Midwest Winter Storm Incident Coordination Scenario

Three months ago (N-3 months)

A late-season hurricane pummeled the U.S. Gulf Coast, including the Houston area, affecting up to 30% of U.S. refining capacity with short-term and long-term outages. Following the refinery outages, U.S. Gulf Coast refined product inventories sank below the five-year average, impacting supplies and prices in parts of the Midwest that received refined products from the U.S. Gulf Coast through the Magellan pipeline.

Additionally, a record size wet corn harvest led to increased propane consumption for crop drying. Propane inventory levels, are already below the seasonal average, and continued to drop during the harvest season. Propane days of supply in storage were at an all-time low as the autumn harvest ended.

One month ago (N-1 month)

The polar vortex descended on the U.S., bringing record low temperatures across the Upper Midwest beginning last month. Heating demand for propane spiked, leading to increased shipments via pipeline and truck to the region as propane inventories struggled to meet the high demand. Supplies from Canada and rail shipments are also delayed by snow and winter weather. As a result suppliers have cut off sales to non-contract customers and contract customers are on allocations receiving only 85% of their contract volumes.

Gasoline stocks across the Midwest were largely unaffected by the hurricane outages in the fall, with inventories within the five-year range.

Two Days Ago (N-2 day)

After a very cold, but mostly dry beginning to the winter, a massive blizzard is moving into the Upper Midwest region of the U.S. Forecasts are calling for 18-24" of snow over the next 48 hours and sub-zero temperatures affected the refineries' ability to operate efficiently. Customers are scrambling to purchase extra propane after the polar vortex has already depleted stocks due to record levels of heating and prices are spiking to record highs.

Gasoline supply has also surfaced as an issue. The Flint Hill Resources Pine Bend Refinery in Rosemount, MN, was idled last night for unscheduled maintenance. The refinery estimates that repairs will take about 30 days. The refinery provides about 310,000 barrels per day (b/d), which is equal to 147,560 b/d or 6.1 million gallons per day of gasoline and 88,600 b/d or 3.7 million gallons per day distillate oil production. The estimated total loss of product supply over all 30

days is about 183 million gallons of gasoline and about 111 million gallons of distillate oil productions, which include both diesel fuel and home heating oil.¹

Current Situation

The winter storm has moved swiftly into the Midwest, paralyzing the region with cold air and snowfall. Roads are icy and snow covered. The Magellan refined product pipeline network is operating at reduced flows in some areas as personnel are unable to reach pump stations to monitor and service issues caused by the storm. The winter storm has also impacted the railways, which have either ceased operating or have reduced their capacity and shortened trains from 100 to 50 cars. This has reduced propane shipments to the Upper Midwest. Customers unable to procure extra propane supply have been contacting various local government offices requesting assistance.

The Chicago region is now beginning to feel the impact of the storm. Additionally, the BP Whiting Refinery in Whiting, IN, which can normally process 413,500 barrels per day or about 17.4 million gallons per day,² has reportedly reduced crude oil runs by 50% due to routine maintenance scheduled for the next 30 days. This is expected to reduce refined product shipments north into Wisconsin on the Badger Pipeline and east into Michigan. Notable, demand is reduced because of the storm impacts.

KEY ISSUES

- Public information coordination and management.
- Identifying critical fuel shortages and establishing priorities.
- Communication between responding government agencies and fuel providers.
- Weather forecast and impact assessments.
- Cascading impacts down the fuel supply chain for propane and gasoline.

¹ The production capacity for the refineries referenced in this scenario is the Atmospheric Crude Distillation Capacity (barrels per calendar day) as reported in the U.S. Energy Information Administration's (EIA) Refinery Capacity Report and Data as of January 1, 2018, which was released on June 25, 2018 (https://www.eia.gov/petroleum/refinerycapacity/). According to the EIA, on average, one 42-gallon barrel of crude oil yields about 19-20 gallons of motor gasoline (about 47.6%) and 12 gallons of distillate fuel (about 28.6%) (https://www.eia.gov/energyexplained/index.php?page=oil_refining). For 310,000 b/d, this would equal 147,560 b/d of gasoline and 88,660 b/d of distillate oil production. Converted to gallons, this would be 6.1 million gallons of gasoline and 3.7 million gallons of distillate. (147,560 and 88,600 times 42 respectively, as 1 barrel equals 42 gallons). Since the refinery is estimated to be out for 30 days, both numbers were multiplied by 30, arriving at an estimated total loss of product supply of 183 million gallons of gasoline and 111 million gallons of distillate oil products (rounded up).

² The production capacity for the refineries referenced in this scenario is the Atmospheric Crude Distillation Capacity (barrels per calendar day) as reported in the U.S. Energy Information Administration's (EIA) Refinery Capacity Report and Data as of January 1, 2018, which was released on June 25, 2018 (<u>https://www.eia.gov/petroleum/refinerycapacity/</u>).

DISCUSSION QUESTIONS

- 1. What are your general priorities for fuel shortages and how do you plan to communicate these priorities to stakeholders and the public? Can you procure extra fuel from Conway, Kansas or other sources of supply?
- 2. Which petroleum response measures or programs would you recommend to the governor to consider implementing?
- 3. What would your message be to the public?
- 4. What information are companies providing to your states ESF-12 point of contact or the emergency management agency (EMA)? What information is your Governor likely to ask the states ESF-12 point of contact or the emergency management agency (EMA)? What information would be shared between affected states through the Energy Emergency Assurance Coordinators (EEAC) and between State and the Department of Energy? How would the State and Energy Information Administration Heating Oil and Propane Price (SHOPP) Program contribute to this response?
- 5. How do you supply heating fuel to customers that have run out of fuel? Do you need to assist low income customers in light of the sharp increase in prices?
- 6. Does your agency have a communication protocol between industry and government?
- **7.** Are you preparing for gasoline, diesel fuel and home heating oil shortages after the storm?