oil Control Program and the MDE Emergency Response Division⁴⁶ are responsible for emergency response activities related to an oil spill.

Maryland Office of the Comptroller

The Maryland Office of the Comptroller is the regulatory authority for the administration and enforcement of motor fuel quality in Maryland. The Maryland Office of the Comptroller regulates all motor fuels, although it only samples, inspects and analyzes gasoline (including ethanol), diesel fuel, kerosene and fuel oil. The Maryland Office of the Comptroller's regulations apply to all fuel in the state that is stored, sold and transported.

During an emergency, the Maryland Office of the Comptroller has the authority and responsibility to:

- Approve waiver (primarily RVP/RFG) at the state level
- Coordinate with MDE about the need for waivers

Under this authority, the Maryland Office of the Comptroller may waive both state fuel regulations and, in concurrence with federal waivers, federal fuel regulations that have been adopted into state law. Although EPA regulates summer RVP and RFG requirements, Maryland has its own waivers in the winter and spring months. Additionally, all EPA RVP/RFG fuel requirements are adopted into state law, meaning that all federal fuel regulations related to RVP/RFG waived by the EPA must also be waived separately by the Maryland Office of the Comptroller to go into effect. Similarly, if the EPA and the Internal Revenue Service (IRS) waive red dye diesel regulations, the Maryland Office of the Comptroller would also need to issue an additional waiver of state regulations. Red dye is added to diesel fuel used for off-highway use and is taxed differently than diesel fuel used for road use; this waiver would allow diesel fuel containing red dye to be used in road vehicles without penalty during the period of the waiver. In practice, however, the Maryland Office of the Comptroller rarely waives red dye diesel regulations at the state level because it has only a minor impact on diesel supply in the state and because residual red dye can remain in the tanks for an extended period of time before being flushed out.

The Maryland Office of the Comptroller also collects excise taxes on motor fuels, with the exception of dyed diesel fuel. As part of that authority, the Maryland Office of the Comptroller collects data on fuel volumes moving within the state in [Maryland Motor Fuel Tax Form 775](#).⁴⁷ If made accessible, this data can help with emergency prepared efforts and be used to analyze the flow of fuel within the state in advance of emergencies.

Maryland Department of General Services (DGS)

In partnership with MDEM, DGS is responsible for the "State Resources" SCF during emergencies.⁴⁸ During a fuel emergency, DGS can help:

- Connect state agencies with vendors selling energy-related commodities and services during a fuel shortage

During an event, a Maryland state agency in need of fuel, generators or other energy commodities submits a resource request through the WebEOC software, the state's emergency management software for supporting situational awareness and facilitating resource support. The request should include a description of the commodity or service needed, the quantity needed, the timeframe for delivery, a delivery address with instructions, and a point of contact for accepting the delivery. DGS then reaches out to state-contracted vendors on behalf of the agency. DGS then submits a quote from the vendor to the requesting agency, who then completes the transaction

and payment with the vendor directly. DGS repeats this process with other emergency vendors if no state-contracted vendor is able to fulfill the request. While DGS facilitates the vendor quotes for needed resources for the Maryland state agency in need of a particular resource, DGS does not fund nor contract for the commodities or services. State contracts are often written in broad enough terms that other state agency/department or local jurisdiction can use the contracts to fill any needs, including outside of emergency circumstances.

DGS also operates fuel dispensing sites for state fleet vehicles, including state police and other state agencies.⁴⁹ The program includes over 100 refueling sites through the state. A list and map of locations can be found on the [DGS Fuel Management website](#).^{50,51} During a fuel emergency, DGS tracks fuel inventories at these locations for situational awareness, using automatic monitoring capabilities. There are additional bulk fuel sites owned by the state and operated by DGS that include generator fuels, heating oil and other fuels stored for state, local government, and nonprofit use.

Maryland Public Service Commission (PSC)

The PSC regulates public utilities in Maryland, including electric and natural gas utilities.⁵² The PSC is the lead agency for the “Power Infrastructure” SCF and plays a role in fuel emergencies related to long-term power outages.

During power outage events, the PSC:

- Coordinates with impacted utilities on mitigation efforts
- Communicates with utilities, state partners and local governments to share updates on power outages and energy demands
- Provides personnel, equipment and other resource support as needed⁵³

Maryland state agencies may also need to coordinate with other states within the Federal Emergency Management Agency (FEMA) Region III if an event affects multiple states or necessitates resource-sharing between states. Contact information for neighboring FEMA Region III states can be found in Appendix A.

Maryland state waivers, executive orders, and other response actions

During a fuel emergency, Maryland agencies have several tools that they can use to facilitate the delivery of fuel to customers. In addition to executive actions that can be taken by the Governor of Maryland, waivers granted by state agencies act in concert with federal waivers to help address issues that may occur. Examples of each waiver discussed below can be found in the [State Waiver Library](#).

This section outlines key actions that can be taken by state agencies, including:

- [State transportation waivers](#), including HOS and weight restrictions
- [State fuel specification waivers](#), including RVP, RFG red dye diesel fuel penalty waivers
- [State executive actions](#);, including emergency declarations and executive orders or suggestions to the public for demand reductions

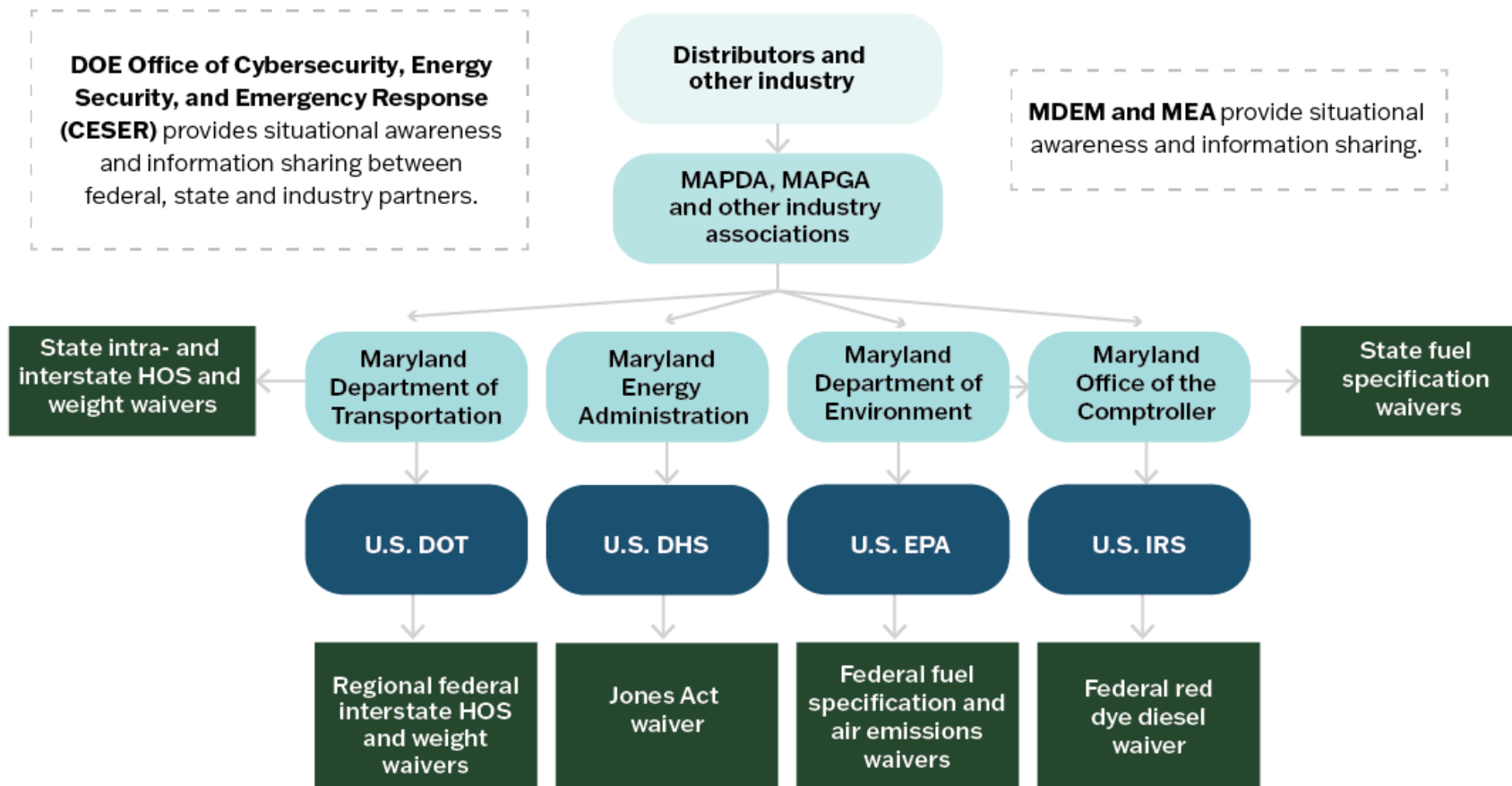
[Exhibit 12](#) provides an overview of the stakeholders involved in granting key federal and state waivers. It is designed to demonstrate the relationship between federal and state agencies for the waivers that are most important to Maryland response efforts.

Key Resource for State Planning and Response

The National Association of State Energy Officials (NASEO) publication [*Guidance for States on Petroleum Shortage Response Planning*](#) (February 2018) provides detailed information on best practices for states planning for and responding to fuel shortages.⁵⁴ The document includes example templates for executive orders for odd-even purchase programs and other potential actions.

The NASEO publication includes a description of petroleum set-aside programs and includes a template for an executive order to implement them. Set-aside programs are implemented during fuel shortage to ensure critical fuel users (emergency responders, etc.) can access fuel. In Maryland, the “State Standby Petroleum Fuel Set-Aside Program” was abrogated effective July 1, 2010.⁵⁵ Although set-asides programs are not discussed in this section, the NASEO publication is a useful resource for additional information on how these programs are set up and administered.

Exhibit 12: Stakeholders Involved in Granting Key Waivers



State transportation waivers

During fuel shortages, certain requirements for commercial motor vehicles may be waived to facilitate fuel supply into a region. These requirements are focused around the hours that commercial drivers may legally drive as well as restrictions on commercial vehicle weight.

Hours of service waivers

Lead agency: MDOT

Description: Hours of Service (HOS) requirements are safety requirements that limit how long commercial drivers may drive before resting. During a fuel emergency, these requirements can be waived to allow drivers to complete more deliveries or pick up fuel from farther away without stopping.

MDOT has authority over intrastate HOS regulations applying to commercial drivers operating within state boundaries.

To obtain a waiver for intrastate HOS regulations, motor carriers request that the MDOT Secretary declare that a transportation emergency is interrupting the delivery of essential services or supplies or threatening human life or public welfare. Industry associations such as MAPDA and MAPGA typically request these waivers on behalf of motor carriers.

Once declared, a transportation emergency and associated intrastate HOS waiver lasts five days or the duration of the emergency (whichever is shorter), although MDOT can renew the transportation emergency and HOS waiver in five-day increments for up to 20 days. To issue HOS waivers beyond 20 days, MDOT coordinates with the Office of the Governor to issue a State executive actions: declaring a state of emergency.

Once Maryland has declared an emergency and issued an intrastate HOS waiver, interstate HOS requirements are also automatically waived for drivers supporting emergency response efforts, including for drivers passing through other states to assist Maryland's response.⁵⁶ Note that interstate HOS waivers may also be granted separately at the federal level by DOT for emergencies affecting multiple states. Even if DOT issues a regional interstate waiver prior to action at the state level, MDOT usually also issues its own state HOS waiver to cover intrastate commercial transportation.

The full text of MDOT-issued waivers can be found on the [DOT-FMCSA website](#) shortly after they are granted.⁵⁷ Updates on granted waivers are also publicized by industry groups such as MAPDA.

Example of Past Use of the State HOS Waiver

In January 2014, MDOT [granted](#) a request from MAPGA to waive HOS regulations for the entire state.⁵⁸ MAPGA had requested the waiver due to a surge in demand for propane causing delayed deliveries and propane shortages. The waiver was in effect from January 16 through January 21.

Weight Restriction Waivers

Lead agency: MDOT

Description: After a presidential emergency or federal major disaster is declared, states may issue special permits to allow vehicles to carry divisible loads above legal weight limits in interstate commerce. Weight restrictions exist to ensure road safety for truck drivers and other drivers on the road, as heavier loads are more unwieldy and increase wear and tear on infrastructure. Temporarily

waiving this requirement during emergencies allows tanker trucks to carry more fuel per trip.

In Maryland, weight restriction waivers often take the form of a 15% tolerance above statutory weight limits and are most commonly granted through a Governor's declaration of emergency. The period of weight tolerance for the interstate highway system cannot exceed 120 days. Vehicles crossing through multiple states must comply with permitting requirements in every state in which they exceed the weight limits.

State fuel specification waivers

The following state waivers are associated with requirements for the chemical composition of fuel, including Reid Vapor Pressure (RVP) requirements.

State RVP and RFG waivers

Lead agency: Maryland Office of the Comptroller, in coordination with MDE

Description: Maryland's Office of the Comptroller regulates the quality of fuels sold in Maryland. Gasoline fuel specifications can be found in regulation 03.03.05 of the Code of Maryland Regulations (COMAR).⁵⁹ Among other requirements, the RVP of gasoline is regulated to reduce evaporative emissions and improve air quality. Gasoline RVP is regulated federally during the summer ozone season (June 1 to September 15), and Maryland's regulations go beyond the federal RVP requirements to specify year-round RVP requirements. Fuel specifications vary by month and by region. Conventional gasoline in the state varies from a high RVP of 15.0 pounds per square inch (psi) in winter months, down to a low RVP of 9.0 psi in the summer. RFG, which is required in 13 Maryland counties, has the same winter RVP requirement as conventional gasoline but must not exceed an RVP of 7.4 psi during the summer.

RVP requirements can be waived to help expand the supply of fuel available to be used in the state. Waivers of RFG requirements allow conventional gasoline to be brought into RFG-covered areas for sale and use. Waivers of RVP requirements granted at the end of the summer often allow distributors and retailers to switch to winter gasoline blends earlier. In the spring months, waivers may delay the transition to summer gasoline. Typically, supply at terminals becomes tighter around the transition months, as suppliers empty their storage tanks in anticipation of the switch. Waivers allow for some fungibility of gasoline during these periods.

Since EPA regulates RVP during the summer months and Maryland has adopted EPA's RVP standards, the Maryland Office of the Comptroller usually must waive the state's RVP requirements when EPA issues a fuel waiver that involves RVP requirements. The Maryland Office of the Comptroller can issue state-specific waivers during the spring and winter, should supply conditions warrant a waiver.

Example of Past Use of the State RVP/RFG Waivers

In response to the Colonial Pipeline cyberattack in May 2021, multiple [federal](#) and state waivers were issued to help alleviate disruptions to fuel supply caused by the pipeline shutdown. On May 11, EPA issued a [waiver](#) allowing summer conventional gasoline blend stock for oxygenate blending (CBOB) and summer conventional gasoline not exceeding 9.0 psi to be used in RFG-covered areas.⁶⁰ The Maryland Office of the Comptroller issued a state-level waiver the same day waiving the same regulations at the state level.

On May 12, the Maryland Office of the Comptroller issued a second waiver of gasoline RVP requirements in accordance with a second [federal EPA waiver](#) released in parallel.⁶¹ These updated federal and state waivers allowed summer conventional gasoline, summer CBOB, winter conventional gasoline, winter CBOB, winter reformulated gasoline blend stock for oxygenate

blending (RBOB), and winter RFG to be used in all RFG-covered areas, as long as the substituted fuel's RVP did not exceed 13.5 psi. The waiver applied to terminal owners, terminal operators, distributors and carriers.

A third state waiver was later issued on May 28 in conjunction with a [third federal waiver](#) to extend this regulatory relief to June 6, 2021.⁶²

State waiver of the red dye diesel fuel penalty

Lead agency: Maryland Office of the Comptroller, in coordination with MDE

Description: In keeping with federal regulations, Maryland regulations specify that non-highway diesel fuel must be dyed red and cannot be used in any on-highway vehicle.⁶³ This regulation can in theory be waived during fuel emergencies. Because federal fuel specifications are adopted into Maryland law, the Maryland Office of the Comptroller would need to issue an additional waiver of state red dye diesel penalties for EPA and IRS Federal fuel specification waivers to go into effect.

However, in practice the Maryland Office of the Comptroller has rarely waived red dye diesel regulations at the state level. Red dye can remain in tanks long after waivers expire, complicating enforcement in on-highway vehicles. Red dye waivers also are not believed to have a major impact on diesel supply in the state. As such, there are no recent examples of this waiver's use, and it is not a primary tool for response in Maryland.

State executive actions:

The following actions fall under the authority of the Governor of Maryland. The actions marked "potential" have not yet been implemented in Maryland but could be used in the future during extraordinary circumstances.

State of emergency declarations

Lead agency: Office of the Governor

Description: The most common emergency action at the executive level is for the Governor of Maryland to declare a state of emergency. States of emergency can be granted for the entire state or for specific counties. In Maryland, emergency declarations last 30 days unless rescinded sooner or reissued.

A declaration of a state of emergency allows for expedited resource procurement and can initiate emergency disaster funding and federal resources to help with response. The declaration of the state of emergency may also initiate or support state waivers.⁶⁴

Note that under Maryland law, the Governor may also proclaim an energy emergency. State law allows the Governor "...to implement any federal mandatory energy emergency program as set forth in any federal programs, laws, orders, rules, or regulations that relate to the allocation, conservation, or consumption of energy resources."⁶⁵

Example of Past State Emergency Declarations

On October 29, 2021, the Governor of Maryland declared a state of emergency in 16 counties due to severe weather and tidal flooding.⁶⁶ The order authorized MDEM and other State agencies to activate emergency preparedness plans and deploy resources to address the severe weather impacts, as well as authorizing Executive Branch units to take measures as needed to protect public health and facilitate delivery of resources.

Possible executive actions for fuel demand reductions

Lead agency: Office of the Governor

Description: The Office of the Governor can consider implementing measures to try to decrease public demand for fuel. Many of the possible options to try to decrease public fuel demand would be voluntary in nature. Options could include:

- Encouraging temporary telework for the subset of state employees who can work remotely to reduce fuel demand for commuting.
- Requesting that companies temporarily implement telework policies on a voluntary basis, where possible.
- Appeal to the public to switch their normal transportation practices away from single-passenger vehicles, to instead leverage options like public transit, carpooling, biking, or walking.
- Encourage best practices to maximize fuel economy. This could include maintaining a consistent speed, or removing unnecessary cargo from your vehicle to reduce weight.
- Encourage minimizing recreational fuel use. This could include minimizing fuel used for yardwork, marine, and off-road vehicles during the period of the emergency.

Odd-even fuel rationing programs can also potentially be implemented by executive order during times of severe fuel (primarily gasoline) shortage. These programs are intended to minimize panic buying; discourage hoarding behavior, such as topping off vehicle tanks and filling gas cans; reduce wait times at retail stations; and stretch the supply of fuel in a region. Because the program has been implemented so infrequently in recent decades, its effectiveness remains unclear. The program may simply shift the days individuals buy fuel, keeping demand the same overall or even increase overall demand due to panic buying. Under an odd-even fuel rationing program, drivers of vehicles with license plates ending in odd numbers can purchase fuel at retail stations only on days ending in odd numbers. The reverse is true for vehicles with license plates ending in even numbers.

To further discourage the practice of topping off tanks during fuel shortages – a practice which contributes to wait times at terminals, diverts fuel from users in critical need, and accelerates fuel shortages – NASEO suggests that odd-even fuel rationing programs be coupled with a minimum fuel purchase plan.⁶⁷ Mandatory or voluntary minimums on retail station purchases encourage drivers to refuel only when they truly need fuel.

Another measure to reduce demand could entail potentially capping each vehicle to a maximum volume of fuel rather than a minimum. This program may be able to be implemented as an automated feature at retail gas stations. In effect, maximum volume capping programs are the opposite of the minimum volume programs, in that they are designed to discourage large purchases rather than small purchases of fuel. The particular measure to implement should be guided by an event's specific supply constraints and considerations.

In practice, both volume capping and odd-even fuel rationing may be challenging to implement and regulate. In particular, maximum volume cap programs may not be able to prevent a motorist from getting back in line for a second purchase.

Example of Past Odd-Even Fuel Rationing Programs in New Jersey and New York

The most recent example of odd-even fuel rationing programs in the U.S. occurred in the fall of 2012 after Superstorm Sandy. In the days following the storm, more than half of gas stations in New Jersey and Long Island and two-thirds of stations in the New York metropolitan region were shut due to lack of fuel, power outages or other storm damage at retail stations and supporting fuel terminals.⁶⁸ To help address this, the Governor of New Jersey, the Mayor of New York City, and county officials in New York implemented odd-even fuel rationing programs for portions of New Jersey and the New York metropolitan region. New Jersey's restrictions were in place from November 3 through 13. In conjunction with its odd-even fuel rationing program, New Jersey also established a telephone hotline for retail station owners to report service delivery issues at their stations.⁶⁹ Odd-even fuel rationing in New York extended from November 8 through November 17 in Nassau and Suffolk Counties and through November 23 in New York City.^{70, 71}

State fuel considerations

In the event of a liquid fuel supply emergency, normal channels of supply of government fuel may be unavailable. If proper mechanisms are not in place to assure fuel supply, then essential public services may not have sufficient fuel to ensure public safety. Some tools to consider, based on programs implanted by other states, are included in this section.

Priority end user program

The priority end user program is designed to guarantee the availability of necessary supplies of liquid fuel for priority end users essential to ensure the health, safety and welfare of the general public. This typically includes first responders like law enforcement, fire and emergency medical services. The priority end user program could be used after the governor has declared an energy emergency, or after a natural disaster or man-made emergency has been declared under another authorizing authority as determined by state law. This would only be implemented in more serious, longer-term shortages when priority end users are receiving insufficient volumes of liquid fuel. Legal authority to institute such a program would be based on a public act that authorizes a governor to initiate this action, typically via the governor issuing an executive order to establish the plan.

Contracting structures

NASEO recommends that states consider certain contractual provisions for assuring liquid fuel supply to critical public entities. States should understand the risks of entering into contracts with spot-market dependent vendors. Although this might represent some cost reduction on a normal basis, there will likely be little or no surplus fuel during a shortage. Some suppliers have priority tiers that give available fuel to specific customers during shortage situations. Thus, a potential tool for liquid fuel assurance may be to incorporate the higher priority tier into the state's contract.

In general, when evaluating vendors for a state fuel contract, an evaluation should consider the vendor's supply sources and arrangements and their level of stocks near state fueling locations. It is also possible to have a secondary contract with a separate vendor that is specifically for supplying fuel in emergency or shortage situations. There are certain companies that specialize in mobilizing fuel for emergencies. A separate contract could be utilized to assure supply during emergencies while allowing the state to take advantage of cost beneficial vendors or contracts for normal fuel supply needs.

State petroleum reserves

Another possibility to ensure in-state supply availability is to establish a state petroleum reserve for use during severe supply disruptions. This is an expensive option, but it provides the greatest assurance that first responders and other critical state services will have access to fuel in emergencies.

New York, for example, maintains the New York State Strategic Fuel Reserve, which entails two fuel reserves hosted at existing commercial fuel terminals.⁷² The reserve was established in direct response to the retail station shortages experienced after Superstorm Sandy in 2012. The reserves store gasoline and diesel, which can be distributed to pre-qualified fuel distributors when New York State declares an energy supply emergency.

Other potential considerations

NASEO details other considerations for states in their *Guidance for States on Petroleum Shortage Response Planning*. These include:

- Considering a petroleum set-aside program that requires vendors supplying the state with fuel to reserve a fixed percentage of petroleum products that are projected to be delivered to the state for final consumption each month
- Considering generator requirements for the fuel dispensing sites for state fleet vehicles operated by DGS
- Considering integrating alternative fuel vehicles into petroleum shortage contingency and emergency operation plans to increase reliance on a diversified pool of fuel resources in the event of a petroleum shortage

Federal Government

Federal agencies assist during energy events that impact multiple states or that exceed a single state's ability to respond. Among other roles, federal agencies are involved in information sharing and situational awareness, granting federal waivers to facilitate fuel supply, and coordinating resource requests and federal aid.

Roles and responsibilities

Contact information for each federal stakeholder listed below, as well as additional federal agencies involved in response, can be found in Appendix A.

Federal Agencies Involved in Fuel Emergency Preparedness and Response

White House/Executive Office of the President (EOP)

The President has the authority to declare emergencies and major disasters, which allows supplemental federal disaster assistance to flow to affected states under the Stafford Act.⁷³ State governors formally request that the President declare an emergency and can do so as a "pre-disaster emergency declaration" in advance of the imminent impact of the event.

During and after an event, organizations within EOP such as the National Security Council (NSC) assist with information sharing and situational awareness and ensure that the President stays informed about the event.⁷⁴

U.S. Department of Energy, Office of Cybersecurity, Energy Security, and Emergency Response (CESER)

Prior to events, CESER hosts exercises and training to help federal, state and local governments, as well as private industry representatives, prepare for various disaster scenarios.⁷⁵ Through its State, Local, Tribal, and Territorial (SLTT) Program,⁷⁶ CESER maintains a [State, Local, Tribal, and Territorial Program Resource Library](#),⁷⁷ and [State and Regional Energy Sector Risk Profiles](#) to assist with planning.⁷⁸ CESER also engages with industry groups and other non-governmental partner organizations through its SLTT program and the Oil and Natural Gas Sector Coordinating Council. These programs help private industry stay abreast of new threats and challenges facing the industry.

During a fuel emergency, CESER is the lead agency for ESF-12 activations and coordinates government and private sector response. CESER serves as a resource to answer questions and to help connect states with other federal agency resources needed. This activity includes releasing situation reports that provide information on energy sector impacts. Public facing situation reports can be found on CESER's website.⁷⁹ CESER also distributes a separate, more detailed version of the reports for state use. CESER's [Energy Waiver Library](#) provides additional information on federal waivers that can be issued during emergencies and provides points of contact at each federal agency.⁸⁰

U.S. Environmental Protection Agency (EPA)

EPA regulates fuel specifications and emissions-generating activities under the Clean Air Act.^{81 82} Federal fuel specifications include RVP/RFG requirements in the summer months, as well as the EPA component of red dye diesel requirements. EPA regulations related to emission-generating activities are in effect at multiple levels of the fuel supply chain, including for fuel storage terminals, tanker trucks, retail filling stations, and portable and stationary power generation.

During an event, EPA may grant federal waivers from these Federal fuel specification waivers and [Other federal](#) environmental actions: to facilitate the availability of fuel and power. During an event, all EPA-issued waivers can be found [on the EPA website](#).⁸³

To understand emergency conditions within the state, EPA coordinates waiver requests with MDE. Note also that some EPA fuel specification waivers must be granted separately by the State fuel specification waivers before they can go into effect in Maryland.

U.S. Department of Transportation, Federal Motor Carrier Safety Administration (FMCSA)

Federal transportation waivers of hours of service (HOS) restrictions on commercial drivers on interstate highways, as well as waivers of weight restrictions on fuel trucks. FMCSA interstate transportation waivers apply even when drivers are passing through multiple states, as long as they are providing direct emergency assistance.⁸⁴

FMCSA coordinates primarily with MDOT on federal waiver needs. During an event, all FMCSA waivers can be found [on the agency's website](#).⁸⁵

Internal Revenue Service (IRS)

The IRS collects federal tax on gasoline and diesel fuel used for on-highway vehicles and taxes kerosene used in aviation.⁸⁶ During fuel shortages, the IRS can lift the usual penalty for using off-highway red dye diesel fuel in on-highway vehicles. This expands the supply of diesel fuel available for use by emergency response vehicles and other fleets. Federal tax must still be paid on this fuel.

Current IRS waivers are published on its [New Releases](#) website.⁸⁷

In addition to federal involvement in fuel disruption preparedness and response, several federal agencies play a role specifically in energy sector cybersecurity preparedness and response. Appendix C includes a selection of cybersecurity resources published by the federal government and the table below outlines the various federal agencies and their roles.

Federal roles in Energy Sector Cybersecurity
Department of Energy's (DOE's) Office of Cybersecurity, Energy Security, and Emergency Response (CESER)
<p>As the sector-specific agency for partnering with states and industry on energy sector cybersecurity, CESER addresses both preparedness and response activities to natural and human-caused threats to critical energy infrastructure.⁸⁸</p> <p>CESER developed the Cybersecurity Risk Information Sharing Program (CRISP) to facilitate the timely bi-directional sharing of unclassified and classified threat information.⁸⁹ CRISP is a public-private partnership co-funded by DOE and the private sector. The program uses advanced sensors and threat analysis techniques developed by DOE to help inform the energy sector about high-level cyber risks. A feature of CRISP is the dual classified and non-classified analysis performed to identify threat patterns and attack indicators across the energy industry. Participating utilities passively share near-real-time network data with DOE, which DOE analyzes and uses to deliver alerts and mitigation tips back to owners and operators.⁹⁰</p> <p>The Energy Government Coordinating Council (EGCC), co-chaired by DOE and the Department of Homeland Security, facilitates dialogue and coordination between government and the energy sector.⁹¹ State governments are represented in the Council by the National Governors Association, the National Association of State Energy Officials, and the National Association of Regulatory Utility Commissioners. Working with the EGCC can support state-level planning and implementation of timely and necessary sector-wide resilience and reliability programs for critical energy infrastructure protection and response.</p>
Department of Homeland Security's Cybersecurity and Infrastructure Security Agency (CISA)
<p>CISA leads efforts to protect government networks from cyber threats and collaborates with the private sector to strengthen the security of critical networks, including those for energy infrastructure.⁹² The agency provides technical assistance and risk assessments to federal stakeholders as well as to infrastructure owners and operators nationwide. Housed within CISA, the National Risk Management Center promotes collaboration between the private sector, government agencies, and other stakeholders to identify, analyze, and manage risks to critical infrastructure.⁹³</p>
Department of Homeland Security's Transportation Security Administration (TSA)
<p>TSA is responsible for the physical safety and cybersecurity of hazardous liquids and natural gas pipeline systems.⁹⁴ In May and July of 2021, TSA issued security directives requiring owners and operators of regulated pipelines to implement cybersecurity measures.⁹⁵</p>
Federal Bureau of Investigation's (FBI's) Infraguard
<p>The U.S. Department of Justice is the lead response agency during any significant cyber incident affecting civilian networks.⁹⁶ The FBI leads these response efforts on behalf of the Department and sponsors the Infraguard program, a public-private partnership that promotes preparedness</p>

Federal roles in Energy Sector Cybersecurity

through information exchange and education.

Federal waivers and other response actions

Federal agencies have several waivers at their disposal to help address fuel supply issues in a state or group of states. Waiving federal laws related to the transportation of fuel, fuel specifications, or fuel-related emissions can allow fuel to be delivered more quickly and allow generators to run for longer during power outages, among other beneficial outcomes. This section outlines key actions that can be taken by federal agencies, such as:

- [Federal transportation waivers](#), including HOS and driver, load, and inspection standards, as well as the Jones Act
- [Federal fuel specification waivers](#), including RVP, RFG and red dye diesel fuel penalty waivers
- [Other federal environmental actions](#);, including no action assurances (NAAs) on emissions regulations
- [Other federal actions](#);, including Federal Power Act Section 202(c) Orders, Waiver of Hazardous Materials Regulations for Oil and Hazardous Materials Incidents, Pipeline Emergency Special Permits, and Emergency Prioritization of Pipeline Shipments

[Exhibit 13](#) demonstrates the distinction between state and federal waivers, especially in cases where both levels of government must waive requirements for them to go into effect in Maryland.

Exhibit 13: Federal Versus State Waivers and Executive Actions

	Supply Movement	Supply Fungibility	Demand Management	Other
State	<ul style="list-style-type: none"> • Hours of service • Weight restrictions 	<ul style="list-style-type: none"> • RVP/RFG • Red dye diesel penalty 	<ul style="list-style-type: none"> • Various demand reduction programs 	<ul style="list-style-type: none"> • State of emergency declaration
Federal	<ul style="list-style-type: none"> • Jones Act for Maritime Commerce • Hours of service • Other federal driver, load and inspection standards • Distribution terminal emissions • Emergency prioritization of pipeline shipments 	<ul style="list-style-type: none"> • RVP/RFG • Red dye diesel penalty 	<ul style="list-style-type: none"> • Generator emissions 	<ul style="list-style-type: none"> • Emergency and major disaster declarations • Hazardous materials regulations

Key Resource for Understanding Federal Energy Waivers

DOE CESER maintains an [Energy Waiver Library](#) with detailed information on energy-related federal waivers.⁹⁷ The library includes descriptions of key federal energy waivers, a brief overview

of the request process and points of contact within each granting agency for questions and waiver requests. The list below contains short descriptions of each waiver, but please see the Energy Waiver Library for additional information and for ongoing updates to this information.

Federal transportation waivers

Hours of Service (HOS)

Lead agency: DOT

Description: Federal HOS waivers are granted by DOT FMCSA to allow commercial drivers, including tanker truck drivers, to drive for longer periods of time to deliver fuel and provide other disaster assistance. Note that utility service vehicles are always exempt from HOS requirements when they are providing for the operating, repairing and maintaining of public utilities.⁹⁸ A full list of active FMCSA waivers can be found [on the FMCSA website](#).

Other Federal Driver, Load, and Inspection Standards

Lead agency: DOT

Description: In addition to HOS waivers, DOT FMCSA may waive certain additional regulations contained in Parts 390 through 399 of Title 49 Code of Federal Regulations. These regulations include driver qualifications, required vehicle parts and accessories, and frequency of vehicle inspection and maintenance. FMCSA typically waives these requirements during natural disasters and fuel shortages to assist with event response. Note that some of the safety regulations contained in Parts 390 through 399 are typically exempt from waivers, such as requirements related to commercial driver's licenses, drug and alcohol requirements, hazardous materials, size and weight, or state and federal registration and tax requirements.⁹⁹

Jones Act Waiver

Lead agency: DHS

Description: The Jones Act (codified at 46 U.S.C. § 55102) prohibits a vessel from transporting merchandise between U.S. ports unless the vessel is U.S.-built, owned, and documented, and has been certified as coastwise-qualified (an endorsement granted by the U.S. Coast Guard)¹⁰⁰. This can become a limiting factor during event response, when there may not be enough qualified vessels to transport goods needed for emergency response.

Jones Act waivers are granted by DHS in the interest of national defense and may facilitate the transport of petroleum products to affected regions. Waivers can be granted broadly or narrowly. Past uses have included both "blanket" waivers for all vessels transporting goods to a given region, and shipment-specific waivers to allow individual vessels passage. Waiver requests are sent to U.S. Customs and Border Protection, which evaluates and grants the requests if they are in the interest of national security.¹⁰¹

Example of Past Jones Act Waivers

In September 2017, DHS issued a Jones Act waiver in advance of Hurricane Irma and in response to the effects of Hurricane Harvey, which had previously hit the Gulf Coast and disrupted both Gulf Coast refineries and pipeline systems supplying fuel to the East Coast. The Jones Act waiver was specifically granted "to facilitate movement of refined petroleum products, including gasoline, diesel, and jet fuel to be shipped from New York, New Jersey, Delaware, Maryland, Pennsylvania, New Mexico, Texas, Louisiana, Mississippi, Alabama, and Arkansas to Florida, Georgia, South

Carolina, North Carolina, Virginia, West Virginia, and Puerto Rico.”¹⁰²

Federal fuel specification waivers

Federal RVP and RFG Waivers

Lead agency: EPA

Description: The Clean Air Act contains provisions to allow the EPA, in concurrence with DOE, to provide fuel waivers to address fuel supply concerns during emergency situations. A fuel waiver can be issued only when the criteria specified in Section 211(c)(4)(C) of the Clean Air Act have been met. Because fuel waivers can result in increased emissions and impact air quality, EPA waivers are limited as much as possible in terms of their geographic scope and duration, with a maximum length of 20 days. Spot or localized shortages generally are not fuel supply disruptions for which a waiver may be issued.

EPA works closely with MDE and the Maryland Office of the Comptroller on federal fuel waivers. Except in unusual or emergency circumstances, a formal request for a federal fuel waiver is made by or on behalf of the Governor after consultation with EPA. In cases where Maryland needs to request a Maryland-specific fuel waiver, MDE sends the request on behalf of the Governor. The request describes to the EPA Administrator how the current fuel supply situation meets the Clean Air Act waiver requirements. As noted in the [State fuel specification waivers](#) section, for all EPA waivers, the Maryland Office of the Comptroller must issue a separate state waiver for the federal waiver to go into effect.

Federal Waiver of the Red Dye Diesel Fuel Penalty

Lead agencies: IRS and EPA

Description: The IRS may waive the tax penalties normally levied when dyed diesel fuel is sold for on-highway use, allowing dyed diesel to be used in highway vehicles and increasing the supply of diesel fuel to a region. Federal tax must still be paid on the dyed fuel sold for highway use. This waiver is usually issued with a parallel EPA waiver. However, as noted in the [State fuel specification waivers](#), an EPA and IRS dyed diesel waiver would need to be separately waived at the state level to go into effect in Maryland. The Maryland Office of the Comptroller has not frequently waived this requirement in the past. As a result, a federal red dye diesel fuel penalty waiver is not a recommended tool for fuel emergency response within Maryland.

Other federal environmental actions:

No Action Assurances on Emissions Regulations

Lead agency: EPA

Description: EPA regulates a variety of activities to reduce emissions at both petroleum terminals and at power generation facilities. In emergency circumstances, EPA can issue NAAs for these activities, essentially guaranteeing that these regulations will not be enforced during the event response.

For example, EPA regulates some activities at petroleum terminals to reduce emissions from terminal equipment and tanker trucks loading at the facility. The following regulations have received NAAs in the past from EPA:¹⁰³

- **Tank roof landing requirements:** Normally, EPA requires that floating roof storage tanks that are used for bulk petroleum storage must minimize emissions by keeping a minimum level of

fuel in the tank. EPA may issue NAAs allowing this remaining fuel to be drained down and sold to customers. This increases the fuel available to customers during shortages.

- **Vapor recovery:** Vapor recovery equipment is typically used at terminals to reduce emissions that occur when trucks load and unload gasoline. Vapor recovery requirements can be waived during power outages at terminals, if equipment is damaged during a storm, or if fuel shortages necessitate that drivers use terminals that are not outfitted with vapor recovery equipment. Even if all equipment is fully operational, vapor recovery requirements can limit gasoline loadings if the equipment is not big enough to handle higher loading volumes.
- **Tanker truck tightness testing requirements:** Tanker trucks are tested periodically to ensure vapor tightness and to minimize emissions. EPA can choose to not enforce documentation of this testing during fuel shortages, allowing trucks to pick up fuel at terminals at which they have not yet registered their tank tightness testing.

EPA also regulates emissions associated with permanent and temporary power generation, including limiting the amount of time temporary power generation can run. NAAs can be used to help ensure adequate power supply by allowing permanent generation facilities and temporary power generators to extend their power generation beyond usual engine operating hour limits.¹⁰⁴

Other federal actions:

Federal Power Act Section 202(c) Orders

Lead agency: DOE

Description: DOE is authorized to perform certain actions under the Federal Power Act Section 202(c) to ensure electric grid reliability.¹⁰⁵ Section 202(c) orders have been used in recent years to allow temporary interconnections between Independent System Operators (ISOs) in the country or to allow specific generating units to operate at maximum output levels to address electricity shortages.¹⁰⁶

Fuels used for backup power are in high demand during power outages, and actions that increase power availability indirectly support fuel supply by reducing overall demand for generator fuels. Federal actions supporting power availability also ensure that electricity is available along the fuel supply chain to power critical elements such as pipeline pump stations.

Waiver of Hazardous Materials Regulations for Oil and Hazardous Materials Incidents

Lead agency: DOT

Description: DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) may waive some regulations on hazardous materials transportation to assist with event preparation, response, and recovery. These waivers are usually granted in conjunction with hurricanes.

Pipeline Emergency Special Permits

Lead agency: DOT

Description: PHMSA may also issue an emergency special permit modifying federal pipeline regulations. These permits are granted to pipeline owners and operators to help facilitate fuel delivery during shortages or other events.

Emergency Prioritization of Pipeline Shipments

Lead agency: Federal Energy Regulatory Commission (FERC)

Description: FERC can order that interstate pipelines prioritize certain shipments to assist with emergency response. As of 2021, this authority has been used only once. During a propane shortage

in February 2014, FERC ordered the Enterprise TE Products Pipeline Company (TEPPCO) to prioritize up to 3.2 million gallons per day of propane shipments to locations in the Midwest and Northeast.¹⁰⁷

Local Governments

Local government agencies assist during energy events by responding to events within their jurisdiction, assisting with information sharing, maintaining situational awareness, and addressing resource requests. Local governments are typically county governments, and Baltimore City is considered on par with county jurisdictions for emergency planning purposes.¹⁰⁸ Some local government agencies have fleet managers that use fuel for fleets performing first response activities, removing debris and snow from roads, and performing other critical functions.

Roles and responsibilities

At the local level, emergency managers are responsible for planning for emergency use of fuels, including fuel for backup power generation for community emergency shelters, local government buildings, and water and wastewater treatment plants. Local governments also rely on fuels for routine and emergency activities performed by police, firefighters and other emergency responders.

Contact information for each Maryland county and the City of Baltimore can be found in Appendix A. Each Maryland county has an emergency manager or, depending on the county size, an entire office devoted to emergency management. Every Maryland county also has a fleet manager (or similar position) in charge of fuel procurement for county fleets and other fuel uses that exists in addition to the county emergency manager role.

Response actions

During events, the emergency manager and fleet manager leverage their local contacts and resources to address fuel supply issues, generator needs, access issues, and other incidents at the local level. For emergencies that are more complex or larger than a single county in scope, local governments escalate resource requests up to state agencies.

In addition to requesting specific resources, local governments also play an important role channeling contextual information to state agencies for their situational awareness on fuel availability, waiver needs, and emerging challenges. In addition to monitoring their own fuel demand, local governments with a dedicated fuel supplier should communicate with their distributor about regional fuel availability and should share this information with other counties or state agencies as needed.

Understanding Local Governments' Critical Fuel Use

In order to share accurate and timely information with state agencies during an emergency, local governments should understand the anticipated duration of fuel they have stored for fleets, backup generators and other emergency uses. Prior to an event, local emergency managers should know the Critical Infrastructure and Key Resources (CIKR) within their jurisdiction that utilize fuel for normal and emergency operations and gather the following background information:

- A point of contact at each facility
- The types of fuel used at each facility
- Anticipated emergency demand for each fuel in gallons per day
- The amount of fuel typically stored at each facility
- Estimated duration stored fuel is expected to last without refueling
- Frequency of fuel deliveries
- Contact information for the distributor contracted to supply each fuel

For facilities with backup power generators:

- The generator’s capacity and fuel type
- Facility services powered by the generator
- Estimated burn rate in gallons per hour
- Estimated run time in hours without refueling

Private Sector

Because almost all components of the fuel supply chain are privately owned and operated, the private sector is the best source of information for government agencies about on-the-ground conditions. Industry groups monitor anticipated fuel disruptions, such as predicted storms, and communicate with state agencies proactively about potential waiver needs.

Roles and responsibilities

Private Sector Organizations Involved in Fuel Emergency Preparedness and Response
<p>Mid-Atlantic Petroleum Distributors Association (MAPDA)</p> <p>MAPDA is the industry association for energy distributors and convenience stores in Maryland, Delaware and the District of Columbia.¹⁰⁹ MAPDA plays a crucial role in the fuel waiver request process. During an emergency, MAPDA proactively communicates industry needs to state agencies, including formally requesting waivers to help with fuel delivery.</p> <p>Once aware of a potential or current event, MAPDA leadership communicates to MDOT that an HOS waiver may be needed and reaches out to MDE and the Maryland Office of the Comptroller about potential fuel specification waivers. MAPDA may also proactively contact the Office of the Governor to encourage coordination on federal HOS and RVP/RFG waivers.</p> <p>MAPDA communicates with member companies throughout the event to understand fuel availability and transportation challenges. MAPDA will know how long wait times are at terminals, whether distributors are being put on allocation at terminals, how far distributors have had to drive to acquire fuel and if there are any ongoing industry needs.</p>
<p>Mid-Atlantic Propane Gas Association (MAPGA)</p> <p>MAPGA is the industry association representing the propane industry in Mid-Atlantic states.¹¹⁰ Along with MAPDA, MAPGA applies to MDOT for state-level HOS waivers as needed, including reapplying after each five-day waiver expires. MAPGA also coordinates with the National Propane Gas Association (NPGA) as needed to request federal HOS waivers from FMCSA.</p>
<p>Maryland Motor Truck Association (MMTA)</p> <p>MMTA is the industry association representing the fuel trucking industry in Maryland. Along with MAPDA and MAPGA, MMTA communicates with MDOT about state HOS waivers.</p>

Response actions

During a fuel emergency, industry associations are the primary drivers for state waiver requests and serve as the main point of contact for communication between the state government and industry during fuel emergencies. They gather information from member companies to understand wait times at terminals, road conditions, regional shortages and other supply issues. Points of contact for all non-governmental stakeholders can be found in Appendix A.

Section 5: Liquid Fuels Crisis Communications Planning and Implementation

During a liquid fuel crisis, timely, consistent, and accurate communication is imperative to keep internal and external stakeholders informed of the developing event, as well as its potential and existing impacts. MEA employees, other state agencies, and government officials look to state communications teams for leadership to guide their own response. Companies, private citizens, and other private sector stakeholders rely on the state for information that may be crucial for public health and safety, financial stability, national security and other considerations.

To ensure clarity and consistency of message, it is important that state communications teams establish communications protocols, including models for crafting tailored messages for the public, key stakeholders, the media, and other parties. As incidents evolve, MEA should frequently update its internal and external communications to foster the flow of information and to develop a reputation for responsiveness.

Because messaging decisions are based upon up-to-the minute incident updates, MEA's response is situational and may vary from event to event. **No matter what caused the crisis, timely and accurate communications are needed** to avoid misinformation and assure citizens that effective emergency response is underway. Through planning, preparation, and sound decision-making at the onset of an issue, MEA can help avoid misinformation and crisis escalation regardless of the event's origin or impact.

This section outlines the framework for communication efforts before, during, and after liquid fuel emergency events.

- **Before:**
 - Maintain contact lists. Use blue-sky days to continuously update the requisite information.
 - Ensure that key staff are well-versed in and understand email, press, and internal and external communications protocols, including access to for all platforms and establishing familiarity with platform functions.
 - Review the Prepared Statement, a template that can be quickly updated and issued at the beginning of an event.
- **During:**
 - Initiate Emergency Communications Protocols.
 - Establish lines of communication and cadence for information exchange.
 - Craft messaging, based upon subject matter expertise while applying best practices.
 - Monitor media.
 - Use social media to share information and correct misconceptions.
- **After:**
 - Host a hot wash meeting, or debriefing, for lessons learned.
 - Develop an after-action report as needed.
 - Update protocols and contact information as needed.

BEFORE: Preparing for Crisis Communications

There are two key documents that can be developed prior to an event to help expedite communications as an event unfolds: an **Emergency Communications Protocol**

containing a list of contacts and a cadence of events can help ensure that lines of communication are opened, and key parties are notified appropriately; and a **Prepared Statement**, a template outlining potential emergency scenarios, designates the appropriate channels for communication and can be quickly updated with event-specific information during an actual incident.

Emergency Communications Protocol

An Emergency Communications Protocol clearly lists steps that need to be taken in an emergency for both public-facing communications and internal communications across key state parties. It may also include a decision tree to be followed during an event. Elements of an Emergency Communications Protocol include:

- A list of agencies or offices that need to be contacted immediately to establish lines of communications
- A cadence or schedule for information exchange between state and federal agencies and offices
- A sequence for information distribution across key parties (e.g., first contact state officials and office holders first, then community organizations, then media outlets, etc.)
- A decision tree that guides the reader through a diagram of if-then scenarios to ensure all necessary tasks are completed and all parties stay informed during an emergency

Prepared Statements

Prepared Statements help streamline and expedite agencies' initial public communications as an event is still unfolding. A set of Prepared Statements that address the most likely issues or crisis should be drafted and pre-authorized for use by leadership to expedite the drafting and approval process. Using this statement allows time to gather more information about the situation before drafting tailored communications for the event.

Consider drafting separate Prepared Statements for each of the following potential liquid fuel emergencies:

Pre-Event Recommendations

- ✓ Create an Emergency Communications Protocol document to clearly outline the specific schedule of contacts, notifications and processes that need to happen in an emergency.
- ✓ Review all stakeholder contact information on a quarterly basis to ensure it is updated and that communications systems are operational. Additionally, all key parties should be required to review the Emergency Communications Protocol annually for their awareness.
- ✓ MEA should create and get approved a series of Prepared Statements to have ready in the event of an emergency.
- ✓ Communications drills and test responses should also be held on at least an annual basis to make sure automated systems are working and key parties are prepared to fulfill their responsibilities in an emergency.

- Anticipated or actual fuel shortage (caused by major events as identified in the [Threats to Maryland's Supply Chain](#) section of this report, including Gulf Coast refinery shutdowns, Colonial Pipeline shutdowns, shutdowns of Baltimore terminals, shutdowns of the Port of Baltimore and Port of Salisbury, or other issues)
- Anticipated or actual propane or heating oil shortage
- Regional power outage causing potential or actual generator fuel shortage
- Cyber events, security events, or other events with fuel supply impacts for which information is classified or sensitive

For each potential event, the prepared statement need not be long, nor does it need to address all aspects of an unfolding event. The statement should consist of only a few brief sentences and should be grounded in accuracy, MEA's values and empathy.

Because a prepared statement is released early on during the event, the issuing agency may not have all the information about the event or event impacts. The statement should assure the media and public that more information will be shared as it becomes available. The key is to effectively communicate that the issuing agency is responding to the situation and coordinating with key stakeholders.

Timely publication of the final document is critical to controlling the narrative. If possible, prepared statements should be published as soon as possible once the event is identified.

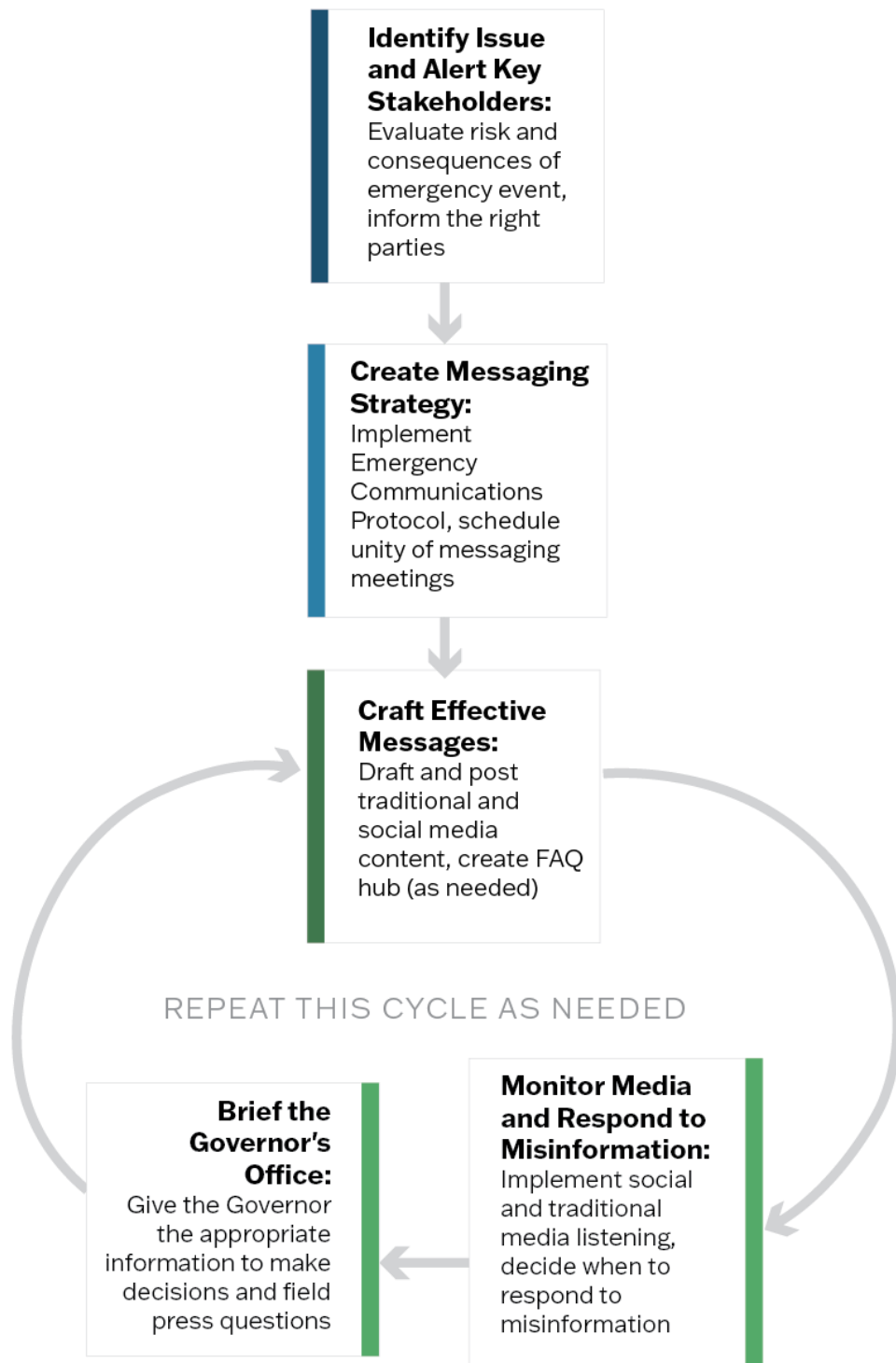
DURING: Crisis Communication During an Incident

Communication during an event has three major emphases:

1. Ensuring that crucial, potentially life-saving information about the event reaches audiences that will be or are affected by the event
2. Informing audiences about response efforts and assuring them that government response is underway
3. Actively countering false narratives that threaten this work

MEA, as the state's lead agency on liquid fuel emergencies, should complete the following tasks to initiate effective crisis communications.

Exhibit 14: Flow of Communications Tasks



To ensure that these activities and the overall crisis response proceeds effectively and efficiently, all key stakeholders must understand the role each state communications team plays during response. MEA's communication's team should be coordinating all other appropriate state agencies during an emergency event.

Brief the Governor's Office

In many cases, the Governor's Office will seek a briefing from MEA as the lead agency on liquid fuels emergencies. MEA's senior leadership should brief the Governor's Office, with input on the briefing content from MEA SCF-12 Team and the MEA Communications team. This briefing should contain a high level of detail on the explanation of the event and impact, as well as an evaluation of the media landscape (i.e., public and media sentiment, volume and content of misinformation, etc.).

AFTER: Post Issues Analysis and Action Plan

Once an event has concluded, a "hot wash" or debriefing meeting should be scheduled with the key state communications teams to discuss which elements of the response were successful and which need improvement. A hot wash should be scheduled as soon as possible after the event to capture lessons while they are fresh. A short, written summary of the hot wash should document key lessons and recommendations for improvement.

For larger events, MEA and MDEM may coordinate to develop a lengthier After Action Report. This report should document the event, actions taken, and outcomes to educate and inform the leadership team. It should also discuss what worked well, what needs improvement, points of confusion in the process and suggestions for future process changes.

Appendix A: Contact Lists

State of Maryland Agency Contacts

Below is a list of Maryland state agencies that grant state waivers or are otherwise involved with fuel disruption response. Review this contact information at least once a year for accuracy.

MARYLAND STATE AGENCY CONTACTS							
AGENCY CONTACT				ENERGY-SPECIFIC CONTACT (Fleet, ESF-12 coordination, etc.)			
State Agency	Office or Division	Website	Agency Contact Info	Point of Contact Name	Position	Phone Number	Email
Maryland Office of the Governor	Governor's Office of Homeland Security	https://msa.maryland.gov/msa/mdmanual/08conoff/coord/homeland/html/msa17159.html	410-974-3901	Walter (Pete) Landon	Director	410-974-3901	walter.landon1@maryland.gov
				Mark Hubbard	Deputy Director		mark.hubbard@maryland.gov
Maryland Energy Administration		https://energy.maryland.gov/Pages/default.aspx	1-800-72-ENERGY DLinfo_MEA@maryland.gov	Brandon Bowser	Program Manager, Energy Resilience	410-537-4086	BrandonW.Bowser@Maryland.gov
Maryland Department of Emergency Management (MDEM)	Consequence Management Directorate	https://mdem.maryland.gov/community/Pages/default.aspx		Marci Catlett	Sr. Technological Hazard Preparedness Specialist	443-379-7891	marci.catlett@maryland.gov
	Business Operations	https://mdem.maryland.gov/community/Pages/PSI		Allegra	Non-Governmental	410-517-	allegra.tartaglia@maryland.gov

MARYLAND STATE AGENCY CONTACTS

AGENCY CONTACT				ENERGY-SPECIFIC CONTACT (Fleet, ESF-12 coordination, etc.)			
State Agency	Office or Division	Website	Agency Contact Info	Point of Contact Name	Position	Phone Number	Email
	Center	P-Welcome.aspx		Tartaglia	Services Branch Manager	3659	
	Joint Information Center (JIC)	N/A	pio.mdem@maryland.gov	Ed McDonough	Public Information Officer	410-517-3632	ed.mcdonough@maryland.gov
Maryland Department of Transportation	Office of Emergency Management and Homeland Security	https://www.mdot.maryland.gov/tso/Pages/Index.aspx?PagelId=70		Kristen Skogsberg	Program Manager	410-865-1178	kskogsberg@mdot.maryland.gov
				Chris Holland	Director	410-865-1161	cholland@mdot.maryland.gov
	State Highway Administration	https://roads.maryland.gov/mdotsha/pages/Index.aspx?PagelId=501	977-624-6863	Tim Lawler	Division Chief Equipment	410-582-5575	TLawler@MDOT.Maryland.gov
	Maryland Aviation Administration/ BWI Airport	https://marylandaviation.com/contact-the-maa/	410-859-7335	Stacey Hicks-Johnson	Fleet Manager	410-859-7351	shicks-johnson@BWIairport.com
				Wayne S. Pennell	Chief, BWI Operations & Maintenance		wpennell@bwiairport.com
Maryland Transit	https://www.mdot.maryland.gov/tso/pages/Index.aspx	410-865-1148	Terry Brown	Fleet Coordinator	410-865-1136	TBrown16@MDOT.state.md.us	

MARYLAND STATE AGENCY CONTACTS

AGENCY CONTACT				ENERGY-SPECIFIC CONTACT (Fleet, ESF-12 coordination, etc.)			
State Agency	Office or Division	Website	Agency Contact Info	Point of Contact Name	Position	Phone Number	Email
	Administration	spx?PagelId=65					
	Maryland Port Administration	https://mpa.maryland.gov/Pages/mpa-divisions.aspx	410-633-1051	Robert Wood	Manager of Fleets	410-633-1052	RWood2@MarylandPorts.com
				Brian Miller	Deputy Executive Director	410-385-4829	bmiller2@marylandports.com
Maryland Office of the Comptroller		https://www.marylandtaxes.gov/contact-us.php		Chuck Ulm	Director, Field Enforcement Bureau	410-260-7278	culm@marylandtaxes.gov
Maryland Department of the Environment		https://mde.maryland.gov/pages/contactus.aspx		Marcia Ways	Manager, Mobile Sources Control Program	410-537-3270	marcia.ways@maryland.gov
Department of General Services		https://dgs.maryland.gov/Pages/FuelManagement/Index.aspx		Jennifer Edwards	Director, Emergency Management	443-934-2677	jennifer.edwards1@maryland.gov

MARYLAND STATE AGENCY CONTACTS

AGENCY CONTACT				ENERGY-SPECIFIC CONTACT (Fleet, ESF-12 coordination, etc.)			
State Agency	Office or Division	Website	Agency Contact Info	Point of Contact Name	Position	Phone Number	Email
				Kurt Butler	State Fuel Manager	410-767-4310	kurt.butler@maryland.gov
				Kathryn Wilson	POC-Statewide Automated Fuel Dispensing & Management System	410-767-0587	kathryn.wilson@maryland.gov
Maryland Center for Analysis and Coordination (MCAC)		https://www.mcac.maryland.gov/contact_us/	1-800-492-TIPS (8477) mdwatch@mcac.md.gov	Jessica Curtis			Jessica.Curtis@mcac.maryland.gov
Maryland Public Service Commission		https://www.psc.state.md.us/	410-767-8000	Kevin Mosier	Assistant Director Energy Analysis & Planning	410-767-8926	kevin.mosier@maryland.gov
Maryland State Police	Motor Vehicle Division (Headquarters)	https://mdsp.maryland.gov/Organization/Pages/SupportServicesBureau/MotorVehicleDivision.aspx	410-486-3101	Jeffery Pettitt	Facility management Division	410-758-1101	Jeffrey.pettitt@maryland.gov
				Sgt. Travis Nelson			travis.nelson@maryland.gov

MARYLAND STATE AGENCY CONTACTS

AGENCY CONTACT				ENERGY-SPECIFIC CONTACT (Fleet, ESF-12 coordination, etc.)			
State Agency	Office or Division	Website	Agency Contact Info	Point of Contact Name	Position	Phone Number	Email
Maryland Military Department	Maryland National Guard	https://military.maryland.gov/Pages/about-us.aspx		LTC Adam Smith	Deputy Joint Operations Officer		adam.k.smith.mil@mail.mil
Maryland Department of Human Services (for emergency residential heating fuel assistance)	Office of Emergency Operations	https://msa.maryland.gov/msa/mdmanual/18dhr/html/18agen.html#administrativeservices		Bethany Brown	Director, Quality Assurance and Compliance	443-930-2298	bethany.brown@maryland.gov

FEMA Region III Contacts

FEMA Region III, which includes Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia and seven Tribal Nations, is headquartered in Philadelphia. During large scale fuel supply disruptions, regional coordination can allow for a coordinated response, messaging, and the distribution of information. The following lists of contacts and agencies represent key state energy offices and public utilities commissions that can play an integral role in coordinating the response to petroleum, natural gas and electricity disruptions.

The tables below include points of contact at the various State Energy Offices (SEOs) and Public Utility Commissions (PUC) located within FEMA Region III. These offices include:

- **Pennsylvania:** Department of Environmental Protection Energy Programs Office
- **Maryland:** Maryland Energy Administration
- **Delaware:** Delaware Division of Climate, Coastal and Energy - Delaware Department of Natural Resources and Environmental Control
- **D.C.:** Department of Energy and Environment
- **Virginia:** Energy Division, Virginia Department of Mines, Minerals, and Energy
- **West Virginia:** Office of Energy

NASEO hosts a complete list of state energy offices on their website with a phone number if coordination is necessary outside of FEMA Region III.¹¹¹

FEMA REGION III HEADQUARTERS		
Phone	Website	
215-931-5500	https://www.fema.gov/about/contact#region-3	
FEMA Region III HQ Contact Name	Position	Email
Melissa Wiehenstroer	Liaison	melissa.wiehenstroer@fema.dhs.gov

FEMA REGION III CONTACTS			
Name	Role and Department	Email	Org.
Pennsylvania			
David Althoff	Director, Energy Programs Office	dalthoff@PA.GOV	SEO
Kerry Campbell	Environmental Program Manager, Energy Programs Office	kcampbell@PA.GOV	SEO
Libby Dodson	Division Chief, Pennsylvania Energy Development Authority	libdodson@PA.GOV	SEO
Amanda Eyer	Energy Program Specialist, Department of Environmental Protection	amaeyer@pa.gov	SEO
Lindsay Byron	Environmental Group Manager, Energy Programs Office	lbyron@PA.GOV	SEO

Patrick McDonnell	Secretary, Department of Environmental Protection	ra-epenergy@PA.GOV	SEO
Brian Moore	Director of Emergency Response, Department of Environmental Protection	briamoore@PA.GOV	SEO
Ghana Redman	Energy Analyst, Public Utility Commission	gredman@STATE.PA.US	PUC
Daniel Searfoorce	Reliability and Emergency Preparedness Supervisor, Public Utility Commission	dsearfoorc@PA.GOV	PUC
Matt Stewart	Technical Utility Staff, Public Utility Commission	mattstewar@PA.GOV	PUC
Delaware			
Kevin Neilson	Regulatory Policy Administrator, Public Service Commission	kevin.neilson@STATE.DE.US	PUC
Robert Underwood	Energy Programs Section Administrator, Department of Natural Resources and Environmental Control	Robert.underwood@STATE.DE.US	SEO
District of Columbia			
Taresa Lawrence	Deputy Director, Energy Administration at Department of Energy and Environment (DOEE)	Taresa.lawrence@dc.gov	DOEE (SEO)
Sosina Tadesse	Energy Program Specialist, Department of Energy and Environment	sosina.tadesse@DC.GOV	DOEE (SEO)
John Howley	Senior Economist, Public Service Commission	jhowley@psc.dc.gov	PUC
Virginia			
Al Christopher	Director, Energy Division at Department of Mines, Minerals, and Energy	Al.christopher@DMME.VIRGINIA.GOV	SEO
David Essah	Deputy Director, Public Utility Regulation at State Corporation Commission	david.essah@SCC.VIRGINIA.GOV	PUC
Brandi Frazier Bestpitch	Energy Data Analyst, Department of Mines, Minerals, and Energy	brandi.frazierbestpitch@DMME.VIRGINIA.GOV	SEO
West Virginia			
Karen Lasure	Energy Development Specialist, Office of Energy	Karen.R.Lasure@WV.GOV	SEO
Earl Melton	Direction, Engineering Division at Public Service Commission	emelton@PSC.STATE.WV.US	PUC

Federal Contacts

Federal agencies assist with federal waivers and help with coordination during regional events.

Below is a list of federal agencies that grant federal waivers or are otherwise involved with fuel emergency response. A general point of contact is provided for each agency, typically for a watch desk or email address dedicated to emergency response.

FEDERAL CONTACTS				
Agency	Office or Organization	Email	Phone Number	Notes
Department of Energy (DOE)	Cybersecurity, Energy Security, and Emergency Response (CESER)	energyresponsecenter@hq.doe.gov	202-586-2264 (Business hours)	Use for any questions about emergency response
	Emergency Operations Center (EOC)		202-586-8100	Call for after-hours energy sector emergencies
Environmental Protection Agency (EPA)	Fuel Programs	FuelsProgramSupport@epa.gov	1-800-385-6164 (Business hours)	Use for questions about EPA's fuel programs, including RVP and RFG waivers
	Emergency Operations Center (EOC)	eoc.epahq@epa.gov	202-564-3850	Direct questions here during an emergency. Line is staffed 24/7/365
Internal Revenue Service (IRS)	Excise Hotline		866-699-4096 (Business hours)	Use for questions about IRS waivers
Department of Transportation	Federal Motor Carrier Safety Administration	FMCSADeclaration@dot.gov	877-831-2250	Use for information about FMCSA emergency declarations, waivers and regulations during a declared

	(FMCSA)			disaster
Department of Homeland Security	Federal Emergency Management Agency (FEMA) – Region III	Region III Watch Center: FEMA-RO3-RRCC-WATCH@fema.dhs.gov	Region III office: 215-931-5500 Region III Watch Center: 215-931-5757	Use to engage with FEMA on disaster assistance, especially related to hurricanes and other weather events. Watch Center contact may be useful for reporting emerging events.
Department of Homeland Security	Transportation Security Administration	For questions: pipelinesecurity@dhs.gov For pipeline operators to report an incident to the Transportation Security Operations Center (TSOC): TSOC.ST@dhs.gov	TSOC: 866-615-5150	Use for information about pipeline cybersecurity
Department of Homeland Security	Cybersecurity and Infrastructure Security Agency – Region III	CISARegion3@hq.dhs.gov	888-282-0870	Use to report cyber incidents
Department of Transportation	Pipeline and Hazardous Materials Safety Administration – Eastern Region	Personnel contact list (including emails) available here: https://www.phmsa.dot.gov/about-phmsa/offices/eastern-region	609-771-7800	Use for information on pipeline ruptures, leaks or shutdowns

Local Government Contacts – Emergency Managers Contacts

Local emergency managers play an important role in channeling information, including resource requests and reported fuel disruptions up to state agencies. Contacts for all Maryland counties and the City of Baltimore are included below and should be reviewed annually for accuracy.

COUNTY CONTACTS – EMERGENCY MANAGERS							
County Name	County Agency			Individual Point of Contact			
	County Agency	Phone Number	Website	County Emergency Manager	Position	Phone Number	Email
Allegany	Roads Dept.	301-777-5955	https://www.alleganygov.org/168/Emergency-Services	Roger Bennett	Emergency Manager	301-876-9155	rbennett@alleganygov.org
Anne Arundel	Office of Emergency Management	410-222-0600	http://www.aacounty.org/OEM/index.cfm		General Number	410-222-0600	oem@aacounty.org
Baltimore County	Emergency management	410-887-5996	https://www.baltimorecountymd.gov/departments/emergency-management/emergency-plans	David Bycoffe	Deputy Chief		emergencymanagement@baltimorecountymd.gov
Baltimore City	Office of Emergency Management	410-396-3100	http://www.baltimorecity.gov/OfficeoftheMayor/MayoralOffices/EmergencyManagement.aspx				

COUNTY CONTACTS – EMERGENCY MANAGERS

County Name	County Agency			Individual Point of Contact			
	County Agency	Phone Number	Website	County Emergency Manager	Position	Phone Number	Email
Calvert	Emergency Management	410-535-1623	https://www.calvertcountymd.gov/101/Emergency-Management	Michael Grierson	Emergency Manager	410-535-1600 x2537	Michael.Grierson@calvertcountymd.gov
Caroline	Emergency Management	410-479-2622	http://www.carolinemd.org/181/Emergency-Services	Sam Grant	Emergency Management Division Chief	410-479-2622	SGrant@carolinemd.org
Carroll	Emergency Management	410-386-2260	https://www.carrollcountymd.gov/government/directory/public-safety/emergency-management/	Valerie Hawkins	Manager, Emergency Management	410-386-2296	vhawkins@carrollcountymd.gov
Cecil	Emergency Management	410-392-2017	http://www.ccdes.org/	Wayne Tome	Acting Director of Emergency Management		wayne.tome@CCDPS.ORG
Charles	Emergency Services	301-609-3401	https://www.charlescountymd.gov/services/emergency-services	Michelle Lilly	Director, Emergency Services	301-609-3401	lillym@charlescounty.gov
Dorchester	Emergency Management	410-228-2231	http://www.dorchestercountymd-ema.com/	Dave Edwards			dedwards@docogonet.com, drahilly@docogonet.com

COUNTY CONTACTS – EMERGENCY MANAGERS

County Name	County Agency			Individual Point of Contact			
	County Agency	Phone Number	Website	County Emergency Manager	Position	Phone Number	Email
Frederick	Emergency Management	301-600-1746	https://frederickcountymd.gov/2001/Emergency-Management	John "Jack" Markey	Director, Emergency Management	301-600-6791	jmarkey@frederickcountymd.gov
Garrett	Emergency Services	301-334-7619	https://www.garrettcounty.org/emergency-services	John Frank	Director, Emergency Services	301-334-7619	jfrank@garrettcounty.org
Harford	Emergency Services	410-638-3407	http://www.harfordpublicsafety.org/	Rick Ayers	Director, Emergency Services	410-638-3407	raayers@harfordpublicsafety.org
Howard	Office of Emergency Management	410-313-6030	https://www.howardcountymd.gov/fire-and-rescue-services/emergency-management	Mike Hinson	Director, Emergency Management	410-313-2900	mhinson@howardcountymd.gov
	Howard County Central Fleet	410-313-2099		Tiffany Talay	Emergency Management Specialist II	410-313-0717	ttalay@howardcountymd.gov
Kent	Emergency Services	410-778-7458	http://www.kentcountymd.com/oes	Wayne Darrell	Director, Emergency Services	410-778-7458	WDARRELL@KENTGOV.ORG
Montgomery	Emergency Management	240-777-2300	https://www.montgomerycountymd.gov/oemhs/	Earl Stoddard	Director, Emergency Management	240-777-2300	earl.stoddard@montgomerycountymd.gov

COUNTY CONTACTS – EMERGENCY MANAGERS

County Name	County Agency			Individual Point of Contact			
	County Agency	Phone Number	Website	County Emergency Manager	Position	Phone Number	Email
Prince George's	Office of Homeland Security and Emergency Management	301-780-8313	http://www.princegeorgescountymd.gov/sites/emergencymanagement/Pages/default.aspx	Ronald Gill	Director, Emergency Management	301-324-4336	regill@co.pg.md.us
Queen Anne's	Emergency Services	410-758-4510	http://www.qac.org/325/Department-of-Emergency-Services-DES	Lorenzo Crawford	Emergency Planner	410- 548-4820	lcropper@wicomicocounty.org
St. Mary's	Emergency Management & Communications	301-475-4200, EX 2120 (Emergency Communications)	http://www.co.saintmarys.md.us/est/ema.asp	Gerald Gardner, Jr.	Supervisor	301-475-4200, EX 2124	gerald.gardner@stmarysmd.com
Somerset	Emergency Services	410-621-9188	http://www.somerset911.org/	Yvette Cross	Director, Emergency Services	410-651-3465	ycross@somersetmd.us
Talbot	Emergency Services	410-770-8160	http://www.talbotcountymd.org/emergency_management.asp	Brian Lecates			blcates@talbgov.org

COUNTY CONTACTS – EMERGENCY MANAGERS

County Name	County Agency			Individual Point of Contact			
	County Agency	Phone Number	Website	County Emergency Manager	Position	Phone Number	Email
Washington	Office of Emergency Management and Communications	240-313-4360	https://www.washco-md.net/emergency-management/	Charles "Tom" Brown	Director of Emergency Management and Communications	240-313-4372	cbrown@washco-md.net
Wicomico	Emergency Services	410-548-4920	http://www.wicomicocounty.org/214/Emergency-Management-Division	David Shipley	Director, Emergency Services	410-548-4921	dshipley@wicomicocounty.gov
Worcester	Emergency Services	410-632-1311	https://www.co.worcester.md.us/departments/emergency	Billy Birch	Director, Emergency Services	410-632-3080	bbirch@co.worcester.md.us

County Contacts – Fleet Managers

Below is a listing of points of contact for each Maryland county who is aware of fuel procurement for county fleets or a central point of contact who can communicate with various fleets operating in the county to assess issues with acquiring fuel during a disruption.

COUNTY CONTACTS – FLEET MANAGERS					
County Name	County Fleet Manager	Position	Phone Number	Website	Email
Allegany	Dave Teter	Fleet Manager	301-777-5955		dteter@alleganygov.org
Anne Arundel	Ellie Harris	Fleet Administrator	410-222-8546		faharr50@aacounty.org
Baltimore County	<u>See Baltimore County Table Below</u>				
Baltimore City	Renee Johnson	Deputy Chief Fleet Administrator	410-826-3353		reeneb.johnson@Baltimorecity.gov
Calvert	John Spya	Calvert County Fleet Maintenance Division Chief	410-535-0167		john.sypa@calvertcountymd.gov
Caroline	Amy Thetford	Purchasing Agent II	410-479-4152	https://www.carolinemd.org/140/Purchasing-Procurement	athetford@carolinemd.org
Carroll	Reid Oliver	Incoming Fleet Manager	No response yet	https://www.carrollcountymd.gov/government/directory/public-works/fleet-managementwarehouse/	roliver@carrollcountymd.gov
Cecil	Kenneth Jackson	Procurement and Fleet Manager	410-996-5396		kjackson@ccgov.org
Charles	Lee Hammonds John Mudd	Deputy Fleet Manager	301-932-3483 301-932-3482	https://www.charlescountymd.gov/government/public-works-facilities	HammondD@charlescountymd.gov MuddJo@charlescountymd.gov

COUNTY CONTACTS – FLEET MANAGERS

County Name	County Fleet Manager	Position	Phone Number	Website	Email
Dorchester	Dave Edwards	Director of Public Works (Maintenance Division)	410-228-2920	https://dorchestercountymd.com/departments/maintenance-division/	dedwards@docnet.com , drahilly@docogonet.com
Frederick	Tony Dalfonzo	Assistant Director of Fleet Management	301-600-1814	https://frederickcountymd.gov/92/Fleet-Services	JEndlich@FrederickCountyMd.gov
Garrett	Jason King	Facilities and Maintenance Manager	301-334-1928	https://www.garrettcountry.org/facilities-and-maintenance	jking@garrettcountry.org
Harford	Patrick Warren	Fleet Manager	410-638-3102	https://www.harfordcountymd.gov/Directory.aspx?did=207	wrpatrick@harfordcountymd.gov
Howard	Robert Phillips	Fleet Administrator	410-313-0723		rophillips@howardcountymd.gov
Kent	James Wright, Jr. Daniel T. Voshell	County Engineer County Roads Division Chief	410-778-7407 410-778-4252		jwright@kentgov.org dvosshell@kentgov.org
Montgomery	Del Spurrier Peggy Lynch	Compliance / QC /Fleet Facilities Business Operations	240-773-0502 240-777-5759	https://www.montgomerycountymd.gov/DGS-FMS/SeniorManagement.html	Dspurrier@montgomerycountymd.gov Plynch@montgomerycountymd.gov
Prince George's	Mike Hardesty	Garage Manager	301-306-2780	https://www.princegeorgescountymd.gov/876/Fleet-Management	

COUNTY CONTACTS – FLEET MANAGERS

County Name	County Fleet Manager	Position	Phone Number	Website	Email
Queen Anne's	Nick Rice	County Purchasing Agent	410-548-4805		nrice@wicomiconcounty.org
St. Mary's	Debbie Litten	Fleet Services Coordinator	301-475-4200 ext 1125	https://www.stmarysmd.com/dpw/fleet/maint.asp	debbie.litten@stmarysmd.com
Somerset	Christie Bull	Somerset County Roads	410-651-0707 410-651-1930		iredden@somersetmd.us
Talbot	Warren Edwards, Jr. Lois McDonald	Roads Superintendent	410-770-8150	https://talbotcountymd.gov/roads	wedwards@talbotcountymd.gov
Washington	Christine Casey	Public Works Office Manager	240-313-2254	https://www.washco-md.net/public-works/	ccasey@washco-md.net
Wicomico	Nick Rice	County Purchasing Agent	410-548-4805	https://www.wicomiconcounty.org/	nrice@wicomiconcounty.org
Worcester	Derrick Babcock	Fleet Management Superintendent	410-632-5675	https://www.co.worcester.md.us/departments/publicworks/fleet	dbabcock@co.worcester.md.us

Baltimore County – Fleet Managers

Below is a listing of the central point of contact for fleet information for various agencies operating within Baltimore County.

Baltimore County Agency	Agency Phone Number	Fleet Manager	Position	Phone Number	Email
County Fire Department (CFD)	410-887-6590	Craig Bidinger	Fire Director	(410) 887-6590	jbidinger@baltimorecountymd.gov
County Police Department (CPD)	410-887-4550	Mark Horvath	Lieutenant	(410) 887-4550	mhorvath@baltimorecountymd.gov
Corrections, Police, Fire, Property Management, Health, Rec & Parks, EPS, DPW, Workforce development, Library	410-887-3714	James Montgomery	Acting Equipment Manager	(410) 887-3714	jmontgomery@baltimorecountymd.gov
Office of County Executive, Board of Elections, Parking Enforcement, Corrections, State's Attorney, Community Planning, Police Department, Fire Department, Permits, Sheriffs, Property Management, Health Department, Aging/DPW&T, Rec & Parks, Environmental Protection, County Council, Information Technology, Public Works, Housing Office, Housing Services, Vehicle Operations, Library	(410) 887-3927	Joseph Delucia	Vehicle Operations Administrator	(410) 887-3927	jdelucia@baltimorecountymd.gov

Key

NOTE: The county has arrangements with outside entities that are able to obtain fuel from County Fuel Centers and bills entity separately. The county has no control over these vehicles. These arrangements include Refuse Haulers, Volunteer Fire Companies, Revenue Authority, Public Schools, Social Services (State of MD) and Towson University.

Non-Governmental Contacts

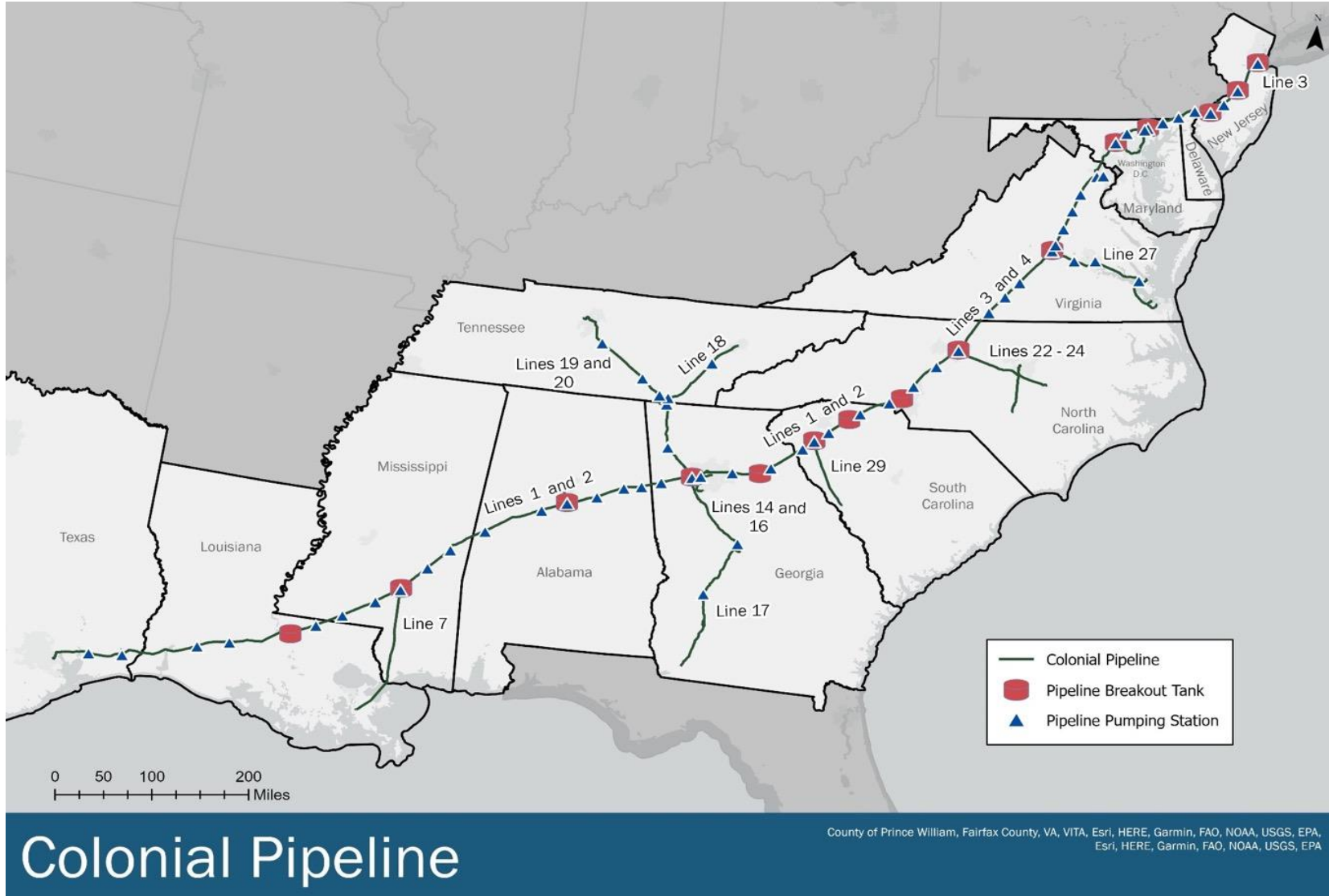
During a fuel emergency or anticipated fuel emergency, non-governmental contacts serve to survey industry needs and relay them to the government. They also often communicate information coming out of State and federal agencies back down to industry.

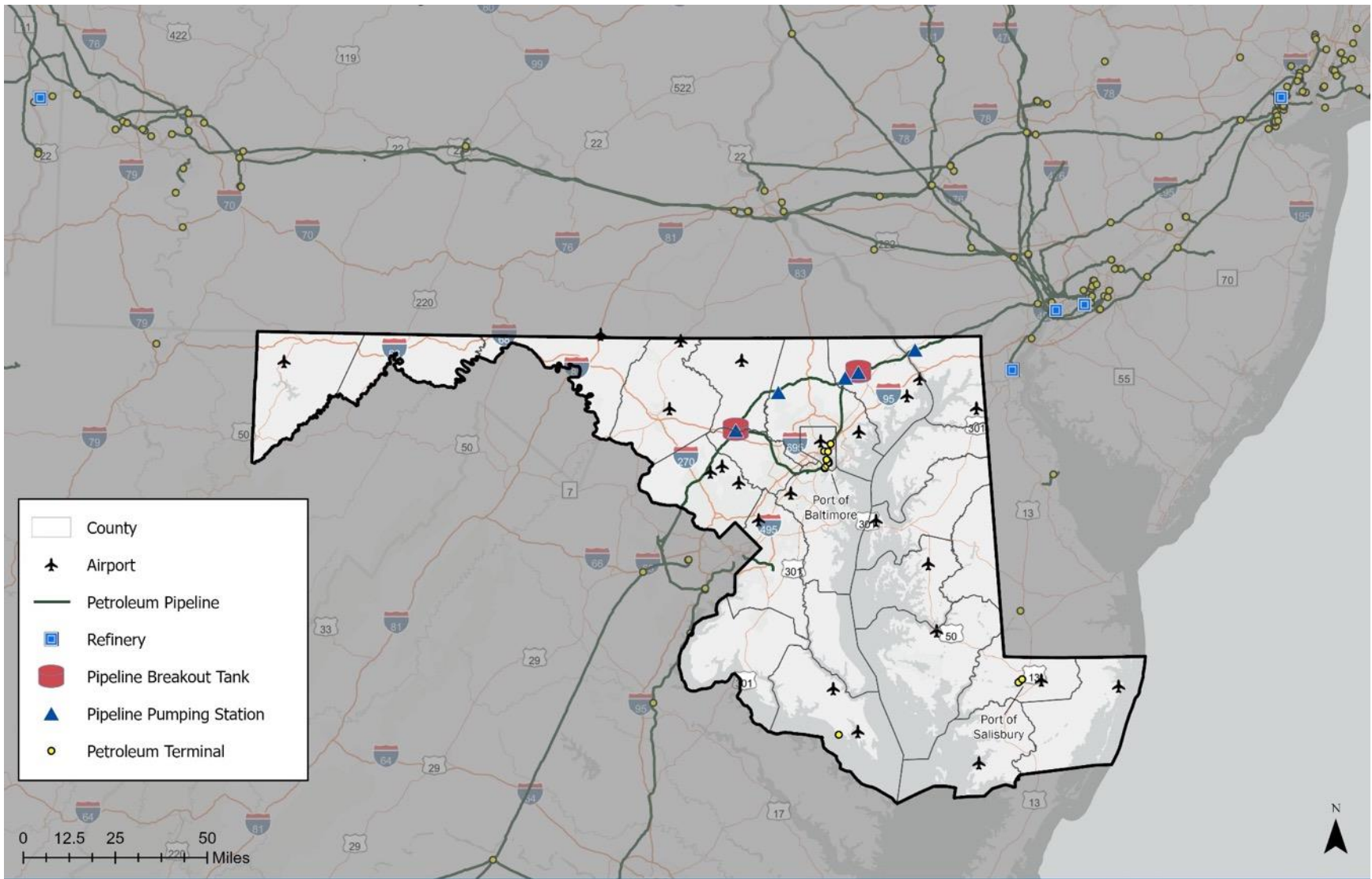
MAPDA and MAPGA in particular have established relationships with several State agencies, and are directly and proactively involved in requesting waivers during fuel disruptions.

NASEO also notably publishes best practices for state energy offices on its website and is involved in helping to coordinate emergency response across state and federal government agencies.

Non-Governmental Contacts			
Organization	Website	Point of Contact	Email
MAPDA	http://www.mapda.com/	Ellen Valentino	ellen@mapda.com
MAPGA	https://www.mapga.org/	Jonathan Williams	jonathan.williams@easterassociates.com
American Petroleum Institute (API)	https://www.api.org/contact	Michael Gaimo	GiainoM@api.org
National Association of State Energy Officials (NASEO)	https://www.naseo.org/	Campbell Delahoyde	cdelahoyde@naseo.org
Maryland Motor Truck Association (MMTA)	https://www.mdtrucking.org/		contact@mdtrucking.org

Appendix B: Maryland Fuel Infrastructure Background Information





MNCPPC, VITA, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS

Maryland Liquid Fuel Infrastructure

Appendix C: State Waiver Library

Example templates for the following state waivers are included in this section for reference:

- Potential action: Executive orders for odd-even fuel rationing programs
- State fuel specification waivers (e.g., RVP and RFG)
- State transportation waivers (intrastate HOS and weight)

All templates are based on past waivers issued by Maryland as well as other states. Although the circumstances surrounding each waiver are briefly described, note that each fuel emergency is different, and future events may vary from the templates provided. The waiver language and the degree to which regulations are relaxed varies significantly based on event severity, event type, independent compounding factors, and time of year of the event. As such, these waivers are included for reference only.

Potential Action: Executive Orders for “Odd-Even” Fueling Rationing Programs

Granting entity: Office of the Governor

Maryland has not issued an executive order or odd-even fuel rationing program in recent years. The following text is taken from [New Jersey Executive Order No. 108](#), released November 2012.¹¹² The executive order was released in the aftermath of Superstorm Sandy.

EXECUTIVE ORDER NO. XXX

WHEREAS, beginning on [EVENT START DATE], and continuing through [EVENT END DATE], [DESCRIPTION OF EVENT]; and

WHEREAS, [IMPACT OF EVENT]; and

WHEREAS, the effects of [EVENT], especially the widespread power outages, have disrupted the orderly sale of motor fuel, making it difficult for the citizens of the State to access adequate quantities of motor fuel; and

WHEREAS, the orderly and measured sale of motor fuel is necessary to ensure that all citizens of [STATE] have a steady and reliable source of power for both transportation and maintenance of essential services at home; and

WHEREAS, [AUTHORITY GRANTING GOVERNOR POWER TO ISSUE ENERGY EMERGENCY]; and

WHEREAS, on [DATE], in light of the dangers posed by [EVENT], and pursuant to the authority provided under the Constitution and [RELEVANT STATE LAW], I declared a State of Emergency; and

WHEREAS, in accordance with [LAW], I reserved the right to utilize and employ all available resources of the State government to protect against the emergency created by [EVENT]; and

NOW, THEREFORE, I, [NAME], Governor of [STATE], by virtue of the authority vested in me by the Constitution and by the statutes of this State, do hereby ORDER and DIRECT:

1. A limited state of energy emergency with regard to the supply of motor fuel exists in the following counties: [COUNTY NAMES]
2. The [AGENCY IN CHARGE OF ADMINISTERING PROGRAM] is empowered to implement all provisions of [STATE LAW], and, more specifically, is empowered to implement the provisions of [STATE LAW] including, but not limited to:
 - a. Requiring retail dealers of motor fuel to only sell motor fuel for use in a passenger automobile bearing license plates, the last number of which is an even number, on even

numbered days of each month; and

b. Requiring retail dealers of motor fuel to only sell motor fuel for use in a passenger automobile bearing license plates, the last number of which is an odd number, on odd numbered days of each month; and

c. Deeming all license plates not displaying a number as an odd numbered plate.

3. The [HEAD OF ADMINISTERING AGENCY] is directed to take all appropriate steps to effectuate and enforce this Order.

4. This Order shall take effect at noon on [DATE].

State Fuel Specification Waivers (RVP, RFG)

Granting entity: Maryland Office of the Comptroller, in coordination with MDE

The following text is modeled on the May 11, 2021, fuel waiver issued by the Maryland Office of the Comptroller in response to the Colonial Pipeline cyberattack.

TEMPORARY GASOLINE VOLATILITY ADJUSTMENT

DATE

As the effects from the [EVENT] continue to impede the normal flow of product into Maryland for further distribution, and in conjunction with the issuance of the [DATE] Federal EPA Waiver ([LINK TO EPA WAIVER](#)), effective immediately, the Maryland Office of the Comptroller will authorize volatility adjustments relative to fuel quality standards.

Effective today, and continuing throughout the specified time periods stated in the current EPA waiver (now through [END DATE]), and including any subsequent changes or extensions to the [EPA WAIVER DATE] EPA Waiver, the Maryland Office of the Comptroller will further waive gasoline vapor pressure requirements as set forth in the Code of Maryland Regulations (COMAR) 03.03.05.01-1(D).

The waiver of COMAR gasoline vapor pressure requirements will run concurrent with the federal EPA vapor pressure waiver time period(s) and will align with any federal vapor pressure limitations set forth in future EPA waivers or waiver adjustments in response to the Colonial Pipeline supply interruption, for the period of those adjustments.

The Maryland Office of the Comptroller is granting relief for vapor pressure relaxation during the period of the federal waiver(s), which would allow the receipt, blending, storage, distribution, sale, and use of conventional gasoline in reformulated gasoline control areas as stated in the federal waiver.

As further specified in the EPA waiver, “summer CBOB [conventional gasoline blend stock for oxygenate blending] and summer conventional gasoline...meeting the 9.0 psi RVP standard...with the application of the ethanol 1.0 psi waiver...may be used in the RFG Covered Areas.” [\[OR OTHER RELEVANT TEXT ON WAIVED REGULATIONS FROM THE EPA WAIVER\]](#)

The waiver of the federal RFG requirements applies to terminal owners, terminal operators, distributors, and carriers. Current Maryland regulations allow the sale and use of gasoline complying with the April vapor pressure limit throughout May at retail outlets and wholesale purchaser-consumer facilities. [\[OR OTHER ALLOWANCES, AS RELEVANT\]](#)

Should conditions develop which lead to a continued lack of available supply of compliant gasoline, and warrant additional actions to allow the use of seasonally non-compliant gasoline, the Maryland Office of the Comptroller will work with allied agencies in an effort to consider additional relief measures.

The Maryland Office of the Comptroller will also provide for relief beyond the current EPA waiver expiration date in accordance with the Federal Waiver Conditions:

“This waiver is effective immediately and will continue through May 18, 2021. After May 18, 2021, fuel manufacturers may not produce or import gasoline that does not meet the RFG standards for distribution in the RFG Covered Areas. However, any summer CBOB and summer CG [conventional gasoline] permitted for use in the RFG Covered Areas described in this waiver that is in the distribution system on May 18, 2021, may be distributed and sold until the supply is depleted.” [TEXT INCLUDED AS EXAMPLE, UPDATE DATES AND ALLOWANCES AS NECESSARY]

Please direct all questions relative to this Maryland Temporary Gasoline Volatility Adjustment Waiver to [NAME], [TITLE], [EMAIL].

State Transportation Waivers (Intrastate HOS and Weight)

Granting entity: Maryland Department of Transportation (MDOT)

This example waiver is based on the [waiver issued by MDOT on May 12, 2021](#) in response to the Colonial pipeline cyberattack.¹¹³

DECLARATION OF TRANSPORTATION EMERGENCY BY THE SECRETARY OF THE MARYLAND DEPARTMENT OF TRANSPORTATION

Emergency Waiver from Motor Carrier Transportation Regulations in Maryland

WHEREAS, A REGIONAL EMERGENCY DECLARATION UNDER 49 CFR § 390.23 HAS BEEN DECLARED BY THE FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION UNDER ORDER No. [NUMBER] FOR THE STATES OF [LIST OF STATES].

WHEREAS, Regional Emergency Declaration No. [NUMBER] is in direct response to [EVENT DESCRIPTION] affecting the supply of gasoline, diesel, jet fuel, ethanol and other refined petroleum products throughout the affected States, which includes Maryland;

WHEREAS, The [EVENT] constitutes an emergency that may interrupt the delivery of essential services or essential supplies or otherwise immediately threatens human life or public welfare;

WHEREAS, Addressing this emergency condition which has created an immediate need for transportation of gasoline, diesel, jet fuel, ethanol and other refined petroleum products throughout the State of Maryland as a result of the [EVENT] is in the best interests of the citizens of Maryland and will facilitate emergency relief efforts;

WHEREAS, Efficient and effective distribution of these products necessitates an emergency waiver of those regulations specified herein and an increase in current weight limitations imposed by statute;

WHEREAS, [GOVERNOR NAME], Governor of the State of Maryland, by virtue of the authority vested in [him/her/them] by the Constitution and Laws of Maryland, including but not limited to Title 25 of the Transportation Article of the Annotated Code of Maryland, has delegated to me as Secretary of Transportation, the power to declare a transportation emergency pursuant to Transportation Article § 25-111.

NOW, THEREFORE, I, [NAME], SECRETARY OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, BY VIRTUE OF THE AUTHORITY VESTED IN ME BY A DELEGATION FROM [GOVERNOR NAME], GOVERNOR OF THE STATE OF MARYLAND AND THE LAWS OF MARYLAND, INCLUDING BUT NOT LIMITED TO TITLE 25 OF THE TRANSPORTATION ARTICLE OF THE ANNOTATED CODE OF MARYLAND, DO HEREBY ORDER:

There is a transportation emergency throughout the State acknowledged by the Federal Motor Carrier Safety Administration with the issuance of Emergency Declaration [NUMBER].

The United States Department of Transportation has advised that Presidential Declarations

issued under the Stafford Act and currently in effect provide states authority to raise weight limits on the Interstate Highway System to address this specific emergency.

Pursuant to Title 49, Code of Federal Regulations Part 390.23 and Title 25, Subtitle 25-111 of the Transportation Article of Maryland motor carriers and drivers transporting gasoline, diesel, jet fuel, ethanol and other refined petroleum products, and provided relief from Parts 390-399 of Title 49 Code of Federal Regulations by Federal Motor Carrier Safety Administration Emergency Declaration [NUMBER], are extended identical relief while in intrastate operation on state and local roadways. Motor carriers and drivers must adhere to the requirement of Title 49, Code of Federal Regulations Part 390.3 related to ill or fatigued drivers and all requirements so stated in Federal Motor Carrier Safety Administration Order 2021-002.

Vehicles transporting gasoline, diesel, jet fuel, ethanol and other refined petroleum products for emergency relief are allowed a 15% tolerance above any weight limit imposed by statute. Said tolerance shall be the only tolerance applicable to the vehicle. Vehicles exceeding this tolerance and carrying a non-divisible load shall obtain a hauling permit as required. No vehicle shall exceed any tire manufacturer's maximum load capacity rating or cargo tank laden weight specification as required by 49 CFR 178.345-14.

The Administrator, Maryland State Highway Administration, or the Administrator's designee may temporarily waive or modify hauling permit restrictions and conditions deemed safe and appropriate to facilitate relief efforts.

Carriers and drivers operating under the provisions of this declaration must adhere to all roadway restrictions of the Maryland State Highway Administration, Maryland Transportation Authority and local jurisdictions regarding roadway, bridge and tunnel size, weight and hazardous material limitations.

Nothing in this declaration relieves the carrier or driver of responsibility for the safe operation of the vehicle.

The provisions of this Order regarding increased vehicle weight limitations on the Interstate Highway System are only applicable as provided by federal code. Such relief is strictly under the purview of and must be independently declared by the appropriate federal agency. Any such declaration currently in effect or any future declaration so made and receiving concurrence by me as the Maryland Secretary of Transportation shall become a part of this Order.

This Order shall remain in effect for 5 days from the date of issuance unless rescinded or extended by the Secretary.

Appendix D: Resources

Fuel Supply Resources

The following data sources were used to create the graphics found in [Section 1](#):

- **Department of Homeland Security (DHS) – Homeland Infrastructure Foundation-Level Data (HIFLD) and the legacy Homeland Security Infrastructure Program (HSIP)**¹¹⁴ collects, processes and shares geospatial information for data visualization and analysis. Pipeline, terminals and power plant infrastructure were included on the supply maps from this source.
- **Department of Transportation (DOT) – National Transportation Atlas Database (NTAD)**¹¹⁵ hosts a set of nationwide geographic databases of transportation facilities and networks. This data was used to populate airports and ports on the supply section maps.
- **Energy Information Administration (EIA) – Interactive State Maps**¹¹⁶ reports all operable petroleum refineries located in the United States. EIA surveys refineries annually via the EIA-820 Annual Refinery Report and adjusts locations using public data.
- **U.S. Census Bureau – American Community Survey**¹¹⁷ develops estimates for the number of households by county that use various fuels for heating their homes.
- **U.S. Army Corps of Engineers (USACE) – Waterborne Commerce Statistics Center**¹¹⁸ reports volumes of liquid fuel delivered and received at U.S. ports in their Waterborne Commerce of the U.S. Ports and Waterways Web Tool. Data is recorded in short tons per year, and density estimates have been made to convert various products to a gallons per day basis.

Fuel Demand Resources

The following data sources were used to calculate volumes and create the graphics found in [Section 2](#).

- **EIA - Prime Supplier Sales Volumes**¹¹⁹ reports the petroleum products sold to local distributors, local retailers or end users derived from out of the state. This data is collected through a monthly survey of “prime suppliers,” defined as “a firm that produces, imports or transports any of the selected petroleum products across state boundaries and local marketing areas and sells the product to local distributors, local retailers or end users.”¹²⁰ Prime suppliers in Maryland include interstate resellers, importers and some large retailers. In the demand documents, this data is used for gasoline, diesel and propane consumed in the state. Ethanol and gasoline blending volumes are included in the gasoline dataset. Volumes are reported on the final day of the month.
- **EIA - State Energy Data System (SEDS): 1960-2019 consumption data**¹²¹ is an annual estimate of fuel consumed within each state. In the demand documents below, this data is used for kerosene and RFO. This estimated data is likely more accurate than the Prime Supplier Sales Volumes for these two fuels due to several factors. For jet fuel, points of sale can differ from their end location, and as a result, Prime Supplier Sales data undercounts volumes actually consumed in the state. EIA may also withhold Prime Suppliers Sales data for fuels or for time periods in which there are too few survey respondents, such as in the case of RFO. As a result, SEDs data provides a better estimate for kerosene and RFO consumption.
 - **Kerosene:** SEDs estimates jet fuel volumes consumed in the state using a combination of Airlines for America (A4A) data for select airports and U.S. DOT Bureau of Transportation Statistics (BTS) “Air Carrier Statistics (Form 41 Traffic) – All

- Carriers” database.
 - **Residual Fuel Oil:** EIA’s SEDs estimate of total RFO consumption accounts for fuel consumed by the electric power sector and consumption by all other end-use sectors. EIA collects this data via industry surveys.
- **EIA - Refinery, Bulk Terminal, and Natural Gas Plant Stocks by State**¹²² captures the product stored at bulk terminals (terminals with a capacity exceeding 2.1 million gallons) within the state of Maryland. As there are no refineries or natural gas plants in Maryland, these terminals represent the product stored in the state from pipeline, marine, rail and truck deliveries. Data is collected in monthly surveys to industry. The demand documents use this data for gasoline, distillate, kerosene, and RFO stocks. However, this data has not been used for propane stocks due to the nature of the propane supply chain, in which large volumes of propane are stored in secondary terminals not captured in the data.
- **EIA - Sales of Fuel Oil and Kerosene by End Use**¹²³ categorizes fuel sales data by end use sector. The data is collected annually in the “Sales of Fuel Oil and Kerosene” survey. The dataset is only available for distillate, RFO, and kerosene. Note that the kerosene dataset includes only non-transportation (including aviation) uses for kerosene.
- **EIA - State Energy Data System (SEDS): 1960-2019 consumption data by end use sector** provides fuel sales by end use for gasoline¹²⁴ and propane.¹²⁵ EIA uses eleven data series from the U.S. DOT Federal Highway Administration, as well as EIA’s Motor Gasoline Consumption Model Short-Term Energy Outlook to estimate motor gasoline sales. Hydrocarbon gas liquids, including propane, are estimated through a combination of data sources, including data from EIA, American Petroleum Institute (API) and the Propane Education & Research Council.

Cybersecurity Resources

- **Cybersecurity and Infrastructure Security Agency (CISA) - Cyber Resource Hub**¹²⁶ offers more than a dozen cybersecurity assessments provided by DHS’s CISA that organizations may request at no cost. The assessments are intended to help organizations manage risk and strengthen their cybersecurity practices.
- **CISA - Joint Cyber Defense Collaborative**¹²⁷ was launched in 2021 to lead CISA efforts to mitigate cybersecurity risks and respond collectively to cyberattacks. The effort is a collaboration with other federal agencies, state and local governments, as well as private sector entities. The collaborative will develop comprehensive cyber defense plans to facilitate unified action.
- **CISA – National Cyber Awareness System**¹²⁸ allows users to view or subscribe to tips, alerts, bulletins, and analysis related to cybersecurity and infrastructure security. The information caters to varying levels of technical expertise and offers timely and regularly updated information about security topics and threats.
- **CISA - Pipeline Cybersecurity Resources Library**¹²⁹ provides pipeline companies and stakeholders with a set of free resources to help strengthen their cybersecurity posture. The library includes a plethora of information related to assessments, tools, and services; cybersecurity trainings and exercises; reporting and information sharing mechanisms, and; standards and guidance, as well as other resources.
- **CISA - Stop Ransomware**¹³⁰ is the U.S. government’s official page dedicated to guidance and resources related to ransomware, a type of computer virus that encrypts a user’s or organization’s files and demands a ransom in exchange for decrypting the files. State and local governments have increasingly been the target of these types of attacks, which can

paralyze an organization's ability to operate and can be extremely costly. The webpage offers guidance, alerts, an incident reporting feature, and a ransomware readiness self-assessment.

- **Department of Energy (DOE) - Multiyear Plan for Energy Sector Cybersecurity**¹³¹ is a report by DOE that presents the department's integrated strategy to reduce cyber risks in the U.S. energy sector. The report addresses DOE's partnerships and coordination with the energy sector, national laboratories and the research community, and other federal entities. The report also addresses the legal precedents for the department's lead role in energy sector cybersecurity.
- **National Association of State Energy Officials (NASEO) - Enhancing Energy Sector Cybersecurity**¹³² is a report by NASEO that provides background on federal entities undertaking relevant cybersecurity efforts in addition to information sharing practices and doctrine. The report also provides a checklist of actions states and territories can take to improve their cybersecurity risk mitigation, preparedness, and response measures.
- **White House – Executive Order 14028 on Improving the Nation's Cybersecurity**¹³³ was issued in the wake of the May 2021 Cyberattack that led to the shutdown of Colonial Pipeline, one of the largest petroleum product pipelines in the country. The executive order acknowledges the need to improve the country's cybersecurity posture and calls for a standard playbook for responding to cyber incidents, improved information sharing between government and the private sector, public-private review boards to propose recommendations following an incident, and several other initiatives.

Appendix E: Plan Maintenance & Record of Changes

Plan Maintenance Change Types

Change Type	Description
Substantive	Significant language changes made to ensure the plan is complete or accurate.
Observation	These comments make observations on the plan, but do not suggest specific wording changes.
Administrative	These are grammatical, spelling, or formatting errors identified in the plan. Updates to points of contact for the different organizations listed in the plan will be considered administrative changes.

Record of Changes

Change Number	Change Type	Change Date	Pages(s) Affected	Individual Making Changes



About MEA

The Maryland Energy Administration (MEA) advises the governor and general assembly on all energy matters, promoting affordable, reliable and cleaner energy. MEA develops and administers programs and policy to support and expand all sectors of the state's economy while benefiting all Marylanders and implementing legislation.

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