Illinois Pipeline Study

for Illinois Department of Transportation

Illinois State Freight Advisory Council
Soliciting your Input

Go to www.menti.com and use the code 4879877

During this session, an online audience response application (Mentimeter) will be used to collect your inputs.

Voting will be anonymous.

Results will be shown on the screen in real time.

Go to www.menti.com and use the code that will appear in the banner above.
Where is the 2nd largest crude oil terminal in the U.S. located?

- Patoka, IL: 12
- Springfield, IL: 0
- Wood River, IL: 5
- Pontiac, IL: 2
Where is the 2nd largest crude oil terminal in the U.S. located?

- a. Patoka, IL
- b. Springfield, IL
- c. Wood River, IL
- d. Pontiac, IL

**Patoka, IL**

Crude oil storage: 80+ tanks
Total capacity: >19 million barrels
Connecting pipelines: 12 active pipelines
Crude oil sources: Bakken, Canada, US Gulf Coast

Source: Dakota Pipeline facts, 2019
What is the total number of pipeline miles located in Illinois?
What is the total number of pipeline miles located in Illinois?

- a. 10,000
- b. 52,000
- c. 134,000
- d. 173,000

Illinois has over 134,000 miles of crude oil, highly volatile liquids (HVL), refined petroleum, and natural gas pipelines

- Almost 94% of all miles transport natural gas
- 4th largest refinery capacity in the US
- Total refining capacity of over one million barrels per calendar day
Study Objective

Complement the Illinois State Freight Plan

- Identify the location of pipelines running throughout the State of Illinois, commodities carried, and where they originate and terminate
- Identify role of pipelines in Illinois’s multimodal freight transportation system
- Assess the potential effects of a loss of pipeline operation in the state
- Identify IDOT’s role in pipelines
Many different types of pipelines but the focus of this study is transmission pipelines

- **Transmission pipelines**: Liquids and gases from gathering pipelines to refineries, storage facilities, or processing plants.

Other types of Pipelines:

- **Gathering pipelines**: Liquids and gases from their sources to refineries, processing plants, or connections with transmission pipelines.
- **Distribution pipelines**: Distribute natural gas to commercial and residential end-users.

Source: U.S. Pipeline and Hazardous Materials Safety Administration
Natural Gas Pipelines

- Very limited natural gas production in Illinois
  - Illinois relies on interstate transportation of natural gas
  - The Illinois border with Iowa and Missouri transport the largest amounts of natural gas into Illinois for consumption and traveling through the state

- Three operators provide service to about 91 percent of customers and operate about 89 percent of distribution pipelines in Illinois
  - Ameren Illinois, Northern Illinois Gas, and Peoples Gas Light & Coke Company
Crude Oil

Crude oil pipeline intensity in Illinois is a function of:

- Geography: Connection to Canadian crude oil imports and domestic fracking
- History: Patoka is the second largest pipeline terminal in the US, served by multiple pipeline operators
- Refining capacity: 5.5% of U.S. refining capacity in Illinois (4th in the U.S.) and largest refining capacity in the Midwest

Source: Canadian Association of Petroleum Producers

Data Sources: EIA, Cartography by CPCS (2021)
Refined Petroleum Products & Highly Volatile Liquids

Two classifications of liquids (non-crude)

- Highly Volatile Liquids (HVL): HVL is a hazardous liquid that forms a vapor cloud when released into the atmosphere – examples include: propane, butane, ethylene
- Non-HVL: Refined petroleum products such as gasoline, diesel, jet fuel, kerosene, heating oil, etc
Review of Petroleum Terminals

➤ Proximity to truck bottlenecks: 30 out of Illinois’ 51 petroleum terminals likely contribute to truck bottlenecks, roadway pavement issues, or both

➤ Truck Access: Access to a terminal and the connections to access routes may not reflect the quantity of trucks and cause impacts to roadway performance, safety, and efficiency

➤ Weight Restrictions: Posted access on connector roadways may result in inefficient routes, traffic, and congestion

Buckeye Terminal in Summit (SW of Chicago)
Resilience of Illinois Pipeline System

- Illinois’s crude oil pipelines have multiple times the capacity that Illinois refineries need to operate at maximum capacity and have major pipeline hubs in the region.

- Most of Illinois's refineries (Lemont, Joliet, and Wood River) are directly served by several crude oil pipelines and refineries can reduce production if needed.

- Illinois has many product pipelines inbound and outbound and refinery capacity in Illinois exceeds consumption.
  
  - Disruptions resulted in longer truck trips, different origin/destination pairs, and a potential to impact performance on connecting roadway.

**IDOT’s Existing Role in Pipeline Planning and Oversight**

- **Right-of-Way Coordination:** Approve utility permits for pipeline construction proposed within the roadway right-of-way.

- **Emergency Response:** The 2015 State of Illinois Energy Assurance Plan and the 2021 Illinois Emergency Operations Plan (IEOP) identifies IDOT’s role in mitigating the impacts of a fuel shortage in areas affected by a disaster.

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**Energy Emergency Response Hierarchy and Responsibilities**

- **Governor**
  - Requires IEEMA approval for purchases

- **IEEMA**
  - Leads in energy recovery efforts

- **ICC**

- **CMS**
  - Purchases equipment (with IEEMA approval)
  - Assists state agencies in finding fuel for vehicles

- **IDOC**
  - Provides manpower for debris removal

- **IDOT**
  - Removes debris from federal and state roadways
  - Repairs roadways
  - Has stockpile of fuel
  - Provides driver waivers

- **DCEO**
  - Monitors energy supply
  - Infrastructure knowledgebase

Source: 2015 State of Illinois Energy Assurance Plan
Opportunities for IDOT’s Future Role

➢ Identify and integrate IDOT pipeline activities into existing planning, operations, and resilience efforts

➢ Integrate pipelines into the Illinois State Freight Plan

➢ Integrate pipeline-related facilities into last-mile freight planning

Illinois State Freight Plan
Executive Summary
JUNE 2018

Illinois serves as one of the nation's premier logistics hubs because of its strategic location and access to multimodal transportation infrastructure.

- 15,968 Miles of Roadway
- 10,000 Miles of Tracks
- 1,095 Miles of Navigable Inland Waterways
- 116 Airports
- 1.23 Billion Tons Combined Total Freight
- $2.97 Trillion in Freight Value

Illinois ranked third in truck freight tonnage even though its truck mode share of 54 percent is well below a national average closer to 80 percent due to large volumes of freight also being moved by rail, water, and air. Illinois is the third largest state in the nation for volume of freight, whether measured by tonnage or by value of goods.¹
What role(s) in the pipeline system should IDOT undertake? Select all that apply

- New role: Integrate IDOT pipeline activities into existing planning, operations, and resilience efforts (16)
- New role: Incorporate pipelines into the Illinois State Freight Plan (12)
- New role: Integrate pipeline-related facilities into last-mile freight planning (11)
- Existing role: Right-of-way coordination (8)
- Existing role: Emergency response (11)
Thank You!