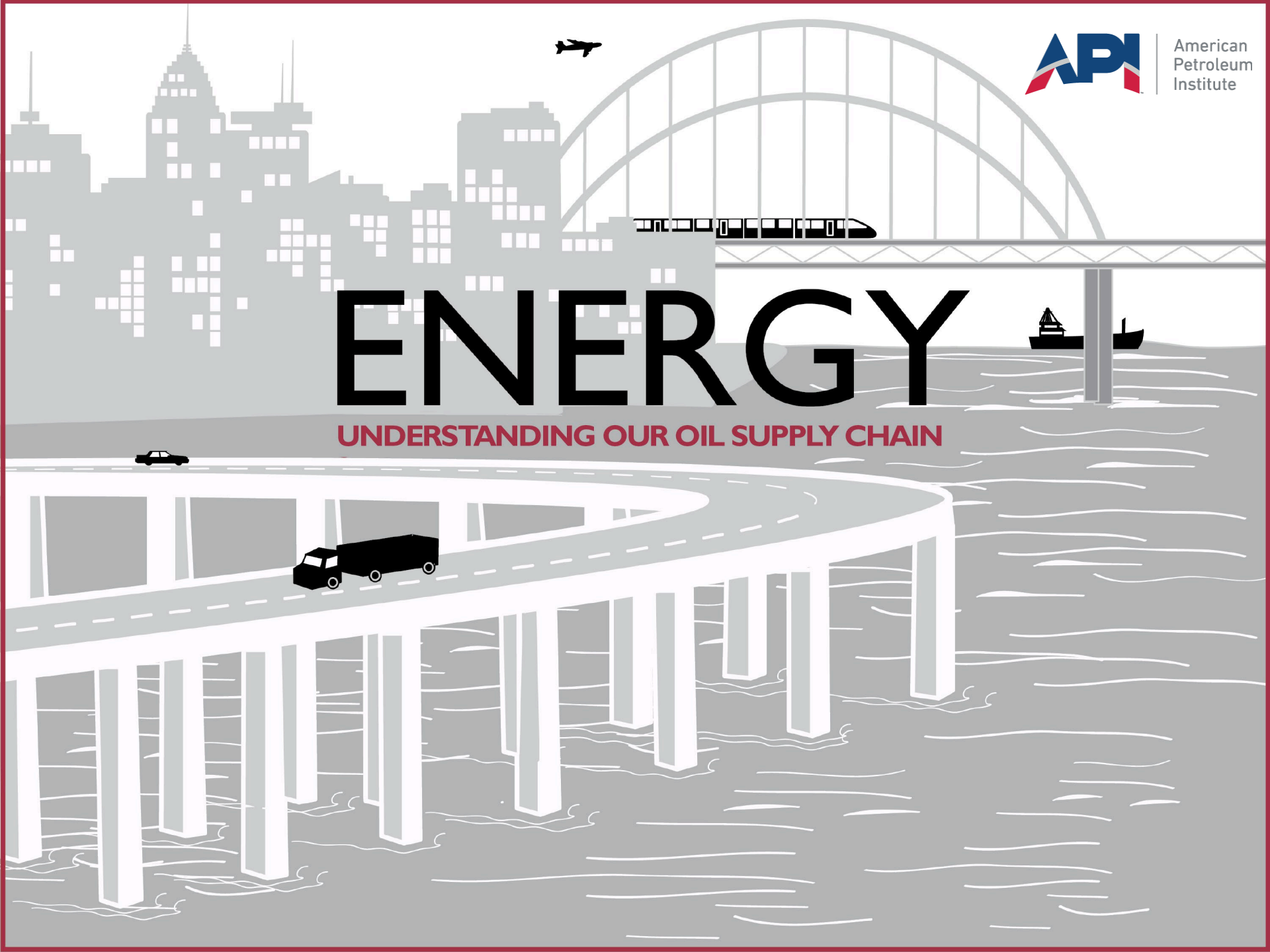




American
Petroleum
Institute

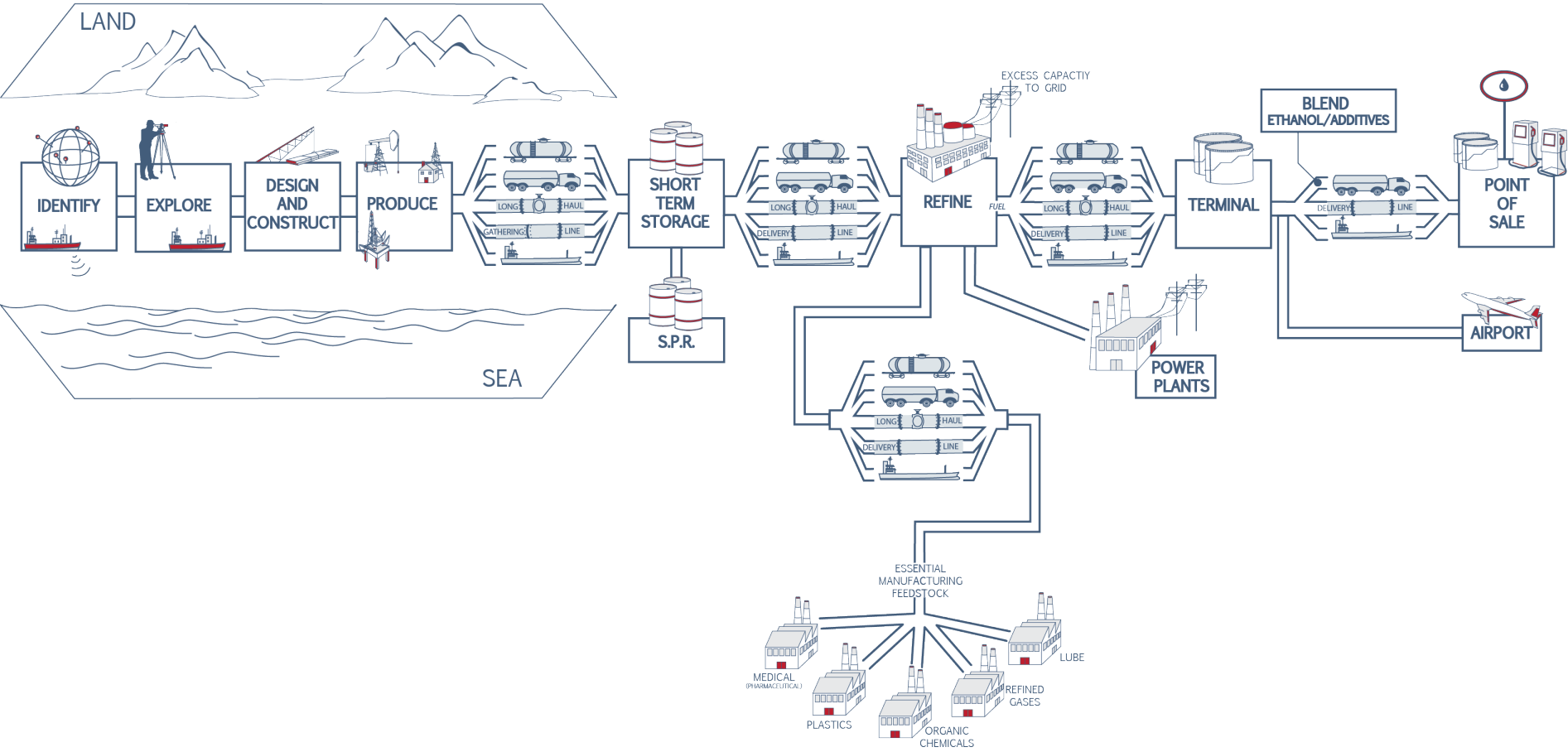
ENERGY

UNDERSTANDING OUR OIL SUPPLY CHAIN



- Our goal is to raise the level of awareness around the oil supply chain among key stakeholders in order to facilitate positive working relationships and more informed decision making.
- We've built resiliency and rapid response capabilities into our supply chain to prevent incidents and to ensure that, if events occur, they produce the least possible impact.

CRITICAL ELEMENTS OF THE OIL SUPPLY CHAIN



Legend:
S.P.R.: Strategic Petroleum Reserve

RESOURCES: PEOPLE (HUMAN BEHAVIOR, SKILLED/TRAINED PERSONNEL) POWER (ELECTRICITY) WATER IT (TELECOM, CYBER, ACCESS CONTROL)



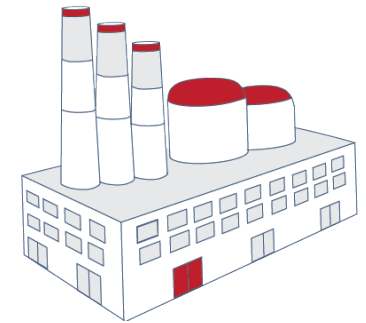
UNDERSTANDING THE COMPONENTS



PRODUCTION



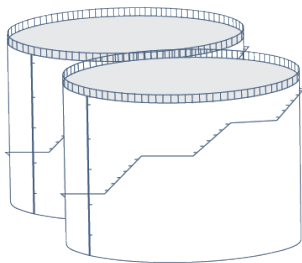
PIPELINES



REFINING



SHORT TERM
STORAGE



TERMINAL

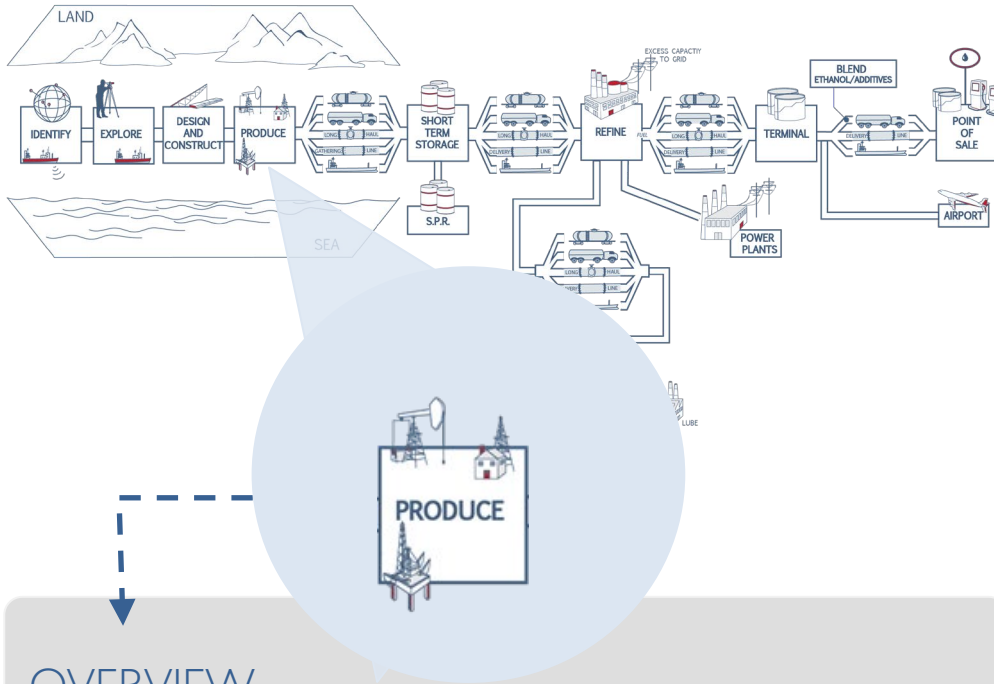


SHIPPING & PORTS
OF CALL



POINT OF SALE

PRODUCTION



OVERVIEW

The first step in the oil supply chain is production. During production, crude oil is produced on both land and at sea. Oil production includes drilling, extraction, and recovery of oil from underground.

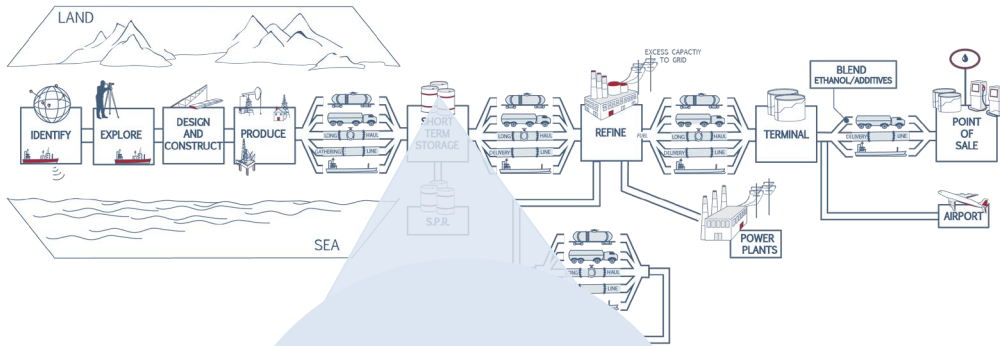
STATISTICS

- In 2022, U.S. oil production surpassed 4.3 billion barrels annually, while marketed natural gas production reached nearly 40 trillion cubic feet.
- Crude oil production has consistently risen since 2008 when it averaged 5.0 million barrels per day, reversing a decline that began in 1986.
- Similarly, U.S. natural gas production has been increasing since 2005, where annual production was below half its current level at 19 trillion cubic feet.
- Post-Covid, U.S. oil production has continued its upward trajectory.

KEY TAKEAWAY

Improvements in advanced crude oil production technologies continues to lift domestic supply. The growth results largely from a significant increase in onshore crude oil production, particularly from shale and other tight formations, which has been spurred by technological advances.

SHORT TERM STORAGE



OVERVIEW

Short term storage serves as the staging area for crude distribution throughout the entire supply chain. Without storage facilities, the ability to adjust to supply and demand would be debilitated.



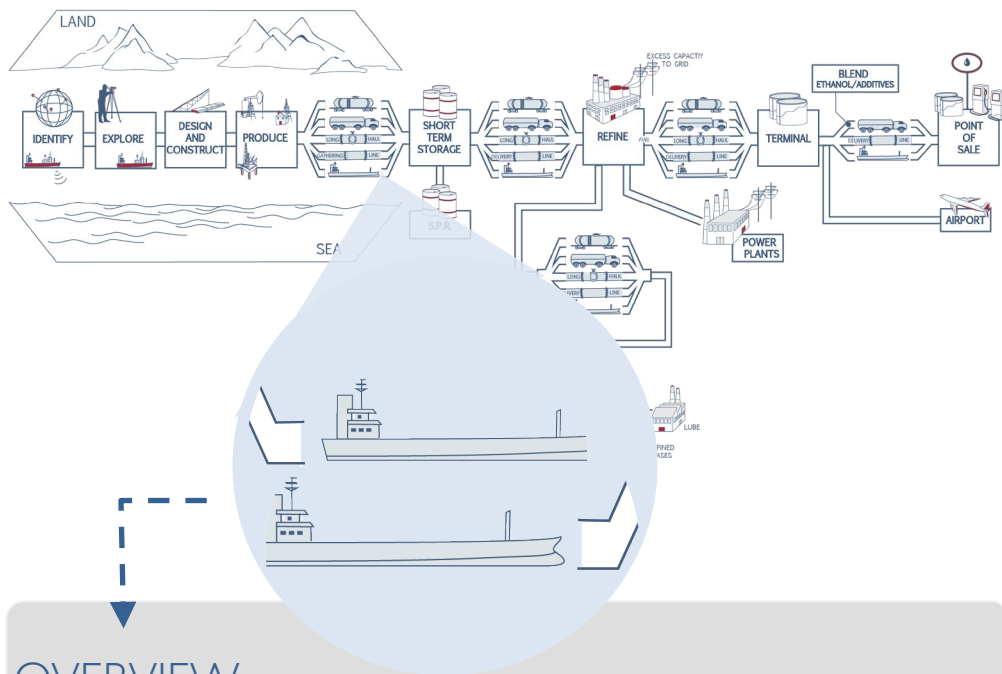
STATISTICS

- The U.S. has 1.1 million barrels of petroleum product storage capacity at bulk terminals.
- The U.S. has over 700 million barrels of crude oil storage capacity at crude tank farms.
- The U.S. has over 550 million barrels of storage capacity at refineries.
- Over 130 million barrels can be in storage in the product pipeline system, in rail cars and on the waterway system.



KEY TAKEAWAY

Underground moisture can corrode steel tanks. New fiberglass tanks and steel tanks lined with fiberglass or other durable, coatings help prevent corrosion. The same high-tech coatings and linings also protect the Nation's pipelines and above-ground storage tanks.



OVERVIEW

Ports of call represent the major entrance and exit points of crude oil prior to short term storage and, later, refining. Ports serve as central gathering facilities for entrance into the U.S.

Shipping channels are the most travelled and commonly used source to move foreign oil to domestic refineries. Large tankers contain thousands of barrels of crude oil to be refined into fuel and other by-products.



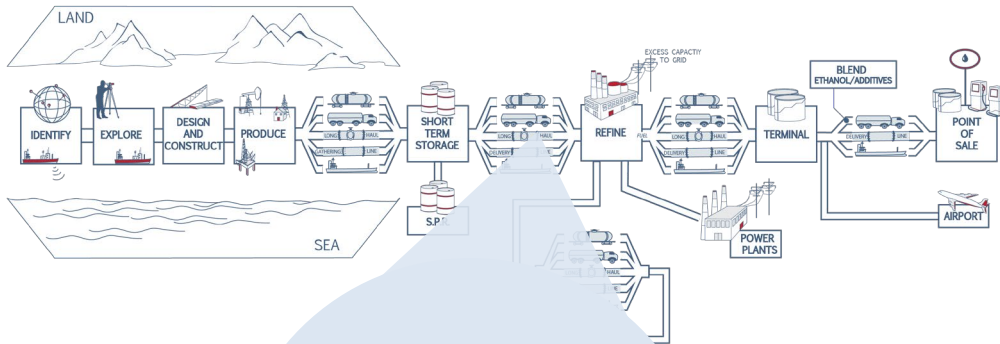
STATISTICS

- In 2022, the U.S. exported 1.3 billion barrels of crude oil and 2.2 billion barrels of petroleum products.
- In 2022, the U.S. imported 2.3 billion barrels of crude oil and 744 million barrels of petroleum products.
- In 2022, exports of U.S. crude and petroleum products totaled \$306.9 billion (17% of total U.S. exports). Over 90% of this trade was by tankers.



KEY TAKEAWAY

A long-range tanker can carry up to 615,000 barrels of gasoline. This is approximately the equivalent capacity of 20 large tank barges, 830 rail cars, or 2,500 trucks, and would keep over 50,000 cars running for a year.



OVERVIEW

Gathering pipelines are the main transportation modes for movement of crude oil into short term storage. Gathering pipelines travel shorter distances than long haul pipelines, varying in size, frequency, and flow levels.

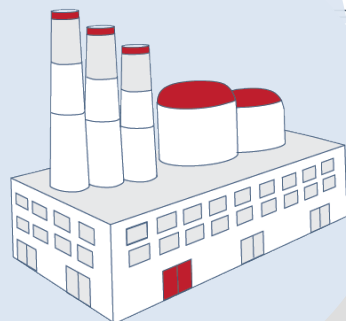
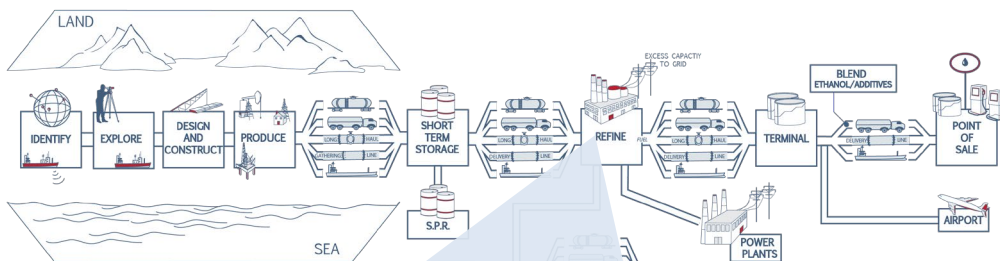
Delivery lines act as a major transportation module of crude oil to the refining process. Delivery lines are smaller in diameter and travel shorter distances than gathering lines.

STATISTICS

- There are approximately 150,000 miles of crude oil petroleum product trunk lines in the U.S.
- Pipelines move approximately 80% of the oil and petroleum products transported annually.
- Replacing even a modest-sized pipeline, which might transport 150,000 barrels per day, would require 750 tanker truck loads per day, a load delivered every two minutes around the clock.

KEY TAKEAWAY

- US pipelines delivered over 3.7 billion barrels of crude oil and petroleum products in 2022.
- About 33% of the petroleum transported by pipelines is crude oil and 67% is refined petroleum products.



OVERVIEW

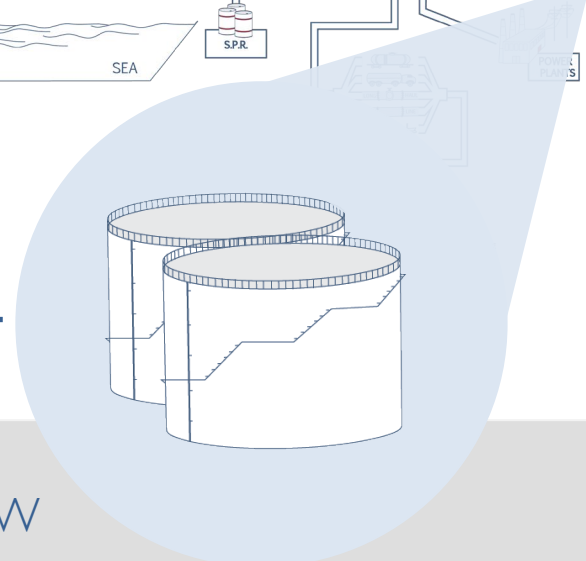
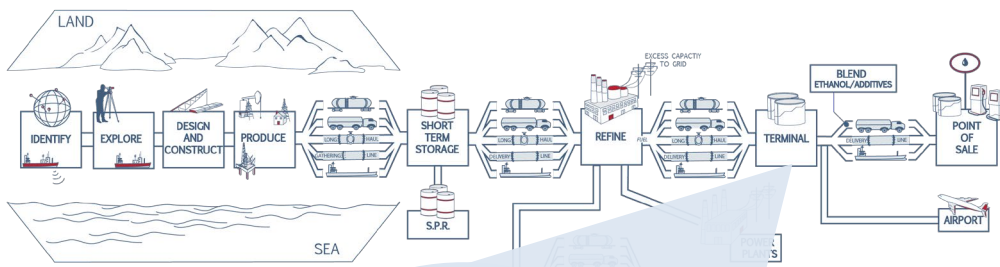
Refineries act as the main transformation point for all crude oil into its various consumable products and are mainly located domestically. After receiving oil from storage facilities, refineries use various chemical separation and reaction processes to transform crude oil into usable products such as: fuel oil, diesel oil, jet fuel, and multiple essential manufacturing feedstocks.

STATISTICS

- In 2022, there were 130 refineries in the United States.
- In 2022, U.S. refineries produced over 7 billion barrels of refined products of which 3.5 billion barrels were finished motor gasoline.

KEY TAKEAWAY

In 1982, the United States had more than 300 operational refineries. Although no new refineries have been constructed since then, advancements in the industry have significantly increased the capacity of existing facilities. As a result, the refining capacity in the U.S. remains essentially unchanged, despite a reduction of 57% in the number of refineries.



OVERVIEW

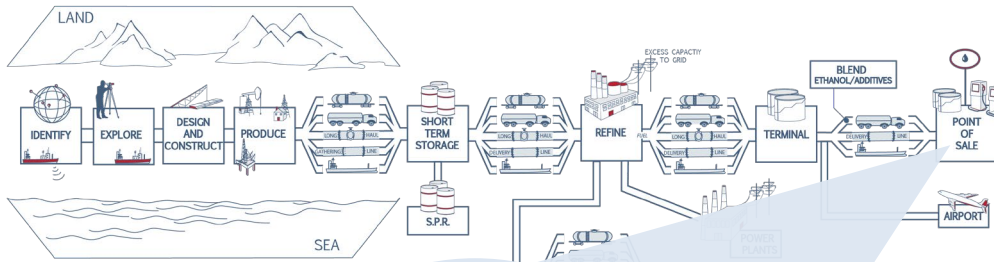
Refined fuel that is ready for use is transported to terminals. Terminals are located closer to transportation hubs and are the final staging point for the refined fuel before the point of sale. After entering the terminal ethanols and additives are added to the final refined product before fuel is transported.

STATISTICS

- Over 1400 petroleum product terminals are in the U.S.

KEY TAKEAWAY

Terminals are owned by individual petroleum marketers, by common carrier pipeline/terminal companies or by integrated oil companies. As a result, fuels supplies that are available in excess of that needed to meet contractual obligations are treated as a surplus and sold at a discount. In a shortage, contractual needs are served first and there is little or no surplus. Hence, vendors who rely solely on the spot market may be unable to supply critical needs customers during a shortage.



OVERVIEW

Once the refined fuel leaves the terminal, it is transported to its final point of sale, which includes fuel stations and airports. The trucking, shipping and delivery lines provide the final finished product which can be delivered across the country.



STATISTICS

- America's 145,000 retail service stations, of which 128,00 are convenience stores selling fuel.
- A typical gasoline station has a storage capacity of 30,000 to 40,000 gallons.



KEY TAKEAWAY

Major integrated oil companies only own about 3 percent of retail stations. A little-known fact is that the vast majority of branded stations are owned and operated by independent retailers who are licensed to represent that brand. More than 60% of the retail stations in the US are owned by an individual or family that owns a single store.

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For more information on the visual depiction of this supply chain model, please contact:

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